

# Measurement plan: Icu nurses' challenges in implementing a pain assessment tool with adult non-verbal patients

## Introduction

The measurement plan is for a quality improvement project, which concerns pain assessment in an intensive care unit (ICU) for patients who are unable to self-report. Nurses therefore have to use their judgement to assess levels of pain and make decisions. Pain assessment is important because it determines the functional aspects of pain, which are useful in developing a plan for pain management and medication.<sup>1</sup> According to Georgiou et al.<sup>2</sup>, between 2013 and 2014, only 45% of adult patients who were unable to self-report in the ICU had their pain assessed and a valid pain tool was used just 28% of the time. Thus, 40–77.4% of the patients who were unable to self-report complained that they had bad experiences of pain in the ICU.<sup>3</sup>

Clinical judgement is defined as a choice between different situations requiring decision-making. It affects patients and clinical performance.<sup>4</sup> Nurses' judgements and decisions are closely related to each other.<sup>5</sup> While Jacavone et al.<sup>6</sup> indicated in their study that nursing judgement is used to manage cardiac pain, there is a lack of knowledge and information about how nurses judge pain levels. According to Herr et al.<sup>7</sup> addressed that there is a need to improve the skills and knowledge of healthcare professionals, with the aim of conducting comprehensive pain assessments and understanding various methods to improve health outcomes.

Measurement plan methodology was applied for collecting the data, as well as the identified sources of data. These are components of the approach for measurement selected for a project. Some cases involve defined data and the procedures for collection required to obtain data for measurement.<sup>8</sup> The purpose of the measurement plan is to measure and explore the challenges that nurses face when they need to implement pain assessment tools in ICU with patients unable to self-report. This will be examined from different perspectives to develop the hospital outcome, through a reliable way to structure and identify the project stages, called the Quality Measurement Journey (QMJ) framework, provided by Lloyd<sup>9</sup>. The steps followed include the definition of the aim, theoretical conceptualisation, conducting measurements, defining the variables, outlining the data collection plan, collecting the data, and analysing it for the purposes of an action plan.

## Context, scope, and rationale of the concept

The overall context of the measurement plan for the quality improvement project is to measure nurses' challenges when conducting pain assessment in the ICU with a patient who is unable to self-report. The context is the Kingdom of Saudi Arabia (KSA). The key challenging point is the nurses having to make judgements when assessing patients' pain. This project will focus on the extent to which nurses use their judgement when assessing patients' pain in the ICU rather than implementing pain assessment tools. It will examine which is better for the patients. The capacity of an ICU room depends on the hospital services in the KSA community. The Ministry

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of Health (MOH) in the KSA provides different levels of ICU services depending on the type of hospital: primary, secondary or tertiary. The study will focus on the context of tertiary hospitals, which are described as well-equipped with ratios of 1:1 between nurses and patients.<sup>10</sup> We will consider one ICU room of six beds in this well-equipped environment in order to critically measure the concept of nurses' judgement when applying pain assessment tools in the ICU.

The implementation of pain assessment in the ICU environment is challenging for nurses, even expert nurses. The problem is that nurses use their own judgement rather than implementing pain assessment tools. This could be because of a lack of knowledge or a lack of trust in the assessment tools. Pain assessment plays a significant part in the patients' treatment process as it affects their satisfaction and hospital outcomes. Thus, the question is, how can ICU nurse's awareness be developed and how much they use and believe in the pain assessment tools? The problem will be evaluated with one of six patients in the well-equipped ICU in order to identify the barriers to the ICU nurses' judgement.

Koch et al.<sup>11</sup> examined ICU nurses' knowledge with ventilator patients from three different perspectives through a realistic and comprehensive questionnaire. Multidisciplinary consultants were engaged to develop three scenarios: comprehension, perception and projection, to measure the exact barriers. We can benefit from these rules to measure why nurses judge patients' pain rather than focusing on implementing the exact assessment tool. Deldar et al.<sup>3</sup> indicated the nurses' challenges and the importance of having an effective pain management tool to help nurses take the right decision with regard to the pain scale. They found four categories of challenges: organisational barriers, forgotten priority, barriers to knowledge and attitudinal barriers. Despite that, Foster<sup>12</sup> argued that expert nurses' judgement in the ICU is a key element for assessing pain when behavioural and verbal indicators appear. It appears that there are different points of view, but we can use both studies to find the barriers and communicate with the patients if possible.

