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ABOUT THE NEWSLETTER

“By providing important and relevant information to healthcare providers, this Newsletter aims to enhance communication of quality and patient safety information, raise awareness of reported adverse events and maintain ongoing link to all the medical departments of the National Guard Health Affairs (NGHA) facilities. “

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Causes of Medication Errors

Dr. Gregory A. Poff, Chairman, Saudi Medication Safety Center (SMSC)



Medication errors are the most common type of medical error. In 2006, the Institute of Medicine (IOM) estimated that 1.5 million preventable medication errors happened in the US each year, and that one person dies almost every hour because of a medication error. This is more than the number of people who die each year from breast cancer, AIDS, or in motor vehicle accidents. Additionally one in ten adults who go to the emergency room department do so because of **adverse drug events (ADEs)**.

When something goes wrong and there's an injury due to a medication, it's called an **adverse drug event**. Risk factors for adverse drug events include a patient's age, gender, how many medications the patient takes, and concomitant disease states.

Some ADEs are **adverse reactions**. These are not

always preventable if the drug was prescribed, dispensed and administered appropriately. For example, a patient experiences a rash when no previous drug allergy was known.

But some adverse drug events are the result of **medication errors**. In other words, the injury **could have been prevented**. The National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) defines a medication error as "any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the health care professional, patient, or consumer. Such events may be related to professional practice, health care products, procedures, and systems, including prescribing; order communication; product labeling; packaging; and nomenclature;

compounding; dispensing; distribution; administration; education; monitoring and use."

Fortunately, medication errors (as a subset of ADEs) are preventable, and health care is in a constant state of evolution to improve patient safety. The current thinking on medication errors is that they happen because of **system** problems, as opposed to **individual** negligence. Most health care professionals have learned the "five rights" of safe medication use: the right patient, right drug, right time, right dose, and right route of administration. Yet even when practitioners believe they have verified these "rights," errors, including fatal ones, occur. One reason for such errors is that health professionals may have difficulty putting the five rights into practice. Without adequate systems to help practitioners achieve the goals of the five rights, errors are likely.



The five rights focus on individual performance and overlook crucial system components that contribute to errors. For example, poor lighting, inadequate staffing patterns, poorly designed medical devices, handwritten orders, doses with trailing zeros, and ambiguous drug labels can prevent health care professionals from verifying the five rights, despite their best efforts.

Where medication errors are concerned, finding out who was involved is less important than learning what **went wrong, how and why**. In many cases the causes of medication errors are multifactorial, cutting across many processes, lines of responsibility, and organization-wide systems.

Generally, errors happen because of weak points or flaws in the medication use "system." This system includes every step from purchasing the medication, to writing the prescription, to administering the medication, to the patient's response to the medication. Many factors along the way can contribute to the failure of the medication use system and result in medication errors. Organizations like the Institute of Safe Medication Practices (ISMP) and the Joint Commission collect data on medication errors, analyze the data to uncover the causes of errors, and then alert health care professionals so that errors can be prevented.

Patient Information

To guide appropriate drug therapy, healthcare providers need readily available demographic

and clinical information (i.e., age, weight, allergies, diagnoses, and pregnancy status) and patient-monitoring information (such as laboratory values and vital signs) that gauge the effects of medications and the patient's underlying disease processes.

Drug Information

To minimize the risk of error, the drug inventory must be controlled in some way, and up-to-date drug information must be readily available to healthcare providers through text references, protocols, order sets, computerized drug information systems, medication administration records (MARs) and patient profiles, and regular clinical activities by Pharmacists in patient care areas.

Drug Standardization, Storage, and Distribution

Many errors can be prevented by minimizing the availability of medications (e.g., reducing Floor Stock), restricting access to High Alert Medications and hazardous chemicals, and distributing or dispensing medications from the Pharmacy in a timely fashion. Whenever possible, healthcare organization should use commercially available products rather than compounding medications. In hospitals, the use of commercially prepared intravenous solutions and standard concentrations can minimize error-prone processes such as pharmacy IV admixture preparation and dose calculation.

Abbreviations

Abbreviations are a big problem contributing to many medication errors. Abbreviations can be

misinterpreted, misunderstood, and confusing. This is on top of any confusion caused by difficult-to-decipher handwriting. Patient safety is put at risk with abbreviations. Abbreviations may save time initially, but when the prescriber has to be tracked down and asked what an abbreviation means, or when a patient is harmed as the result of confusion caused by an abbreviation, abbreviations can actually end up costing time.

