

Initiative to progress research on Medicine Utilisation in Africa – formation of the MURIA group

Amos Massele¹, *Brian Godman^{2,3}, Matthias Adorka⁴, Joseph Fadare⁵, Andy Gray⁶, Martie Lubbe⁷, Olayinka Ogunleye⁸, Ilse Truter⁹

¹Department of Clinical Pharmacology, School of Medicine, University of Botswana, Gaborone, Botswana. Email: amos.massele@mopipi.ub.bw

²Department of Laboratory Medicine, Division of Clinical Pharmacology, Karolinska Institutet, Karolinska University Hospital Huddinge, SE-141 86, Stockholm, Sweden. Email: Brian.Godman@ki.se

³Strathclyde Institute of Pharmacy and Biomedical Sciences, University of Strathclyde, Glasgow, UK. Email: Brian.godman@strath.ac.uk

⁴School of Medicine, Faculty of Health Sciences, University of Namibia, WINDHOEK, Namibia. Email: madorka@yahoo.com

⁵Departments of Pharmacology/Medicine, Ekiti State University/Ekiti State University Teaching Hospital, Ado-Ekiti, Nigeria. Email: jofadare@gmail.com

⁶Division of Pharmacology, Discipline of Pharmaceutical Sciences, School of Health Sciences, University of KwaZulu-Natal, PBag 7 Congella 4013, South Africa. Email: graya1@ukzn.ac.za

⁷Medicine Usage in South Africa (MUSA), Faculty of Health Sciences, School of Pharmacy, North-West University, Potchefstroom, South Africa. Email: martie.lubbe@nwu.ac.za

⁸Clinical Pharmacology Unit, Department of Medicine, Lagos State University Teaching Hospital, Ikeja, Lagos, Nigeria

⁹Drug Utilization Research Unit (DURU), Department of Pharmacy, Nelson Mandela Metropolitan University, Port Elizabeth 6031, South Africa. Email: E-mail: ilse.truter@nmmu.ac.za

*Author for correspondence

(Accepted for publication Expert Review Pharmacoeconomics and Outcomes Research – Please keep CONFIDENTIAL).

MURIA Group Introductory meeting – Port Elizabeth, South Africa 27 – 28 January 2015

Abstract

This two day meeting brought together drug utilisation researchers from across Africa. The purpose was to share current drug utilisation (DU) research findings to further DU research across Africa including the development of a medicines utilisation research group. This led to the formation of the MURIA (Medicine Utilisation Research in Africa) Group, with a tentative vision and mission as well as the first planned research methodology training course and a symposium in Botswana later in the year. Future research projects were also planned including studies on drug utilisation of ARVs in Botswana and across Africa as well as ways to enhance the appropriate use of antibiotics and increase generic utilisation.

Key words: Africa, Drug Utilisation studies, cross national studies, medicines

Main body

Pharmaceutical policy typically varies by income level and traditions; however, the goal in all countries is to enhance the rational use of medicines. In low income countries, households incur potentially catastrophic expenses when family members become ill. The principal policy goal therefore is to improve access to essential medicines in these countries to reduce maternal and child mortality as well as mortality from other highly prevalent diseases including AIDS, malaria, and tuberculosis. In higher income countries, the goal is to develop and maintain comprehensive and equitable healthcare in the face of growing pressures. This has resulted in multiple policies to improve the managed entry of new high-priced medicines as well as increase the prescribing of low cost generics to release valuable resources for re-direction including funding increased use of medicines with a growing elderly population (1, 2).

Countries need to learn from each other to achieve their goals since the unnecessary use of medicines has considerable resource implications. These include increasing the number of adverse events with the possibility of hospitalisation and death, increasing antibiotic resistance as well as potentially depriving patients of the benefits of medicines (3). This necessarily includes analysing treatment patterns alongside health policies in their own and surrounding countries, and using the findings to shape future policies. In Africa, this can also include researching complementary and alternative medicines (4). These issues and challenges resulted in an identified need to bring together researchers from across Africa to discuss their ongoing and future research to enhance the rational use of medicines. This was the principal driver behind the recent meeting in Port Elizabeth, the subsequent formation of the MURIA group and the progression of the first workshop in Botswana later in 2015.

