

## “Application of Poka-Yoke Tool in Hospital Industry”

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**Abstract:** Poka yoke has been used in the health care to prevent life-threatening mistakes. Many error proofing solutions are implemented successfully in health care. But mostly they are generated without the benefit of the knowledge of the wider spectrum of error proofing solutions in the related health care areas. This article provides a simple methodology for applying error proofing principles and proven health care solutions for systematically generating and workable solutions to reduce the human error.

**Keywords:** Human error, health, error-proofing

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### I. Introduction

The word Poka yoke is derived from Japanese term as inadvertent error avoidance i.e, error proofing, mistake proofing. Poke yoke is been used in health care to prevent life-threatening error. There are many examples in healthcare where mistake proofing through Poka yoke has been implemented on medical devices. Human error and faulty medical devices can threaten the safety of patients. Poka yoke techniques used together with employee training can reduce the chances of these error occurring.As per US FDA, a medication error causes atleast one death everyday and injures approximately 13 Lakh people annually in the United States. Around2% of hospital admitted patients have to increase their hospital stay on account of adverse drug reaction. Around 4 Lakh adverse drug events per year results in additional costing of 350 crores US dollar is serious concern to patients and to the hospital.Imagine amount of medication errors in India having population approximately four times of USA. Unfortunately due to lack of knowledge, non-participative in patient care plan by family, most of the medication errors are underreported. There are many types of medication errors, wrong patient, wrong drug, wrong dose, wrong timing, wrong route, wrong frequency, wrong method, and wrong documentation.

The most common medication error noted is on account of illegible prescription of medicine leading to wrong transcribing of medicine from pharmacy, improper dosage and wrong administration of drug. The transcribing, dispensing administrations are the major source of medication error in India.

#### 1.1 Some of the common causes of error include:

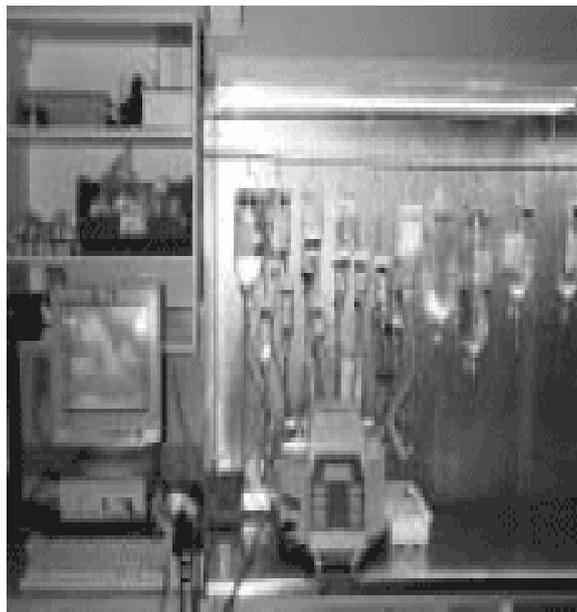
1. Non availability or adherence of standard operating procedure on medication management
2. Poor communication among health care staff
3. Vagueness in production names, directions for use of medical abbreviations or writing
4. Job related stress
5. Poor procedures or techniques

#### 1.2 Measures which can be used in health care :

**Bar coding** is one of the more common and effective information enhancement and mistake-proofing devices. It is particularly useful in ensuring a match between a patient and their treatment, medicines, and supplies. One of the contributors to this example emphasized the importance of radiologists matching the film they are reading to the right patient: Bar codes are attached to every order so that the radiologist can electronically identify the patient and be sure that the correct patient [information] has been entered into the digital dictation system.

#### 1.2 Computer-Aided Nutrition and Mixing

Software is used to profile total parenteral nutrition (TPN) solutions. A patient's nutritional needs (protein, sugar, fat, vitamins, and electrolytes) are entered into the software application. The software sends a message to an automixer that compounds the ingredients to create the base solution. The software issues a warning if certain concentrations of ingredients are exceeded based on literature values.



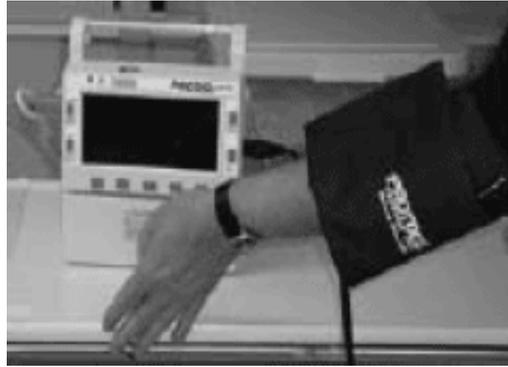
### **1.3 Equipment Collisions**

In hospital operating suites full of large, expensive equipment, there is always the danger that units of equipment will collide with each other. Equipment requires a wide range of motion while in operation. Collision detection systems warn and, in some cases, can lock if they sense an impending collision.



### **1.4 Mistake-Proof Mistake-Proofing**

Transport monitors, who employ flashing and audible alarms, warn all health care workers of high/low heart or breathing rates. A misplaced blood pressure cuff on the lower arm below the elbow would result in inaccurate blood pressure readings and trigger flashing and audible misplacement alarms.



### 1.5 Private Files

Mistake-proofing is accomplished by providing barriers that prevent people from taking the wrong action.

### 1.7 Computerized Physician Order Entry

According to Poon, Blumenthal, Jaggi, et al Medication errors are the most common cause of preventable injuries in hospitals. Computerized physician order entry (CPOE) systems can reduce the incidence of serious medication errors by 55 percent, but only 10 percent to 15 percent of hospitals use them. CPOE is computer software that physicians and other health care providers use to issue and record patient orders for diagnostic and treatment services such as medications, laboratory tests, and diagnostic tests. Computers on wheels (COWs) are available throughout hospitals so that staff can enter information without having to go to a central location . CPOE provides several mistake-proofing features:

1. Informs providers of common dosages and overdose warnings via drop-down menus.
2. Eliminates the issue of legible handwriting.
3. Conducts drug interaction and allergy checking routines.
4. Employs sophisticated systems that function as a clinical decision support system (CDSS).
5. CDSSs are "active knowledge systems that use two or more items of patient data to generate case-specific advice.

## II. Conclusion

Poka yoke application is simple and the easiest way to reduce the errors in the hospital industry. These measures can save lot of human lives and improve quality of service in the society.

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