Simply avoiding abbreviations goes a long way toward preventing medication errors. **APP 1427-16 Error Prone Abbreviations, Symbols, and Dose Designations** specifies a "Do Not Use" list (Appendix A). These abbreviations, symbols and dose designations must not be used in chart orders, progress notes, etc. It's important to avoid these abbreviations in the community pharmacy too. For example, they include: U... IU... QD... QOD... trailing zeros on doses... lack of a leading zero for doses less than 1... and any drug abbreviation (e.g., MS, MSO₄, and MgSO₄).

Medication Labels, Names, and Packaging

Drug products present plenty of opportunities for error. From drug names that look-alike when written or sound-alike when spoken, to drug packaging that is strikingly similar between very different products, it's of paramount importance to be aware of the potential for mistakes as well as safeguards that can be used to prevent them. Products that look alike or sound



alike are a big problem. These products might be involved in as many as 37% of medication errors.

There is an alphabet soup of confusingly similar drug names. Some names are accidents waiting to happen...CeFAZolin, CefTAZidime, and CefTRIAXone, for example. Confusion is especially likely because all are available as 1 Gm.

NGHA now requires "**TALL** man lettering" for similar sounding drug names. For example, Glipizide is printed as GlipiZIDE to avoid confusion with GlyBURIDE, or Prednisone and PrednisoLONE. This suggestion, originally from ISMP, has been included in the **APP 1429-02 Look-Alike, Sound-Alike & High Alert Medications** for at least 72 different drugs.

There's a lot that can be done to prevent mix-ups with look-alike or sound-alike drug names. Make sure that prescriptions are written clearly, and avoid abbreviations. Prescribers should spell out confusing drug names when giving verbal / telephonic prescription orders. It's also helpful when prescribers make patients aware of the reason a medication has been prescribed and include the indication for use on prescriptions. Similar packaging and storage location can also contribute to errors. Look-alike products should **not** be placed side by side. This applies to any place that medications might be stocked or stored...from Pharmaceutical Care Services Department shelves to any

medication storage area (e.g., Floor Stock on a Ward).

Drug Name Suffixes

The suffixes at the end of drug names can be confusing...XL...SR...CD. New recommendations are promoting the safe use of suffixes. Errors that result from the use of suffixes may happen because of confusion about the suffix, not knowing what the suffix means, and lack of standardized meanings of suffixes. This can lead to product mix-ups, prescriptions written with incorrect dosing intervals or frequencies, omission of a suffix, incorrect suffix, etc. Safety recommendations regarding suffixes include:

- Whether in writing or verbally, prescribers should always indicate the complete drug name, including the suffix when applicable.
- Pharmacists should call prescribers to clarify prescriptions where the presence or absence of a suffix doesn't agree with the prescribed dosing schedule.
- Medication errors associated with the use of drug-name suffixes should be reported.

Medication Devices

It has been estimated that approximately 40% of all medication error reports submitted to the ISMP are related to product or device problems. A number of newly marketed medication devices have been recently identified as potentially prone to medication

error. These include medication delivery "pens" and devices like the Rotahaler®. (**Note:** A QPS Newsletter article has been devoted to "Proper Use of Dosage Forms / Devices.")

Different Country, Same Brand, Different Drug

Brand name products often have different ingredients in different countries...DILACOR, a Diltiazem product in the U.S., is a brand name for Digoxin in Serbia. DILACOR is also a brand name for Verapamil in Brazil... and the calcium channel blocker, Barnidipine, in Argentina.

It is not uncommon to discover a patient who is receiving the same drug (or class of drug) under two names; usually this occurs when there are two (2) prescribers, as when the patient is seen by physicians from two or more subspecialties.

The exclusive use of generic names can improve the accuracy of drug prescribing, dispensing and administration and improve the quality of care given the patient. Healthcare professionals cannot expect to recognize every brand name marketed. This fact is even more apparent practicing in a multicultural environment in which pharmaceuticals from all over the world are available.

Based on these observations in the literature it is prudent for the best possible patient care to encourage the use of generic names in prescribing, dispensing, and administering of medications. Generic



pharmaceutical nomenclature is a concept whose time has come. It should and can be accomplished with a little effort. All healthcare professionals should make a commitment to promote the use of generic names in our practice.

