

# Qualitative Assessment of Nuclear Security Culture in a Public and a Private Radioactive Source Using Hospital under the Coordinated Research Project (CRP) of the IAEA

**Dr. Md. Shafiqul Islam**

Chief Scientific Investigator (CSI)

Chairman, Department of Nuclear Engineering

University of Dhaka, Dhaka-1000, Bangladesh

Presented By

**Md. Mobasher Ahmed**

Scientific Officer

Center for Research Reactor

Bangladesh Atomic Energy Commission

# Contents

- **Facilities for Nuclear Security Culture Assessment**
  - **Public Hospital**
  - **Private Hospital**
- **Action plans for NSC Assessment**
- **Methods for Self-Assessment of NSC**
- **Survey Responses**
- **Interview Results**
- **Challenges Faced**
- **Recommendations for Enhancement of NSC**
- **Discussion**

# **Facilities for Nuclear Security Culture Assessment**

## **Two Medical Facilities using Radioactive Material for Treatment Purposes**

- 1. Public Hospital**
- 2. Private Hospital**

# Public Hospital

**Background:** Radioactive materials have been using at the selected public hospital since 1959. It is the oldest and largest Public Medical College and Hospital in Bangladesh. It provides radiotherapy to around 230 patients.

## Treatment Facilities:

Name of the Facility	Number
Teletherapy Facility (Co-60 Source)	2
Brachytherapy Facility (Co-60 source)	1
Linear Accelerator Facility (LINAC)	1

# Private Hospital

**Background:** Selected private hospital is one of the renowned private hospitals for cancer treatment in Bangladesh. It provides radiotherapy to around 250 patients.

## Treatment Facilities:

Name of the Facility	Number
Teletherapy Facility (Co-60 Source)	2
Brachytherapy Facility (Co-60 source)	1
Linear Accelerator Facility (LINAC):	2

# Action Plan for NSC Assessment

**Decision to carry out Self-Assessment**



**Establish a Self Assessment Team**



**Draft a Self-Assessment Plan**



**Data Collection: Survey, Interview, Document Review,  
Observation**



**Analyze Data**



**Discuss Result and Develop Action Plan**

# Methods for Self-Assessment of NSC

- **Survey**

- **Interview**

- **Document Review**

- **Observations**

# Categories of People for NSC Self-Assessment

- **Top Manager**
  - **Professor/ General Manager**
  
- **Management Level People**
  - **Doctor/ Physicist**
  
- **Equipment Handling People/ Technical People**
  
- **Security Personnel**



# Survey Method

## Scoring scheme for respondent

<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Somewhat Disagree</b>	<b>Neither Agree nor Disagree</b>	<b>Somewhat Agree</b>	<b>Agree</b>	<b>Strongly Agree</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>

Survey Statement

If you have a comment, please leave it at the bottom of the page

 Not Applicable

## Results Interpretation

- **Red** : **Weakness**
- **Yellow** : **Concern**
- **Green** : **Good Culture**

# Areas of Survey Questionnaire

- Principles
- Beliefs and Attitudes
- Management System
- Behavior
  - Leadership Behavior
  - Personnel Behavior

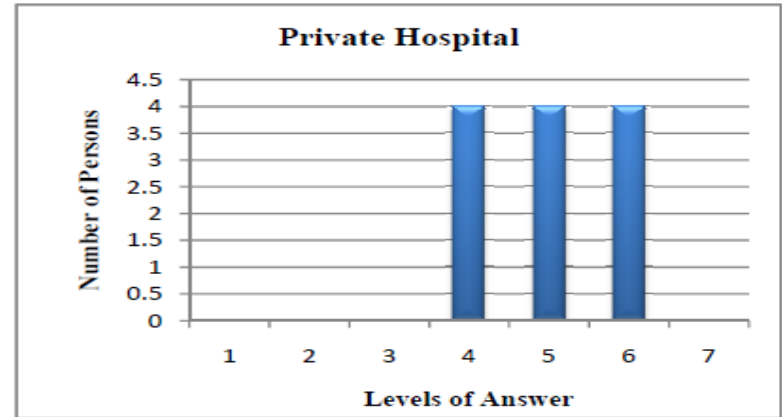
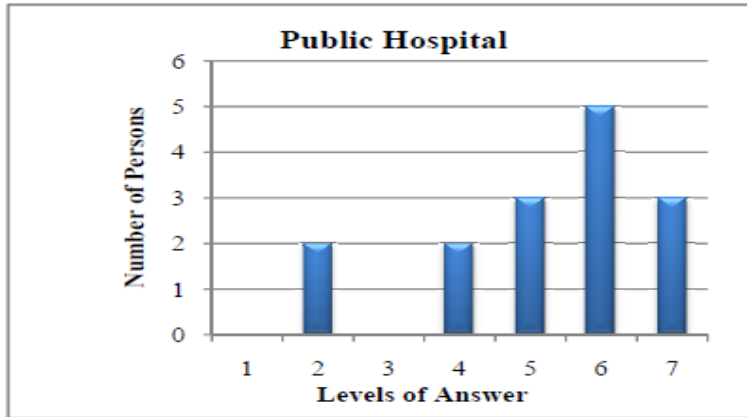