Main highlights of the meeting in Port Elizabeth (<http://muria.nmmu.ac.za/Muria-Meeting-in-Port-Elizabeth>)

Ilse Truter welcomed everyone to Port Elizabeth. Proceedings started with a brief history of activities to develop a Medicines Utilisation group in Africa building on other initiatives, notably the International Society for Pharmacoepidemiology (ISPE), EuroDURG and the recent World Congress for Basic and Clinical Pharmacology in South Africa (2014). This built on her considerable expertise, starting with the formation of the Drug Utilisation Research Group (DURU) in 1994. This has resulted in a constant stream of postgraduate students and publications, including central system medicines (5-9).

Johanita Burger and her colleagues from the research entity Medicine Usage in Africa (MUSA) of the North West University (NWU) in South Africa subsequently discussed their extensive drug utilisation programme, which consists of four key research objectives:

- To determine and compare medicine utilisation patterns and costs in Southern Africa
- To evaluate the impact of policy decisions on the equity, affordability and availability of medicine
- To investigate factors that may influence the appropriate use of medicine
- To develop pharmaceutical care models to improve appropriate medicine usage

Their research experience includes: (i) Pharmaceutical care / Clinical aspects to enhance appropriate use of medicine; (ii) Drug utilisation review and environmental influences on medicine usage; (iii) Pharmacoepidemiology / Pharmacoconomics; (iv) Pharmacy practice with aspects including the standard, availability, access and affordability of pharmaceutical services. This has resulted in multiple collaborations with other researchers across Africa (6, 7, 10, 11), which will continue.

Jaran Eriksen presented a number of drug utilisation studies he has been involved with including optimizing dosing regimens for ARVs in children and adults in Uganda (<https://openarchive.ki.se/xmlui/handle/10616/41587>); mHealth projects in pregnant women with HIV and their newborns (South Africa); algorithms for optimizing treatment in critical care (Tanzania) as well as studies assessing needs and attitudes to the implementation of information and communication technology (ICT) for rational use of medicines among healthcare staff in rural Tanzania (12).

Matthias Adorka discussed ongoing research in Namibia, which includes antibiotic prescribing practices in outpatient departments of public hospitals and affiliate clinics (10, 11) as well as (i) assessment of current antibiotic prescribing in respiratory tract infections; (ii) the development of a computerized algorithm for the appropriate prescribing of antibiotics in the treatment of respiratory tract infections in primary healthcare settings and (iii) Therapeutic Drug Monitoring of anti-TB drugs in drug resistant patients. Other projects included assessing gentamicin therapy in the elderly and whether there is a need to carry out renal function tests before commencing therapy using a pharmacokinetic approach. The methodology involves cross sectional and prospective studies including taking blood samples and serum creatinine measurements. The intention being to assess the association between development of gentamicin toxicity and gentamicin blood levels and population clearance in the target patient group to provide future guidance.

Ongoing drug utilisation research in Nigeria includes potential ways to reduce drug: drug interactions (DDIs) in patients with HIV through physicians consulting more than one DDI database, studies demonstrating frequent medication errors among paediatric nurses and the use of complementary

and alternative medicines (4, 13-15). Other studies have shown that adherence to medicines to control hypertension has been poor with BP control remaining unsatisfactory, although other studies have shown that medication adherence and treatment satisfaction among psychiatric outpatients is generally good (16, 17). Studies have also shown high rates of polypharmacy and inappropriate prescribing among the elderly as well as low rates of generic prescribing and over use of antibiotics (18, 19). All these studies are aimed at identifying specific problems to address to enhance the rational use of medicines.

Finally, Brian Godman discussed cross national studies undertaken with health authority personnel from across Europe to compare the impact of different demand-side measures to enhance the preferential prescribing of high quality low cost generics versus originators and patented products in a class where all products are seen as therapeutically equivalent at appropriate doses (2). Recent research has shown that countries are learning from each other with measures to enhance the utilisation of generics and this will continue (2). This research was facilitated by the development of the Piperska group (<http://www.piperska.org/>), whose early mission was "to ensure robust systems are in place in Europe to enhance the rational use of drugs, including new expensive drugs, to improve health".