Failure to Comply with Policies and Procedures

Deviation from the standard medication procuring, prescribing, dispensing or administration procedures can result in medication errors.

"At-risk" behaviors engaged in by healthcare providers can compromise patient safety. It's human nature to look for and use shortcuts, but in health care, the results can be devastating. As competency is built, healthcare providers can develop a comfort level with shortcuts and at-risk behaviors. The risk of patient harm may **seem** remote. And use of at-risk behaviors may influence coworkers, until the behaviors actually become common practice.

At-risk behaviors frequently result from workarounds of existing workflow systems. The most commonly reported at-risk behaviors include the following:

- Not fully reading medication labels before dispensing, administering, or restocking them;
- Intimidation, or reluctance to ask for help or clarification;
- Using a medication without complete knowledge of that particular medication;

- Not double-checking "high-alert" medications before dispensing or administering them; and
- Not communicating important information, like patient allergies, co-morbidities, weight, etc.

To reduce these behaviors institutions can: eliminate organizational tolerance of risk, determine the system-based reasons for risk-taking behaviors, increase awareness of at-risk behaviors, eliminate system-wide incentives for at-risk behaviors, and motivate through feedback and rewards. Essentially, organizations must not foster dangerous behaviors by ignoring or tolerating them, or by giving employees the impression that efficiency is valued over safety.

Workload

In a hospital or clinic setting, the patient load can affect the chance for a medication error. In some cases, higher workloads might encourage straying from standard practice as suggested above. However, some research suggests that low workloads result in more errors because boredom reduces concentration. Either way, it's important to keep focus on each individual medication writing / dispensing / administration.

Work Environment

Environmental factors such as poor lighting, cluttered work spaces, noise, interruptions, temperature, high patient acuity, the amount of distractions (telephone calls, personal

interruptions, and unrelated tasks) and nonstop activity can contribute to errors if they hinder health care providers ability to remain focused on medication use. To help reduce distractions, keep conversations short and work related.

Communication

Ineffective communication is the most frequently cited cause of serious patient harm. Because failed communication is at the heart of many errors, health care organizations must enhance collaborative teamwork, eliminating communication barriers among healthcare providers, and standardize the way prescription orders and other drug information are communicated to avoid misinterpretation. In NGHA, the "read-back" process is a must for telephone orders, verbal orders, and test results. This helps improve the effectiveness of communication, ensuring that important information is relayed in an accurate, complete, and unambiguous manner.

Staff Competency and Education

Although staff education alone is an insufficient approach to error reduction, it can play an important role when combined with system-based error-reduction strategies. The most effective activities include ongoing assessment of healthcare providers' baseline competencies and education about new medications, Non-Formulary medications, High Alert Medications, and error prevention.



Patient / Caregiver Education

Not enough can be said about the importance of patient / caregiver education. Patients are the final link. Patients can play a vital role in preventing errors if they have been educated about their medications and encouraged to ask questions and seek satisfactory answers. Patients who know the names and doses of their medications, the reason for taking each one, how they should be taken are in an excellent position to help minimize the chance of error. If patients don't take their medication, or if they don't take it correctly, then a lot of effort has been for naught. Healthcare providers are the primary sources of information for patients. When educating patients / care givers, be sure to use language that is simple and clear, free from "medical jargon" that patients may not understand.

Medication nonadherence is huge, especially with drugs for "silent killers" like hypertension, high cholesterol, osteoporosis, etc. In the US, patients stop taking half their chronic meds within a year. Up to one out of five new prescriptions are never filled in the first place.

Poor adherence increases hospitalizations and contributes to 125,000 deaths per year in the US. For example, patients who don't take their heart failure meds are twice as likely to die or be hospitalized. Patients who are nonadherent to 'Statin' therapy seem to have twice the risk of heart attack. Patients who don't use their asthma medications

appropriately are more likely to go to the Emergency Room or be hospitalized for exacerbations.

Education is paramount. Many patients quit taking their medications because they don't know why they need them, don't think they are helping, believe the drug is harmful, or they just plain forget. Patients who understand the benefits are more likely to take their meds appropriately.

Use a "talk back" approach. Have patients tell you how and why they are taking their medications. Tailoring drug regimens to the patient's lifestyle helps. Check for meds with fewer doses, or a different side effect profile. Give patients positive feedback on progress, and encourage them to monitor their blood pressure, blood glucose, etc.

