

The Implementation of Modern Digital Technology in X-ray Medical Diagnoses in Republic of Moldova – a Stringent Necessity.

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Abstract – The study includes the analyses of state of technical X-ray diagnostic equipment from public medico-sanitary institution of Ministry of Health of Republic of Moldova (MSPI MS RM) at 01.01.11.

The traditional RD apparatuses' were morally and physically outrun at 96,6% (in raional MSPI- 93,5%), inclusive the dental one -92,0% (in raional MSPI-97,2%), X-Ray exam -100%, mobile – 84,1% etc.

The exploitation of the traditional RD apparatuses' with high degree of physical and moral wear essentially diminished the quality of profile investigation, creates premises for diagnostic error perpetrating, increase the collective ionsating irradiation of population etc.

In recent years it starts the subvention of MSPI HM RM with digital RD dispositive, a process, which very hard unfold because of grave socio-economic crises in Republic of Moldova (since 01.01.11 only 30 apparatuses are pure digital). Despite these obstacles the subvention of MSPI HM RM with digital equipment represent a stringent necessity and a time request.

Key word– traditional X-ray exam, digital X-ray exam, and moral wear, the digital dispositive subvention.

I. INTRODUCTION

The utilization of traditional X-ray diagnostic dispositive (RD) at present time in Republic of Moldova represent a outrun procedure which decrease considerable the X-ray exam quality, increase the ionsating irradiation doze of population etc. This using is essentially disturbing by absence of the exchange pieces, which are not produced any more, the patients exam by second hand dispositive, supplied by humanitarian aid is very difficult because of lack of necessary documentation (using manual the scheme of dispositive, the certificate of corresponding to European standard requests etc.).

In the same time, thanks to modern technological progress, appears a new digital technology, which present a considerable support in assurance of qualitative assistance with medical RD improves the diagnostic quality decreases the ionsating irradiation, perfectly meet the European standards etc.

Material and methods. It was analyzed the information included in official annual statistic form (f.30-san), 2010, using the documentary statistic and comparative analyzing methods.

II. RESULTS AND DISCUSSION.

Because of deep socio-economic crises existing actually in Republic of Moldova, the rate of fixed traditional X-ray exam dispositive morally and physically outrun in MSPI HM RM at 01.01.2011 were by 90,6% data included in the table nr.1.

The table 1 data show us that the rate of morally and physical outrun dispositive in republican institution is 85,1%, but in municipal institution – 88,5, because of substitution of lesser number of traditional dispositive with analogy-digital, and pure digital. The highest rate morally and physical outrun dispositive were found in raional MSPI, which considerable decrease the assistance quality of RD, granted to rural population, which constitute 60%

from the total population of Republic of Moldova.

TABLE 1. THE TECHNICAL STATE OF TRADITIONAL FIXED X-RAY DIAGNOSTIC DISPOSITIVE IN MSPI HM RM AT 01.01.2011

Type of institution	Total of dispositive	Inclusive morally and physical outrun (abs)	The rate of morally and physical outrun dispositive (%)
Republican	148	126	85,1
Municipal (Chisinau, Balti)	114	101	88,5
Raional	358	335	93,5
Total	620	562	90,6

In the same time the rate of X-ray exam dispositive, using till present for population screening in the purpose of early revealing (opportune) of persons with suspicion to evolutionary lung tuberculoses, malignant neoplasm's and other pathologies of thoracic cave is 100%.

And in dental practice X-ray is often used. The performing of dental X-ray by dental traditional RD dispositive (5D1, 5D2) needs the expecting of same radioprotection rules: using of dental apron or lead rubber collar and glasses (preferably) from lead glass because of impossibility of collimation of ionsating irradiation fascicle etc. During 2006-2010 years in MSPI HM RM was performed since 100897 dental X-ray exams in 2006 till 146149 in 2009 (in 2010 - 130838). In the same time the absorbed doses of ionsating irradiation by performing jf one traditional dental X-ray exam is 0,7 milligrey (1 Gy = 1 J/kg=100rad), when for the same radiophotography, performed by Visiograph accumulate an absorbed doses only 0,05 mGy or 12 times lesser (in same cases even more), substituting with success the traditional dental radiophotography, being a modern dental radiodiagnosis

method. In this context the high degree of physical and moral outrun of traditional dental RD dispositive into MSPI HM RM constitute at 01.01.2011 – 92,0% (in regional institutions-97,2%, because of using of RD MT dispositive, which does not use the modern digital technologies (Visiograph).

In MSPI HM RM are also used the mobile X-ray dispositive, for investigation of patients with trauma, surgery, neurosurgery etc. gravely, which can not move to radiodiagnostic lab's. The technical state of this category of dispositive in included in table 2.

TABLE 2. THE TECHNICAL STATE OF MOBILE DISPOSITIVE OF TRADITIONAL X-RAY EXAM FROM MSPI HM RM AT 01.01.2011.

Type of MSPI	Total of dispositive (abs.)	Inclusive morally and physical outrun (abs)	The rate of morally and physical outrun dispositive (%)
Republican	57	48	84,2
Municipal (Chisinau, Balti)	30	22	73,3
Raional	77	68	88,3
Total	164	138	84,1

From the data from table 2 the majority of mobile dispositives are morally and physical outrun, need substitution with those digital, the absorbed dose of irradiation, being 6-8 lesser than in case of using traditional dispositive of RD TM.

Recent time the Ministry of Health of RM start the subvention of MSPI with new technology, included digital one.

The technical state of digital RD, inclusive computer tomography, considered by us digital in MSPI HM RM at 01.01.2011 is included in table 3.

TABLE 3. THE TECHNICAL STATE OF DIGITAL RD DISPOSITIVE, INCLUSIVE COMPUTER TOMOGRAPHY IN MSPI HM RM AT 01.01.2011

Type of MSPI	Total digital dispositive			Inclusive				
	total	Inclusive morally and physical outrun	%	Computer tomography		digital		
				total	Inclusive morally and physical outrun	Statio-nary	mobile	visio-graph
Republican	22	2	-	8	2	13	-	1
Municipal (Chisinau, Balti)	15	-	-	1	-	14	-	-
Raional	7	-	-	-	-	3	3	-
Total	44	2	5,1	9	2	30	3	2

As it is shown by table 3 data in MSPI HM RM exists 44 dispositive of digital RD, inclusive 9 tomography computers and 30 mobile dispositive and just 2 visiographs for dental necessity the technical state of which is very good. This circumstance permits radioprotection optimization, irradiation security assurance, improvement of medical X-ray exam quality.

III. CONCLUSION.

1.At actual time 90,6% from total traditional RD dispositive from MSPI HM RM is morally and physical outrun, inclusive radiophotography dispositive – 100%, dental X-ray exam 92,0% (in regional MSPI- 97,2%), mobile – 84,1%(in regional MSPI-88,3%).

2.The use of morally and physical outrun dispositive decrease essentially quality of medical care, contributed, in great measure of increasing of collective ionsating irradiation of population of republic.

3.The created situation at the moment in Republic of Moldova input the substitution of all traditional RD dispositive with those digital, which will improve the radiodiagnostic quality, decrease the near by 8 times the collective irradiation of population, to warn the revealing of cancer induced by medical ionsating irradiation etc.

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