Photo during Conducting Survey

# Survey Response

- ❖ Main theme was “**Adherence to Procedures**”
- ❖ Areas of good response in both hospitals:
  - **Personal Accountability (Personal Behavior)**
  - **Adherence to Procedures (Personal Behavior)**
  - **Information Security (Management System)**

**I recognize the importance of adhering to procedures and other protocols such as information control.**



Answer level	1	2	3	4	5	6	7	Average	Answer level	1	2	3	4	5	6	7	Average
Number	0	2	0	2	3	5	3	5.2	Number	0	0	0	4	4	4	0	5

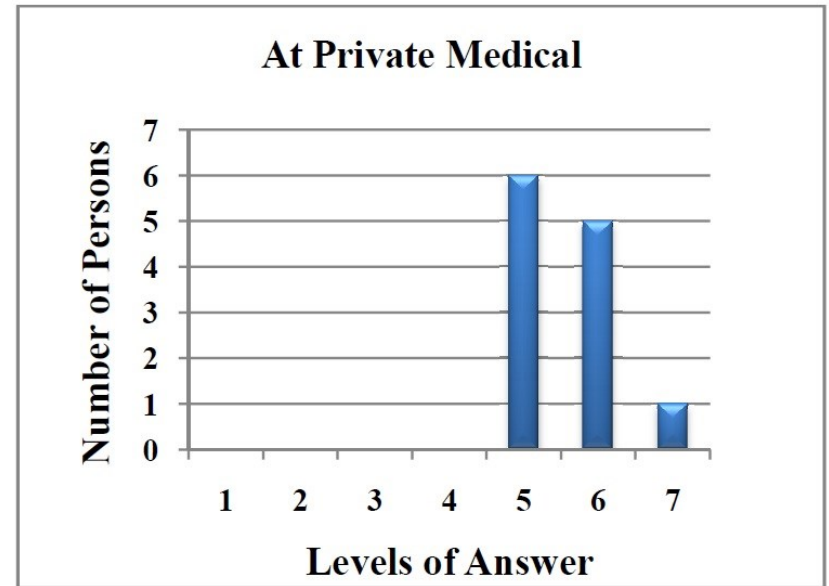
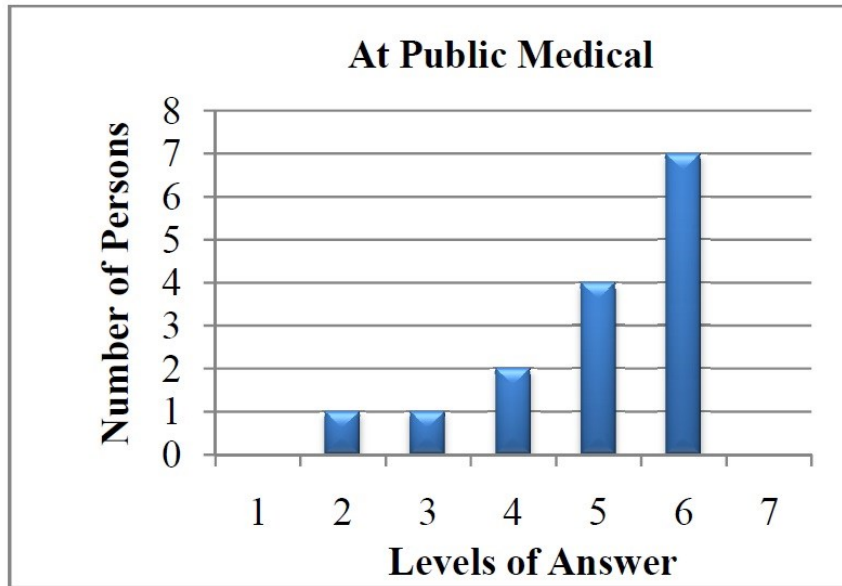
# Survey Response