Quality Processes and Risk Management

Health care organizations need systems for identifying, reporting, analyzing and reducing the risk of medication errors. A nonpunitive culture of safety must be cultivated to encourage frank disclosure of errors and near misses, stimulate productive discussions, and identify effective system-based solutions. Strategically placed quality control checks are necessary. Simple redundancies that support a system of independent double checks for High Alert Medications and error prone processes can promote the detection and correction of errors before they reach and harm patients.

On the basis of these key system elements, the causes of medication errors can be summarized as:

- *Lack of information about the patient*
- *Lack of information about the drug*
- *Communication and teamwork failures*
- *Unclear, absent, or look-alike drug labels and packages, and confusing or look-alike or sound-alike drug names*
- *Unsafe drug standardization, storage, and distribution*
- *Nonstandard, flawed, or unsafe medication delivery devices*
- *Environmental factors and staffing patterns that do not support safety*
- *Inadequate staff orientation, ongoing education, supervision and competency validation*
- *Inadequate patient education about medications and medication errors*
- *Lack of a supportive culture of safety, failure to learn from mistakes, and failed or absent error-reduction strategies, such as redundancies*

When an error occurs, it is tempting to blame individuals. Analyzing errors in an inter-disciplinary, systems-based context avoids this punitive approach. A systems-based approach does not remove individual accountability for medication safety; rather, it expands accountability to all who could potentially influence the medication use process. In this approach, accountability lies not in perfect job performance but in identifying safety problems and implementing system-based solutions.



The N95 Respirator to Protect Against Spread of Tuberculosis Bacteria

Dr. Ashraf Khan, Consultant, Public Health, Infection Prevention & Control (IPC)

Over the past five years, Tuberculosis (TB) continues to be among the top 10 highest ranked reportable diseases in all NGH regions. In 2010, NGH reported 80 new cases. Tuberculosis has emerged over the past 15 years as a threat within communities and healthcare facilities.

Last summer IPC Department in Riyadh conducted TB infection control risk assessment based on the Center for Disease Prevention and Control (CDC) criteria.

Our assessment identified the following opportunities for immediate improvement:

- Early diagnosis of suspected TB patient in the ER,
- Proper air handling and negative pressure system monitoring in air borne isolation rooms and
- Reduction of risk for TB, and other airborne infection droplet nuclei and its exposure to the Health Care Worker (HCW) by use of **N95 respiratory protection**

In February 2013, IPC launched the first N95 Respirator Fit Testing Training and education at our pilot unit in Emergency Care Center (ECC).

N95 donning



N95 fit Check



The N95 Respirator is a type of disposable respirator that may be used in a healthcare setting. Healthcare workers encountering an individual with suspected or diagnosed active tuberculosis typically use an N95 respirators. Wearing an N95 respirator is a safety precaution if your work brings you in contact with a person believed to have active TB or highly suspected with TB.

The term "N95" actually refers to a whole class of NIOSH-approved respirator, and the functioning and efficiency of individual mask models may differ. The N95-class respirator is any, which filters at least

95 percent of air particulates. According to the Centers for Disease Control and Prevention (CDC), N95 filters are fitted into different types of respirators, including the N99, N100, R95, R99, R100, P95, P99 and P100. The letters in the model names indicate oil resistance.

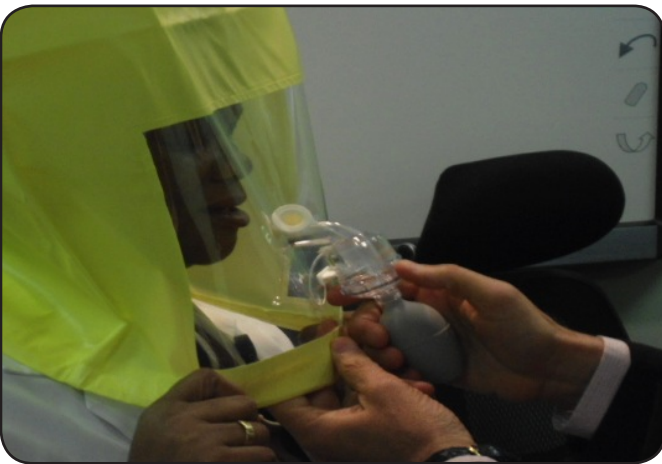
- "N" are not oil-resistant;
- "P" are somewhat oil-resistant;
- "R" masks are oil-resistant.

