

Purpose:

The Standards for Medical Exposure Quality Assurance in mammography units were enacted on July 1, 2008 in Taiwan. For evaluating the trends in mammography quality before and after the regulation started in Taiwan, annual national mammography surveys were conducted from 2008 to 2010.

Methods:

On-site measurements were conducted on 215 mammography units in 2008, 205 units in 2009 and 209 units in 2010, which comprised more than 95% of the total units in Taiwan. Phantom image quality, average glandular dose (AGD) and half value layer (HVL) were performed on all systems in all three years. Automatic exposure control (AEC) reproducibility, radiation output, compression conditions, viewbox luminance and processing conditions, exposure index confirmations and monitor conditions were performed on screening units only in 2008 and on all units in 2009 and 2010.

Results:

Mean phantom scores were improved from 2008 to 2010 (11.09 vs. 11.55, $p < 0.05$ for screen/film units and 12.37 vs. 12.62 for digital systems). Mean AGDs were 1.47 and 1.39 in 2008 and were 1.39 and 1.37 in 2010 for screen-film and digital systems respectively. Mean AGD decreased for both systems during the period. For screen/film systems, variations of sensitometric curves were greatly reduced in 2009 and 2010 as comparing to 2008. For the year in 2009 and 2010, 100% pass rates were reached in compression thickness reproducibility and AGD measurements. Pass rates were increased after the regulation took effect in almost all aspects. Lower pass rates have been continued in some tests that were not yet enforced in the regulation, such as viewbox luminance and AEC thickness tracking in screen/film systems.

Conclusions:

Survey data of mammography systems demonstrated quality improvements during the first two years after the quality assurance in mammography was enforced in Taiwan. The positive outcomes were attributed to facilities' compliance with the regulation.