❖ **Concern response areas in both hospitals:**

- **Visible Security Policy** (Management System)
- **Clear Roles and Responsibilities** (Management System)
- **Work Environment** (Management System)
- **Feedback Process** (Management System)
- **Performance Measurement** (Management System)
- **Improving Performance** (Leadership Behavior)
- **Motivation** (Leadership Behavior)

# Survey Response

I am aware of the Nuclear Security Policy at my organization to the extent that I can specifically cite its provisions relevant to my job.



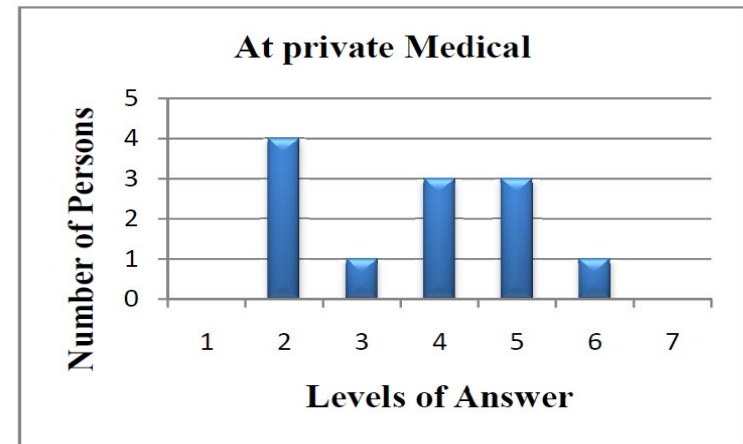
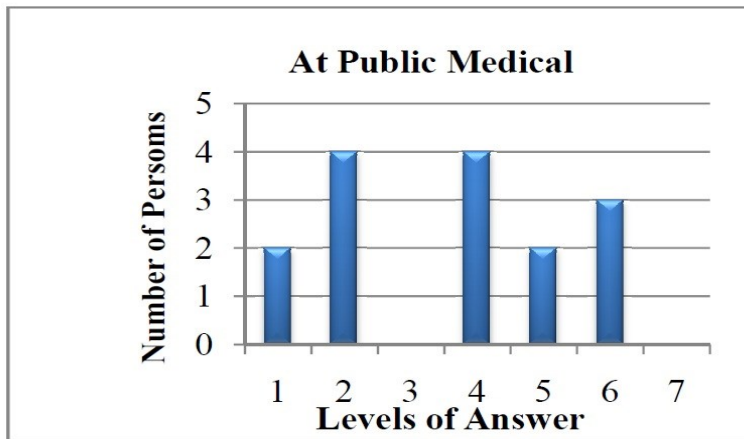
Answer level	1	2	3	4	5	6	7	Average	Answer level	1	2	3	4	5	6	7	Average
Number	0	1	1	2	4	7	0	5	Number	0	0	0	0	6	5	1	5.58

# Survey Response

❖ Areas of weak response in both hospitals:

- Work Management (Management System)
- Self Assessment (Management System)
- Expectations (Leadership Behavior)

Our organization has in place written policies, rules or procedures for recruitment and termination of employment as they pertain to security.



Answer level	1	2	3	4	5	6	7	Average
Number	2	4	0	4	2	3	0	3.6

Answer level	1	2	3	4	5	6	7	Average
Number	0	4	1	3	3	1	0	3.66

# Survey Response

Some comparative response in both hospitals

<b>Chaterteristics</b>	<b>Public Hospital</b>	<b>Private Hospital</b>
<b>Training and Qualification</b> (Management System)	Weakness	Concern
<b>Quality Assurance</b> (Management System)	Weakness	Concern
<b>Effective Communication</b> (Leadership Behavior)	Weakness	Concern
<b>Improving Performance</b> (Leadership Behavior)	Concern	<b>Acceptable</b>
<b>Motivation</b> (Leadership Behavior)	Weakness	<b>Acceptable</b>