- The numbers indicate the minimum filtering effectiveness of the respirator.
- The "95" indicates 95-percent efficiency; "99" indicates 99-percent efficiency; "100" indicates a filtering efficiency of at least 99.97 percent.

The key component of our TB Respiratory Program N95 Respirator Fit Testing will be the **Train-the-Trainer Program**, where each nursing manager /manager as the trainer for N95 respiratory will be responsible for training a group of individuals. Each trainer will train the staff assigned under him or her.

We are planning that the training process will be repeated on a yearly basis at least in high-risk areas as identified by the care managers or recommended by our TB Prevention Advisory Council.

N95 fit testing process



This massive project already has started at KAMC in Riyadh. We are inviting nurses and other healthcare professionals *e.g., RT* to participate in our endeavor and become part of a larger group of trained professionals, who could be mobilized for N95 Respiratory Fit Testing campaign annually and during airborne infection emergency crisis like pandemics.

N95 fit testing process



We have classified high-risk group as following, and N95 fit testing will be conducted based on the degree of exposure in each tier

- **Tier 1:** HCW with close contact and proximity with active TB patient *e.g. nurse, physician, Respiratory Therapist (RT), phlebotomist etc. in areas such as Emergency Room, Isolation Room etc.*
- **Tier 2:** HCW with close contact in environment housed with active TB patient *e.g. Housekeeping etc.*
- **Tier 3:** HCW with no direct contact with active patient or environment, but may be exposed to airborne infection during pandemic *e.g. Facilities Management, administrative staff etc.*

N95 fit testing process





Patient Safety Culture Survey because we care...

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Definition:

The safety culture of a hospital can be defined as the compilation of hospital workers' attitudes, values, beliefs, perceptions and assumptions toward organizational practices that directly or indirectly influence patient safety

Background:

A supportive patient safety culture is considered to be an essential condition for improving patient safety. Assessing the current safety culture in general practice may be a first step to target improvements.

Objective:

To evaluate the patient safety culture in Imam Abdulrahman bin Faisal Hospital.

Design:

A Cross-sectional study was conducted utilizing the Hospital Survey on Patient Safety Culture (a self explanatory questionnaire) developed by the Agency for Healthcare Research and Quality.

Setting:

The Hospital Survey on Patient Safety Culture (HSPSC) was conducted among National Guard Health Affairs (Imam Abdulrahman Bin Faisal Hospital) staff for the year 2011-2012.

Methods:

The questionnaire was sent to all employees via hospital intranet



and by staff interview. The survey includes 42 items that measure 12 areas of patient safety culture domain. These domains are Communication openness, Feedback and Communication about error, Frequency of events reported, Handoffs and transitions, Management support for patient safety, Nonpunitive response to error, Organizational learning—continuous improvement, Overall perceptions of patient safety, Staffing, Supervisor/manager expectations and actions promoting safety, Teamwork across units, and Teamwork within units.

Each item was positively rated on a 1 ('strongly disagree') to 5 ('strongly agree') scale or negatively responses 5 (Strongly Disagree) to negatively worded items.