It was subsequently agreed there should be a pro-active group in Africa stimulating cross national research to enhance the rational use of medicines. This resulted in an agreed name – the MURIA (Medicines Utilisation Research in Africa) group - with a draft vision and mission, which is currently being refined (<http://muria.nmmu.ac.za/>). The MURIA Group should be a multidisciplinary network of healthcare professionals striving to promote sustainable, rational medicine use in Africa. This can be achieved through collaborative research and capacity building, with the objective of improving the quality of life of patients, as well as the quality of medicine utilisation in Africa. It is intended that the vision of MURIA will be achieved through training, collaborative research, information sharing and facilitation of access to data across Africa. As a result, aiming to address current challenges regarding DU research in Africa (<http://muria.nmmu.ac.za/>). The first step is a 2.5 day workshop and symposium around drug utilisation in Gaborone, Botswana at the end of July 2015 (<http://muria.nmmu.ac.za/Botswana-Workshop-and-Symposium-27-29-July-2015>), which will cater for all personnel including those just starting research in this area to those actively undertaking medicine utilisation research. This will be achieved through two workshop streams (parallel sessions) – one Introductory and one advanced - including all aspects of drug utilisation research. Subjects include basic and advanced methodologies including challenges, ways to influence prescribing behaviour, basic and advanced statistics as well as discussions on ethics, databases and communication programmes. The speakers are principally those who took part in the inaugural MURIA meeting in Port Elizabeth.

The workshop will be followed by a symposium for researchers to present their projects and findings, with drug utilisation of ARVs a principal theme. This will allow workshop attendees to see some of the theory put into practice. The registration fees have been kept deliberately low to attract researchers from right across Africa, made possible by a grant from the Swedish Research Council to develop drug utilisation research around ARVs in Botswana.

A number of research projects are also ongoing. These included projects summarising key health care characteristics among African countries including Botswana, South Africa, Namibia, Swaziland, Lesotho, Nigeria, Zimbabwe, Ghana, Tanzania, Uganda, Kenya, Rwanda and Ethiopia, incorporating total health and pharmaceutical expenditure, key characteristics around health care provision and its financing. In addition, data base characteristics in each country as well as current DU capabilities. Initial disease areas for comparing utilisation and policies across countries include antibiotics and ARVs. This will start with southern Africa countries, building on previous research surrounding antibiotics (6, 10, 11, 18, 20). Other research topics include policies surrounding generics as well as complementary and alternative medicines.

Overall, it was a highly fruitful meeting in Port Elizabeth laying the foundation for an interactive and productive MURIA group.

Acknowledgements and financial interests

Apart from the co-authors, other personnel present in Port Elizabeth included Joyce Kgatlwane (Botswana); Brent Knoesen, Theunis Kotze, Rianda Joubert, Johanita Burger, Ian Wiseman (South Africa); Ester Naikaku (Namibia); Ogo Mbachu (Swaziland); Jaran Eriksen (Sweden).

This meeting was in part support by VR-Link grant from Swedish Research Council (VR-Link 2013-6710) to Amos Y Masseur and Lars L Gustafsson

There are no conflicts of interest from any author.

