



CODEN [USA]: IAJPBB

ISSN : 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4435524>Available online at: <http://www.iajps.com>

Research Article

### CONTINUOUS IMPROVEMENT ON EXISTING NUCLEAR CARDIOLOGY AND RADIATION TREATMENT PROCEDURES IN ASIA SPECIALLY PAKISTAN

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Article Received: November 2020    Accepted: December 2020    Published: January 2021

**Abstract:**

***Aim:** Examination in Pakistan atomic cardiology practice with the fact that the rest of the world can discern the developmental regions and lead to instructive activities to minimize NC radiation experience.*

***Methods and Results:** Our current research was conducted at Jinnah Hospital, Lahore from March 2019 to February 2020. INCAPS gathered information on both SPECT and PET approaches that was used in the solitary week of March-April 2013 in 39 laboratories in 10 LA nations (n 5,1142) and in 274 laboratories in 56 RoW countries (n 5,6774). Eight 'prescribed protocols' were separated from the previous one and a radiation-related consistency index (RQI) was established representing the amount used. The average radiation power (ED) was higher in Los Angeles than in the rest of the world (11.8 vs. 9.1 mSv,  $p < 0.002$ ). In a country as populous as Brazil, a wide variety of average EDs were found in the laboratory, ranging from 8.4 to 17.8 mSv. Only 11% of the research facilities in Los Angeles achieved an average ED of  $< 9$  mSv, likened to 33% in the hinterland ( $p < 0.001$ ). IQs increased from 2 in a laboratory in Mexico to 7 in a laboratory in Cuba. Three significant opportunities to reduce ED for patients in Los Angeles were identified: (1) additional research centers were able to update the pressure by simple imaging, (2) camera-based ED reduction techniques, including tilted imaging, were used as often as possible, and (3) the infused motion of the  $^{99m}\text{Tc}$  was able to be modified according to the patient's weight and habitat.*

***Conclusion:** All things considered, the share of radiation from NC is higher in Los Angeles than in RoW, with the intermediate research center ED  $< 9$  mSv performing only a third of its activities. Overtures to reduce the introduction of radiation in Los Angeles have been identified and rule-based proposals have been made to advance the conventions and to keep the standard "as low as reasonably achievable".*

***Keywords:** Nuclear Cardiology, Radiation Treatment Procedures, Asia Specially Pakistan.*

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Please cite this article in press Amina Qayyum et al, *Continuous Improvement On Existing Nuclear Cardiology And Radiation Treatment Procedures In Asia Specially Pakistan.*, Indo Am. J. P. Sci, 2021; 08(1).

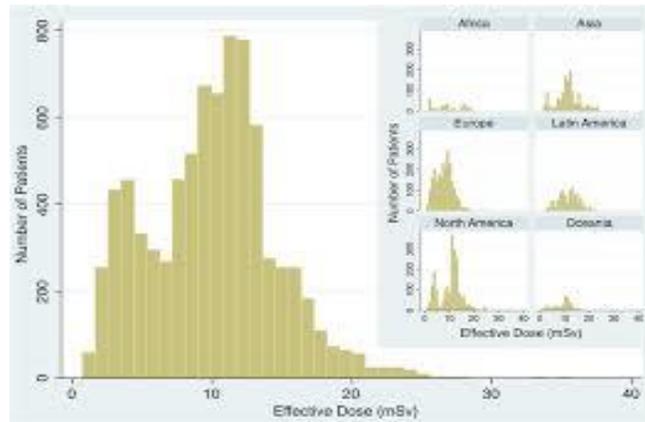
**INTRODUCTION:**

Ischemic coronary heart disease (ICD) is the major cause of death in individuals worldwide.<sup>1</sup> There is little variation in the situation in Pakistan.<sup>2</sup> Improvements in diet, dietary habits and body size are contributing to a rise in the size of cases of type 2 diabetes mellitus and hence ICD in the country [1]. Although death rates have theoretically declined in the newly developed world over a very prolonged period of time, a comparable pattern is not observed in low-wage nations, many of which are in Pakistan. Attempts to decrease mortality rates are especially daunting considering the socioeconomic system and lack of sufficient monetary reserves in the large majority of the developing world [2]. Two Pakistan countries, Brazil and Cuba, are among the ten countries in the world with the highest mortality rates due to IHD and the two largest Pakistan considering the age group of 38-79 years [3]. Myocardial Perfusion Imaging (MPI) is a significant, non-intrusive symptomatic test for separating danger and guiding counseling, widely used in many Pakistan. <sup>7</sup> Indeed, a distributed library with patients from Brazil<sup>8</sup> shows a six-fold higher rate of irregularity for MPI compared to information from a community of drivers in member states. This finding recommends a "greater erasure" a higher likelihood of the atomic cardiology-assessed IHD population in Pakistan. This finding is reliable given the high IHD mortality rate observed in this area [4]. Despite the fact that MPI has demonstrated some beneficial conditions to assist with the IHD mortality test, important questions have been posed with regard to the introduction of radiation to clients and, in particular, the MPI radiation issue, which is the highest per capita radiation dose medical test in certain contexts. A variety of conventions can be used to conduct the IPM, and some of the "best practices" and methodologies have been established to mitigate radiation presentations to patients, in compliance with global guidelines that take into consideration the

recommendations of the International Atomic Energy Agency (IAEA) and the extraordinary standard "As Low as Sensibly Achievable" [5].