## Framework

The rationale of the quality measurement journey framework (QMJ) as shown in Figure 1 has been identified for this paper in order to identify every step in the measurement plan of the quality improvement concept. The reason for choosing the quality measurement framework is the associated development steps of following each other to accomplish improvement in measurement plan while if we apply just a measurement framework without the quality concept, it would only fit the part of measure the knowledge problem. The measurement study of nurses' challenges in using pain assessment in the ICU will explore the use of pain assessment tools and why nurses judge pain themselves rather than implementing the tool. Thus, the QMJ will be used to explore and measure the issue. According to Wells et al.<sup>13</sup>, pain assessment improves the quality of care provided in ICUs. The significant part of the improvement project is a measurement plan, to address and develop a suitable way of assessing patient pain in the ICU. Planning the measurement in a frame of improvement allows for the evaluation of multiple cases and changes in the process.<sup>14</sup> The steps of the measurement plan follow the framework including the definition of eight milestones: the aim, concept, measure, operational definitions, data collection plan, data collection, analysis, and action.<sup>9</sup>

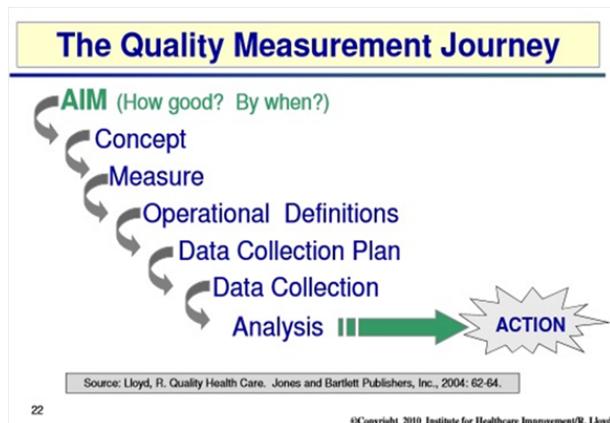


Figure 1 The Quality Measurement Journey QMJ framework (Lloyd, 2004).

### Aim

The SMART goal of the QMJ for this measurement plan will be specific, measurable, attainable, realistic, and time-based to determine the exact measurement focus. This is a clear standard to direct the measurement plan.<sup>15</sup> The aim is to help nurses to meet the challenge of assessing pain in non-verbal patients to improve their outcomes and experience of care, in particular one room in the ICU for four months. The improvement project also aims to accomplish development in pain management and patients' outcomes.

### Concept

The concept of a measurement plan is the second step in the QMJ, designed to rightly lead the project to the measurement and data collection steps.<sup>16</sup> Therefore, a driver diagram was created in order to organise and build the key project aim, which is to improve the pain assessment process in the ICU. Thus, the project was concentrated on one primary driver to clearly accomplish the need to reduce nurses' use of their own judgement in communication difficulty. There are also three secondary drivers directed to achieve the aim, as shown in Figure 2.

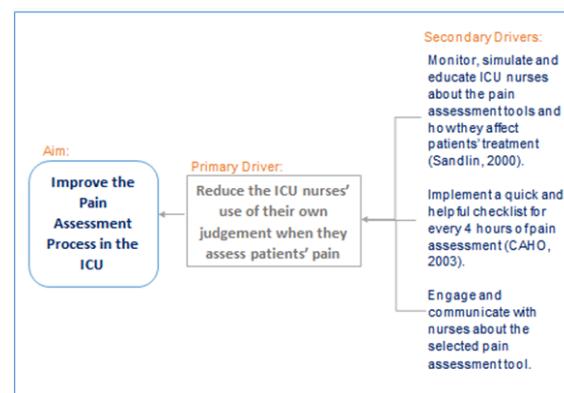
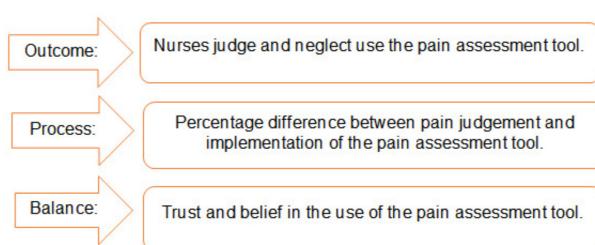


Figure 2 Driver Diagram.