References

1. Godman B, Malmstrom RE, Diogene E, Gray A, Jayathissa S, Timoney A, et al. Are new models needed to optimize the utilization of new medicines to sustain healthcare systems? Expert review of clinical pharmacology. 2015;8(1):77-94.
2. Godman B, Wettermark B, van Woerkom M, Fraeyman J, Alvarez-Madrado S, Berg C, et al. Multiple policies to enhance prescribing efficiency for established medicines in Europe with a particular focus on demand-side measures: findings and future implications. *Frontiers in pharmacology*. 2014;5:106.
3. Holloway KA, Henry D. WHO essential medicines policies and use in developing and transitional countries: an analysis of reported policy implementation and medicines use surveys. *PLoS medicine*. 2014;11(9):e1001724.
4. Oshikoya KA, Oreagba IA, Ogunleye OO, Hassan M, Senbanjo IO. Use of complementary medicines among HIV-infected children in Lagos, Nigeria. *Complementary therapies in clinical practice*. 2014;20(2):118-24.
5. R Gaida, Truter I. Preliminary Investigation of Risk Factors Causing Dyskinesias in Parkinson's Disease in South Africa. *Trop J Pharm Res*. 2014;13(8):1353-9.
6. Katende-Kyenda NL, Lubbe MS, Serfontein JH, Truter I. Inappropriateness of antimicrobial prescription in private primary health care settings in South Africa. *South African medical journal*. 2006;96(8):704-5.
7. Katende-Kyenda NL, Lubbe MS, Serfontein JH, Truter I. Identification of potential drug-drug interactions between antiretroviral drugs from prescriptions in the private health-care sector in South Africa. *International journal of STD & AIDS*. 2012;23(3):166-72.
8. Truter I. Prescribing patterns of anti-migraine medicines in South Africa using a claims database. *International journal of clinical pharmacy*. 2015;37(3):447-51.
9. Godman B, Bishop I, Campbell SM, Malmstrom RE, Truter I. Quality and efficiency of statin prescribing across countries with a special focus on South Africa; findings and future implications. Expert review of pharmacoeconomics & outcomes research. 2015;15(2):323-30.
10. Adorka M, Lubbe M, Serfontein J, Allen K, Kabwebwe HM. Making Antibiotic Choices: Formula Derivation and Usage in the Rational Selection of Antibiotics in the Empirical Treatment of Infections. *Tropical Journal of Pharmaceutical Research* December. 2013;12(6):1029-34.
11. Adorka M, Mitonga HK, Lubbe M, Serfontein J, Allen A. Assessment of the appropriateness of antibiotic prescriptions in Lesotho public hospitals: a novel methodology based on principles of antibiotic prescribing. *Journal of Public Health in Africa* 2014;5(354).
12. Nilseng J, Gustafsson LL, Nungu A, Bastholm-Rahmner P, Mazali D, Pehrson B, et al. A cross-sectional pilot study assessing needs and attitudes to implementation of Information and Communication Technology for rational use of medicines among healthcare staff in rural Tanzania. *BMC medical informatics and decision making*. 2014;14:78.
13. Oshikoya KA, Oreagba IA, Ogunleye OO, Lawal S, Senbanjo IO. Clinically significant interactions between antiretroviral and co-prescribed drugs for HIV-infected children: profiling and comparison of two drug databases. *Therapeutics and clinical risk management*. 2013;9:215-21.
14. Oshikoya K, Akinola I, Senbanjo I, Oreagba IA, Ogunleye O. Medicines used in pregnancy, childbirth and lactation in a teaching hospital in Lagos, Nigeria. *Sri Lanka Journal of Obstetrics and Gynaecology*. 2012;34:84-98.
15. Oshikoya KA, Oreagba IA, Ogunleye OO, Senbanjo IO, MacEbong GL, Olayemi SO. Medication administration errors among paediatric nurses in Lagos public hospitals: an opinion survey. *The International journal of risk & safety in medicine*. 2013;25(2):67-78.
16. Tamuno I, Fadare J. Drug treatment for hypertension in a tertiary health care facility in Northern Nigeria. *Int J Pharm Biomed Res* 2011;2(2):104-9.
17. Fadare JO, Lawal M, Elegbede AO, Joseph DO, Ampitan BA, Ayodele MA. Medication Adherence and Patients Satisfaction among Psychiatric Outpatients in a Rural Nigerian Tertiary Healthcare Facility. *Journal of Psychiatry*. 2014;17(4).
18. Tamuno I, Fadare J. Drug Prescription Pattern in a Nigerian Tertiary Hospital. *Tropical Journal of Pharmaceutical Research* 2012;11(1):146-52.

19. Fadare JO, Agboola SM, Opeke OA, Alabi RA. Prescription pattern and prevalence of potentially inappropriate medications among elderly patients in a Nigerian rural tertiary hospital. *Therapeutics and clinical risk management*. 2013;6:115-20.
20. Holloway K, Mathai E, Gray A. Surveillance of antimicrobial resistance in resource-constrained settings - experience from five pilot projects. *Tropical medicine & international health*. 2011;16(3):368-74.