**METHODOLOGY:**

A global analysis of the technique for atomic cardiology was undertaken to discern what laboratories "are doing because the world in terms of tracer use, portions that are used inventions available" Participating research centers provided evidence for nearly all SPECT and cardiac PET imaging approaches over a span of several weeks between March 2019 to February 2020. Our current research was conducted at Jinnah Hospital, Lahore from March 2019 to February 2020. Approval for this review was given by the Institutional Review Board of Columbia University. While no welfare data were independently collected, the review was considered to not meet the requirements of the U.S. government's life and health insurance guidelines (45 CFR 46). Each site provided data on the socio-economics of the research centers. For each completed MPI study, the site also provided information on the understanding of the socio-economics and clinical qualities, including age, sexual orientation, and weight, and the limitations of the study, including radiopharmaceuticals used and infusion exercises, camera type, situational understanding, additional checks (CT or atomic) performed for constriction adjustment, and any equipment and software that improved camera productivity. The powerful comprehension part was used to measure the radiation presentation. This is a whole body measurement reflecting parts of organs and their relative affectability to the malevolent effects of radiation. Radiopharmaceuticals and their patient-specific exercises were used to assess each patient's urgency. The ED assessment was based on techniques provided by the International Commission on Radiological Protection, as shown in the INCAPS study.

**Figure 1:****Table 1:**

Assessment of patients with non-acute chest pain or ischemic equivalent	Score
Low pretest probability of CAD, with interpretable resting ECG and ability to exercise	3
Low pretest probability of CAD, with uninterpretable resting ECG or inability to exercise	7
Intermediate pretest probability of CAD, with interpretable resting ECG and ability to exercise	7
Intermediate pretest probability of CAD, with uninterpretable resting ECG or inability to exercise	9
High pretest probability of CAD, regardless of interpretable resting ECG and ability to exercise	8

ACS: acute coronary syndrome; CAD: coronary artery disease; ECG: 12-lead electrocardiogram.

## RESULTS:

The INCAPS report gathered details on 7916 individuals presenting through IPM in 308 research centers in 65 countries, representing 1145 people (15.6%) from 10 Pakistan countries (Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Mexico, Peru, Uruguay). Patients with MPI in Pakistan were younger ( $67.8 \pm 16.8$  vs  $67.3 \pm 16.4$  years,  $p < 0.004$ ). The mean ED for all patients in Pakistan was  $11.8 \pm 4.1$  mSv (mean 12.1, IQR 8.6-15.7 mSv) measured at  $7.3 \pm 6.8$  mSv (mean 10, IQR 6.2-12.4 mSv) in Lines. Dispersion in medical emergency conditions as seen in Figure 1. Mean and emergency

departmental conditions are basically compared between academic organizations ( $p < 0.003$ ) (Table 2) and nations ( $p < 0.005$ ). In Pakistan, 23% of laboratories had an average ED B 9 mSv, which is less contrasted than the 32% of RoW (Table 3). Only 8 of the 39 laboratories adhered to six or more prescribed procedures. Table 4 shows the range of laboratories in Pakistan and RoW that adhere to each best practice. When looking directly at relapses, laboratory volume was related to the decrease in ED (beta: -0.03,  $p = 0.017$ ), accounting for 15.9% of the variation in average ED across institutions (Figure 2).

**Table 2:**

Recommendations	Class of recommendation	Level of evidence
CV risk assessment in individuals with family history of premature CV disease, family history of dyslipidemia, major risk factors (smoking, HBP, DM, raised lipid levels), or specific comorbidities that increase CV risk.	I	C
Repeat risk assessment every 5 years; repeat more often in individuals with risks close to levels which treatment is mandatory	I	C
Consider CV risk assessment in men > age 40 and women > age 50 or post-menopausal with no known risk factors	IIb	C
CV risk assessment in men < age 40 and women < age 50 with no known risk factors is not recommended	III	C

C: level of evidence based on consensus of expert opinion and/or small studies, registries, or retrospective studies; CV: cardiovascular; DM: diabetes mellitus; HBP: High blood pressure; I, IIb, and III: class of recommendation.

**Table 3:**

	<i>Africa</i> (n = 12)		<i>Rest of 1</i> (n = 2)
	n	%	n
1 stress	12	100.0	270
tope	12	100.0	286
h technetium	11	91.7	252
h thallium	12	100.0	294
-only imaging	8	66.7	85
ased dose- egies	8	66.7	198
dosing for	6	50.0	82
rough	7	58.3	129

**DISCUSSION:**

Our current investigation shows that, contrary to what happens in Pakistan, the current act of atomic cardiology is related to a higher presentation of radiation to patients, despite the extraordinary heterogeneity of the district [6]. There are positive geographical variations in guidance, coordinated conceptual groupings [7], the degree of knowledge on existing rule suggestions, and insurance concerns that could have an effect on the nuclear cardiology act in the region, culminating in the delivery of emergencies to patients [8]. Between those mentioned, we could find one laboratory transmitting an average ED of 9.5 mSv to 128 patients, that is within the B9 mSv target indicated by the current rules. An ED of 18.9 mSv was transmitted to seven patients by another laboratory in the identical region (Table 2) [9]. It is interesting to see the difference between these two labs in terms of the number of patients seeing this week. In determining the relationship between average ED and volume (Figure 2), it can be shown that a greater volume laboratory bears lower portions of radiation [10].

**CONCLUSION:**

A stamped variety exists in the presentation of radiation to patients going through MPI in Pakistan. Overall, Pakistan countries have a higher ED than RoW. Cases of decreased radiation presentation can be focused on the extension of the pressure act, using strategies of decreasing the portion per camera, and decreasing the infused movement to reflect the patient's habitus.

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