### Measurement

The third milestone is measurement, after confirming the aim and the concept.<sup>16</sup> The measurement analyses three angles of the project: outcome, process and balance.<sup>14</sup> We move to the outcome of the measurement from an initial question: Is every patients' pain assessed regularly in a 6-bed ICU room? A recently published article by Bakshiet al.<sup>17</sup> indicated that pain assessment is the most ignored process in the ICU; nurses have a lack of trust and knowledge about how important it is to use pain assessment tools. It is also appeared that nurses missing a pain management plan. Sessler et al.<sup>18</sup> reported similar concept with Bakshi et al.<sup>17</sup> in the ICU nurses challenges with non-verbal patients and indicated the similar nurses challenging between ICU children and non-verbal patients in assessing the pain. The nurses' prediction and judgement are main factors in the patients' outcome while the nurses' judgement leads them to make a decision about the patients' status and needs. Although judgement, improvement and research are three aspects of individual performance measures that should be identified to build nurses' skills in these aspects,<sup>19</sup> nurses have to be aware of the importance of implementing the exact pain assessment tool itself without further judgement to accomplish the tool's function and improve patients' outcomes. It appears that change leads to improvement when we reduce ICU nurses' judgement and it may also affect the patients' length of stay in the ICU.

The process measure is about how and how often the nurses judge patients' pain rather than using the tool, in the case of following the guideline of assessing patients' pain every 4 hours for the ratio 6:6 ICU nurses and non-verbal patients. Gagliese et al.<sup>20</sup> found that ICU nurses judge cancer patients' pain routinely, using a strategic methodology such as observations of spontaneous behaviour and patients' self-reporting. Gélinas et al.<sup>21</sup> compared pre- and post-implementation pain assessment tools, they showed an increase in ICU nurses' pain reports from 27% to 60% in a year, while ventilator patients reported higher sedation doses in pre-implementation. It is clear that the nurse's judgement on pain assessment not a scale to measure the pain like the tool effectiveness. The balance measure is nurses' trust and their belief in the pain assessment tool. ICU nurses' behaviour and judgement come from their trust in the reliability of the pain assessment tool, which is the challenging issue of behavioural change to critically manage implementing the tools.<sup>22</sup> However, according to Brewer et al.<sup>23</sup>, nurses' judgement and lack of trust in the tool lead them to employ complementary and alternative medicine for pain relief. Reducing ICU nurses' own judgement to improve the use of the pain assessment tool requires that the nurses have trust in the tool's reliability and validity Figure 3.



**Figure 3** Measures Summary.

**Table 1** Operational definition of the outcome measure.

Measure name:	<b>Neglect and judge the pain assessment tool.</b>
Measure type:	Outcome.
Related Driver:	Reduce the ICU nurses' use of their own judgement with a quick checklist.
Description:	The number of the ICU nurses in one room with six beds dealing with non-verbal patients to assess their pain every four hours.
Rationale:	The estimated overall number of night- and day-shift nurses implementing the tool.
Numerators:	The total number of nurses in one ICU room.
Data Sources:	Local audit.
Denominators:	Non-verbal adult patients in the ICU.
Data Sources:	Local audit.
Method of Calculation:	The checklist and medical records which could show the differences in nurses' performance.
Collection Guidance:	Report daily data from the pain assessment checklist.

**Table 2** Operational definition of the process measure.

Measure name:	<b>Compliance with using the pain assessment tool rather than nurses judging the patients' pain.</b>
Measure type:	Process.
Related Driver:	Reduce the ICU nurses' use of their own judgement by monitoring, simulating, and educating the nurses.
Description:	The percentage of ICU nurses who implement the pain assessment tool and judge the pain scale, to see the level of nurses' education and knowledge.
Rationale:	Adopting the pain assessment tool every 4 hours for each patient.
Numerators:	The number of nurses using the pain assessment scale correctly.
Data Sources:	Local audit.
Denominators:	Non-verbal adult patients in the ICU.
Data Sources:	Local audit.
Method of Calculation:	The number of nurses assessing patients' pain and how they judge it using the tool by monitoring their behaviour and simulation training.
Collection Guidance:	The event occurs every 4 hours for each patient in a 6-bed ICU room. The nurses could be watched to see how they behave, or a survey could show the level of nurses' knowledge about using the tool.