# Survey Response

❖ Area wise average response in both hospitals

Areas	Response
Management System	Concern (Between 4 and 5 )
Leadership Behavior	Weakness (Less than 4)
Personal Behavior	Acceptable(Greater than 5)

❖ Overall **CONCERN** (between 4 and 5) response on security culture in observed in these hospitals



# Interview Results

## Participants in Interview

- **Top managers**
- **Management people**

## Opinion Categorized in 3 level

- **Longstanding Issues:** These issues are known about and are staying in the facility for a long time.
- **Changing Issues:** These issues are considered as need attention and are perceived to be changing.
- **Emerging Issues:** The issues that are not widely recognized

# Interview Results

## Longstanding Issues

- Nuclear security issues are discussed at each monthly meeting. In this monthly meeting mainly patients related problems are discussed.
- Interviewees strongly agree about taking personal responsibility for their organizations nuclear security program.
- Interviewees strongly agree about monitoring the pattern of non-compliances or performance failures and take prompt action.
- Interviewees personally inspect performance in the field by conducting walk-through, listening to staff and observing work being conducted, and then taking action to correct deficiencies.

# Interview Results

## Longstanding Issues

- Interviewees have expressed an acceptable opinion about using constructive feedback to reinforce expected behaviour.
- Managers support and reinforce conservative decision making regarding security.
- Management always encourages staff to report security problems and support them when they do.
- Staffs seek advice to the higher ups when they have any doubts about security issues.

# Interview Results

## Longstanding Issues

- Culture of consistently praising good security practices in publicly as well as through official document at monthly meeting is present and sophisticated language is used for poor ones.
- Everyone tries to avoid taking security shortcuts.
- Everyone believes that this organization is truly a learning organization with respect to nuclear security.
- Teamwork and cooperation are encouraged at all levels and across organizational and bureaucratic boundaries.

# Interview Results

## Changing Issues

- Interviewees believe that an effective nuclear security culture is just as important as an effective nuclear safety culture and consider this is a changing issue.
- Interviewees have confessed that possessing nuclear and radioactive materials nowadays are not the matter of hide and seek policy due to global insecurity dynamics. It should be on the table issue.
- Terrorist events and probable ways of attack are not seriously discussed in the meeting.

# Interview Results

## Changing Issues

- Security system is mainly based on surveillance by the CCTV and there is also lack of attention for monitoring the surveillance system round the clock. Biometric security system such as electronic keypad, lock and scanner are recently introduced.
- Interviewees are not more confident about the security arrangement in his/her facility if challenged. They have also realized the necessity of dedicated response forces in and around their facility. Existing response forces are mainly for safeguarding the general security purposes rather than nuclear security issues.
- Staff members and contractors are not properly trained in observation skills to identify irregularities in nuclear security procedure implementation.

# Interview Results

## Emerging Issues

- Interviewees have expressed doubt about regulatory bodies visit for enhancement of the nuclear security program except the purpose of license renew. They normally response on demand basis.
- Interviewees are not aware enough of the best practices pertaining to the national and international security due to shortage of training opportunity and information.
- There are inadequate organization's nuclear security instructions and procedures.

# Challenges Faced

- Lack of training and Education for the team member on NSC Assessment
- This is a new topic for most of the people
- Authority takes more time to take decision about this issue and to give permission.
- Everyone is so busy in the medical facilities. So sometimes it was difficult to engage them in NSC assessment specially during interview.
- Many are afraid of expressing opinions independently



# Recommendations for Enhancement of NSC

- ❖ Country should take appropriate measures to develop Nuclear security culture at nuclear facilities.
- ❖ Government should make proper **nuclear security culture policy** and **regulations**.
- ❖ **Regulatory body** should facilitate to develop nuclear security culture to the licensees.
- ❖ Regular **Education, Training, and Feedback process** should be ensured for maintaining sustainable NSC among the licensees.
- ❖ The organizations as well as their employs should own the importance of NSC

# Discussion

- Security of the radioactive sources does not carry equal weight age as compared to safety
- Less awareness about the best practices pertaining to the dimension of the national and international security due to shortage of training opportunity and communication channels
- Existing security culture and systems are mainly developed by their own perceptions, belief, attitudes and actions
- Participants have expressed their intention to ameliorate the existing nuclear security systems

**Thank You  
for Your Attention**