XXVI Congresso Brasileiro de Engenharia Biomédica

Armação de Búzios – RJ – Brasil

October 21st to 25th, 2018

Medical Device costs with undue breakages

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Background, Motivation and Objective.

The research was performed in a health institution with 8 hospitals of 1200 hospital beds and approximately 12,000 small to large medical device. The main motivation of this work was the lack of care of the operator of the medical device with the technologies of the health area and the ignorance of the economic impact that is generated. The main objective was to verify the direct cost of hospital medical device due to improper use breaks.

Methods.

The methodology used to elaborate the cost of the medical device, and its operationalization was based on 2 stages, described next. **First step**: A survey was made in the database of clinical engineering of the Institution studied. Initially a retrospective study from January to June 2018. We selected the technologies that needed corrective technical intervention. After an analysis of the cause of the presented problem was performed. Health equipment with causes identified for misuse was selected and compiled. **Second stage:** A survey was made of the costs of medical technologies that have been misused and which have had a greater direct economic impact.

Results.

Data were obtained from 8 hospitals. The figure 1 shows the month-to-month costs (January to June 2018). The causes of the problems were analyzed in all equipment[1,2], from the health area, that underwent the corrective technical intervention. The analysis was performed by two clinical engineers. H = Hospital

Discussion and Conclusions.

This is an ongoing study where the next steps are also to know the indirect costs and propose meetings with the team to show the results of the study and its impacts both economic and social. The costs found and presented in Figure 1 showed that the breaks due to inappropriate use were surprising[3,4,5]. The operators of the equipment that undergo corrective technical intervention whose final analysis of the cause was the inappropriate use showed that they were unaware of the presented costs.

Frame 1 - Costs (direct) found from January to June of 2018 with undue losses.

	January	February	March	April	May	June	Total
H1	R$ 21.091,00	R$ 0,00	R$ 0,00	R$ 1.179,50	R$ 0,00	R$ 4.986,27	R$ 27.256,77
H2	R$ 0,00	R$ 0,00	R$ 0,00	R$ 0,00	R$ 1.452,10	R$ 4.304,00	R$ 5.756,10
H3	R$ 72.960,00	R$ 135.860,88	R$ 22.272,27	R$ 68.122,52	R$ 10.776,53	R$ 13.657,89	R$ 323.650,09
H4	R$ 0,00	R$ 0,00	R$ 0,00	R$ 0,00	R$ 2.774,01	R$ 1.800,00	R$ 4.574,01
H5	R$ 0,00	R$ 0,00	R$ 23.874,93	R$ 6.136,66	R$ 14.940,00	R$ 0,00	R$ 44.951,59
H6	R$ 9.312,84	R$ 0,00	R$ 6.801,21	R$ 8.452,00	R$ 0,00	R$ 8.900,00	R$ 33.466,05
H7	R$ 8.450,92	R$ 21.000,00	R$ 37.161,26	R$ 58.709,70	R$ 13.535,44	R$ 27.328,72	R$ 166.186,04
H8	R$ 0,00	R$ 9.842,52	R$ 0,00	R$ 0,00	R$ 0,00	R$ 1.700,00	R$ 11.542,52
	R$ 111.814,76	**R$ 166.703,40**	**R$ 90.109,67**	**R$ 142.600,38**	**R$ 43.478,08**	**R$ 62.676,88**	**R$ 617.383,17**

References:

1 - ISO 16142-1 (First Edition 2016-03-01) Medical Device - Recognized essential principles of safety and Performance of MDs - Part 1 (non-IVD);
2 - ABNT NBR 60601-1-2010 - 1: Prescrições gerais para segurança - Norma colateral: Prescrições de segurança para sistemas eletromédicos;

3 -ABNT NBR IEC 60601- 2-13:2013 Equipamento eletromédico - Parte 2-13: Prescrições particulares para segurança e desempenho essencial de sistemas de anestesia;

4 ABNT NBR 60601-2-4:2005 - Equipamento eletromédico - Parte 2-4: Prescrições particulares para segurança de desfibriladores cardíacos;

5 - ISO 16142-1 (First Edition 2016-03-01) Medical Device - Recognized essential principles of safety and Performance of MDs - Part 1 (non-IVD).