AFRICA'S PROGRESS ON THE BONN CALL FOR ACTION: AFROSAFE PERSPECTIVE

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The Bonn Call for Action (BCA) was the final outcome of the International Conference on Radiation Protection in Medicine held in Bonn, Germany, 3rd to 7th December 2012. It was organized by IAEA, co-sponsored by WHO and the Government of Germany. The year 2017 marked the mid-term for the Call. This paper reviews the progress Africa has made. Africa has made reasonable strides in implementing some areas of the BCA, despite limited resources.
Description of activity and work performed

**Action 1: Enhancing implementation of justification of procedures:**

Sub-actions under this action include: Introducing and applying the 3A’s (awareness, appropriateness and audit), adopting, adapting and implementation of clinical referral guidelines (CIGs).

A major achievement under this action has been the launch of AFROSAFE_rad which is Africa’s radiation protection (RP) campaign platform. This platform has facilitated application of the 3A, especially "Awareness". Joint efforts by AFROSAFE and national and regional professional societies have promoted the prioritization of RP at scientific meetings. RP sessions have featured in regional and national conferences like African Society of Radiology (ASR) and Pan African Congress of Radiology and Imaging (PACORI).

CIG implementation has begun by adopting and adapting other updatable evidence-based guidelines with the support of IAEA through its Technical Cooperation regional project, RAF9053.

**Action 2: Enhancing optimization through diagnostic reference levels (DRLs)**

There was training in DRLs in Nairobi in 2015 for 14 African countries, organized and supported by the IAEA. There have been individual and institutional initiatives in establishing facility and national DRLS in several countries: S. Africa, Nigeria, Kenya, Uganda and Algeria. The studies in S. Africa and Nigeria aimed at establishing facility DRLs for computed tomography (CT) whereas the studies in Kenya, Uganda and Algeria aim at establishing National DRLs for CT.

**Action 3: Strengthen manufacturers' role in RP.**

Africa has participated actively in scientific sessions organized by the Radiological Society of North America (RSNA) during the RSNA 2016 (International Trends session) and 2017 (Global Health Session) illustrating the importance of closer collaboration and regular dialogue between radiologists and equipment manufacturers for promotion of RP.

**Action 5: Shaping and promoting the RP research Agenda.**

This is largely being undertaken in teaching institutions. Institutions have prioritized RP, and consequently, researchers, undergraduate and graduate students are undertaking research in RP. Two PhD theses in Uganda, Makerere University are in RP namely "Adult Computed Tomography Radiation Doses in Uganda; A Precursor to Developing National Diagnostic Reference Levels" and "Impact of Imaging Referral Guidelines on Appropriateness of Computerized Tomography Requisitions for Children and Young Adults in Selected Hospitals in Uganda".
Action 4: Strengthen radiation protection education and training of health professionals

Efforts to train human resource for imaging and radiotherapy namely radiologists, radiotherapists, radiographers, sonographers and medical physicists have intensified in many African countries, leading to an increase of some of these cadres by 10-20% but this is still insufficient. Medical physicists are not yet recognized as health professionals in 44 out of the 54 African countries.

Action 6: Increase availability of global information on medical and occupational exposures

There has been an attempt to collect information on medical and occupational exposures in medicine in S. Africa, Kenya, Ghana and Algeria. A study in Ghana recorded a drop in the individual and collective dose over a nine-year period which they attributed to better RP practice. Another study in Algeria on dose at mammography showed that the dose by patients was lower than the reference level of 3.0 mgy in over 80% of cases and attributed this to CQ and frugal dose optimization.

Action 7: Improve prevention of medical radiation incidents and accidents.

This action is still at a low key in Africa. The IAEA has conducted training workshops for medical workers using ionizing radiation in South Africa in 2012 and in Ghana in 2015. There has been a study on radiation induced cataracts in Egypt which showed a high incidence (20%) in children irradiated for various cancers.

Action 8: Strengthen radiation safety culture in health care (RSC).

The radiation safety culture in most African health settings is still weak. To strengthen RP culture, IRPA, published Guiding Principles on Safety Culture and together with IOMP and WHO, and has held a regional training workshop in Africa in South Africa in Stellenbosch in 2016. A study to explore the level of RP safety culture among staff working in a cardiac fluoroscopy unit in Uganda underscored the importance of RSC.

Action 9: Foster an improved radiation benefit-risk dialogue

The WHO published a tool "Communicating Radiation Risk in Paediatric Imaging". The publication was a joint effort with experts from different professional societies and other stake holders. The ASR participated and contributed to this tool and its dissemination. AFROSAFE has initiated training in the use of this tool in some African countries.

One study in Egypt probed the role of benefit-risk dialogue in pediatric CT examinations concluding that health workers, patients and public need effective dialogue to promote awareness and eradicate misconceptions.

Action 10: Strengthening the implementation of safety requirements (BSS) globally
Furthering the establishment of sufficient legislative and administrative framework for the protection of patients, workers and the public at national level is one of the sub-actions under this action. Africa has made progress on this sub-action evidenced by the increase in numbers of countries with Nuclear Regulatory bodies to 33 out of a total of 54 countries in Africa. These countries have formed a forum entitled: Forum on Nuclear Regulatory Bodies in Africa (FNRBA).
Fig. 1: Launch of AFROSAFE_rad February 2015, Nairobi Kenya

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Fig. 2: Launch of the Uganda AFROSAFE Chapter. November 2015. Kampala, Uganda

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Fig. 3: AFROSAFE Uganda Chapter conducting radiation protection awareness talk in a hospital in Uganda. 2016.
Fig. 5: Clinical Imaging Guidelines workshop, sponsored by IAEA, Cairo, Egypt. Feb 2017.
Fig. 6: IAEA workshop on radiation protection in pediatrics, November 2015

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Fig. 4: AFROSAFE Kenya Chapter conducts street walk for radiation safety awareness. Nairobi, Kenya. 2015.

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Fig. 7: WHO tool for Risk-Benefit Dialogue in Pediatric Imaging.

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Conclusion and recommendations

African has made progress with the Bonn call for action especially for action 1, on awareness. The main focus in the next five years should still be on Action 1: Enhancing implementation of justification of procedures, Action 2: Enhancing optimization through diagnostic reference levels, Action 4: Strengthen radiation protection education and training of health professionals, and Action 6: Increase availability of global information on medical and occupational exposures in medicine.

To achieve the 10 actions, political will, scaling up and empowering human resource plus professional collaborations are essential.
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