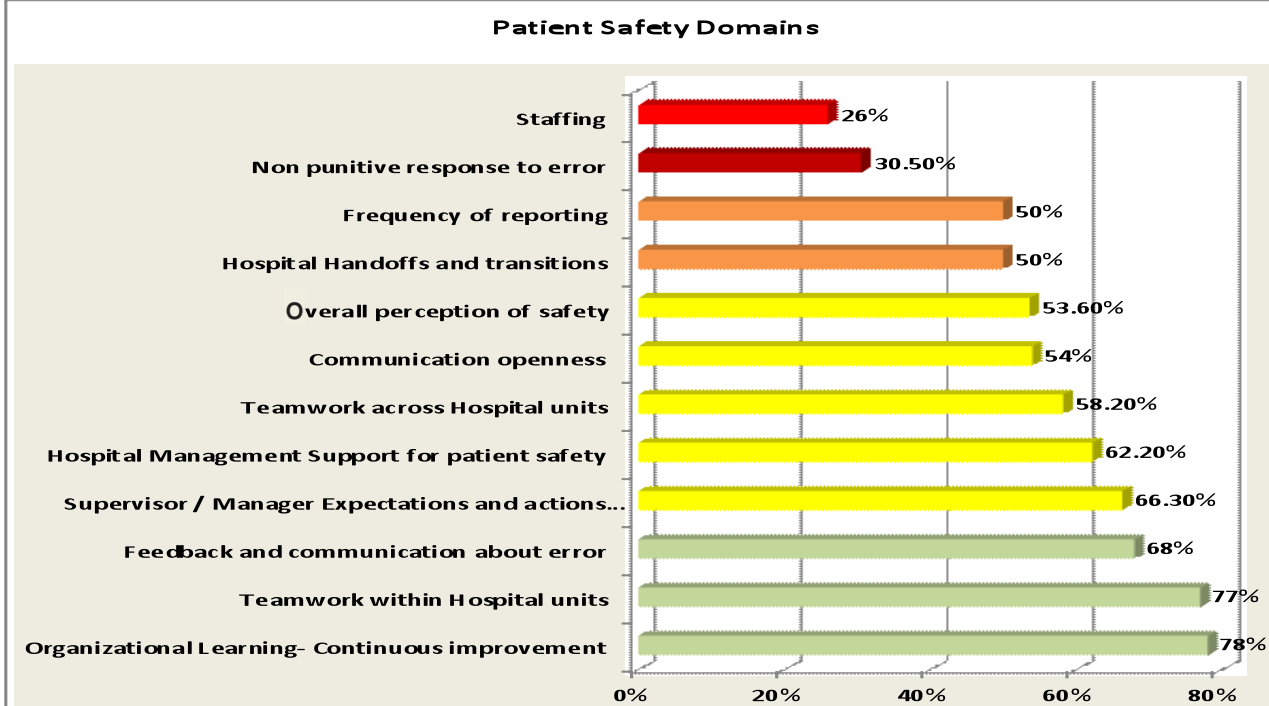
Results:

Of 1107 practitioners 215 respondents (19.5%) completed

the questionnaire. More than half of the respondents (57.2%) were working for more than 3 years in the hospital. 49.8% of the participants were registered nurses, and 16.8% were physicians. The majority of the respondents (82.3%) have a direct relation with the patient.

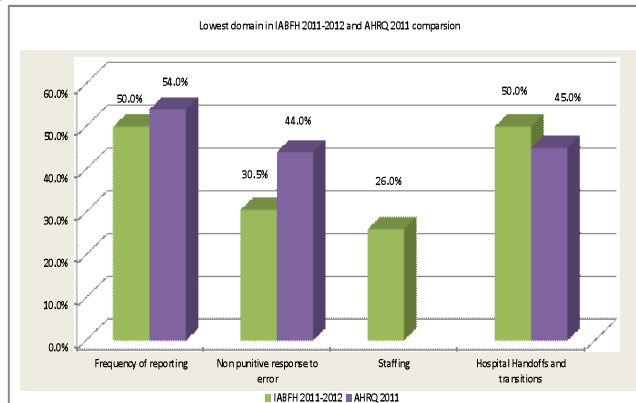
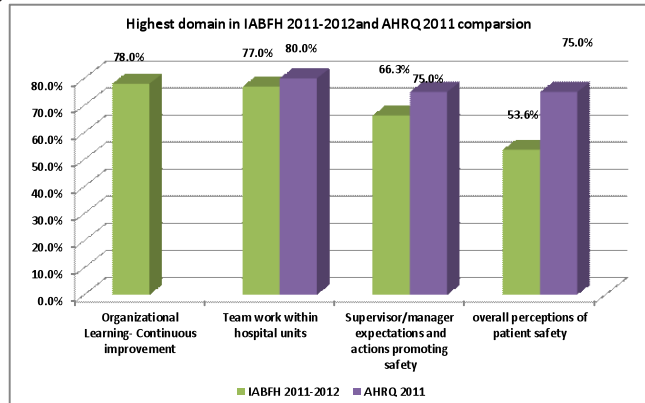
Among the dimensions of patient safety, those with the highest percentage of positive ratings were Organizational learning - continuous improvement then Teamwork within hospital units (78%, 77%) respectively; whereas those with the lowest percentage of positive ratings were Non-punitive response to error and Staffing (30.5%, 26%) respectively. Overall perceptions of safety (53.6%), Reporting of errors was infrequent with 58.6% of the hospital staff indicating that they did not report any incidence during the year.

Overall Results (% of Positive Response)



Conclusions

Improving patient safety culture should be a priority among Health Center Administrators. Healthcare staff should be encouraged to report.



This is your Newsletter and we value your comments. Please recommend Quality Improvement Projects in your area. We strongly encourage you to share patient safety information.

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