**Table 3** Operational definition of the balance measure

Measure name:	<b>The average level of trust in using the pain assessment tool.</b>
Measure type:	Balance.
Related Driver:	Reduce the ICU nurses' use of their own judgement by engaging and communicating with the nurses.
Description:	The nurses' confidence and trust in the tool's reliability and validity.
Rationale:	Implementing the pain assessment tool as the international guideline requires.
Numerators:	The total number of ICU nurses.
Data Sources:	Local audit.
Denominators:	Non-verbal adult patients in the ICU.
Data Sources:	Local audit.
Method of Calculation:	Calculate what nurses think about the tool by communicating and engaging with them.
Collection Guidance:	Create a system to record the communication and understand why nurses do not trust the tool.

## Milestones of the data collection plan and data collection

The data collection plan saves time, money, and effort; in this project case it requires qualitative primary data.<sup>16</sup> A method to collect the data is needed to measure how ICU nurses judge the pain assessment tool. Information can be gathered from a quick survey or through communication, which means obtaining information from people in a group discussion and by observing them.<sup>14</sup> The local secondary data should come from a checklist showing whether each patient had their pain assessed with the tool as CPOT to follow the patients' status and the nurses' performance. Thus, these two types of data could help to accomplish the measurement plan's aim. The gathering data will be collected by an expert nurse who is experienced in collecting data within 24 hours to ensure the information quality. The collecting data process for (6 beds every 4 hours) over two months, and the baseline data will be for one patient over 15 days. This is so that the researcher can have a baseline measurement before going through the other five patients in the ICU room.

## Milestones of the analysis and action

The analysis of measurement indicates the data impact and understanding the change (Provost and Murray, 2011). It also helps to address the common and special causes of variation for the measurement plan of the project.<sup>14</sup> A run chart will be applied to focus on all the data variation over time and to understand whether or not the change constitutes improvement. This will allow us to include multiple measures as we plan to measure the nurses' judgement through communication and a checklist.<sup>14</sup> The run chart will show the variations in the behaviour of the ICU night- and day-shift nurses and give us the opportunity to compare the differences between nurses' performance in two ICU rooms. After we recognize that change leads to improvement regarding to analysing the data in the run chart, we do a suitable organization to take the action. The action milestone will be based on the new knowledge we have acquired with this measurement plan.<sup>14</sup> An action plan is an initial step to reduce the project barriers as much as possible and to accomplish the exact project aims. According to Lloyd<sup>9</sup>, the action could be practical then become deep action, which is implementing an improvement change.

## Risks of implementing the measurement plan

The significant risk of implementing a measurement plan for an improvement project is that the change might not endure.<sup>9</sup> Summarising the risks, this plan could face three barriers:

- a. The ICU nurses' well-being and emotional and psychological status is affected by implementing the pain assessment tool even when they are educated and trained because of the environment.<sup>24</sup>
- b. Effectiveness of the pain assessment tool itself with different patients' health conditions.
- c. Neglecting the guidelines for the nurses' numbers in ICU rooms,<sup>25</sup> which is 1:1 nurses and non-verbal patients, might lead to increase nurses' workload.

These barriers to the measurement plan indicate the nurses' perspectives in a specific environment in the KSA. They could vary in different cultures, perspectives and environments.

## Conclusion

The measurement plan for nurses' challenges in applying the pain

assessment tool in the ICU with patients who are unable to self-report has been established by the QMJ framework. The measurement plan of the improvement project is based on the aim to improve the pain assessment process in the ICU, which relates to the primary driver of reducing ICU nurses' use of their own judgement while they assess patients' pain. There are also three secondary drivers. This addresses the other elements in the plan to improve patients' and hospitals' outcomes. It is clear that the measurement plan is achievable, and the project aim is to persuade nurses to follow the international guide for implementing the pain assessment tool. The recommendation is to employ the pain assessment tool to help nurses assess non-verbal patients' pain, not to force nurses to use something they do not believe in. The tool should help the ICU nurses to assess the patients' pain clearly and it should not increase their workload.<sup>26</sup>

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## Conflicts of interest

None.

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