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Why Compliance to National Prescribing Guidelines is Important Especially across Sub-Saharan Africa and Suggestions for the Future

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Abstract

There are concerns with high prevalence rates for both infectious and non-infectious disease in Sub-Saharan Africa, as well as patients with joint co-morbidities. This requires consideration of multiple guidelines simultaneously to improve the care of patients. Adherence to guidelines is increasingly seen as key criteria for assessing the quality of prescribing in ambulatory care versus the WHO/INRUD targets. These typically represent activity (volume) or performance (cost) indicators rather than quality indicators. However, guideline adherence is currently variable across sectors, diseases areas and African countries. Factors impacting on adherence rates include their routine availability, ease of access and referencing, the extent of consensus on their content, extent of training of their use, monitoring of subsequent prescribing against agreed suggestions and whether regularly updated. Multiple initiatives are typically more successful with changing prescribing habits versus single approaches. Any quality indicators developed as part of prescribing targets must be robustly developed, accepted by physicians and practical to administer. We are likely to see a growth in robust guidelines and indicators across Africa to reduce morbidity and mortality from both infectious and non-infectious diseases.

Keywords: Adherence • Non-infectious diseases • Prescribing targets • Quality indicators

Introduction

There are high prevalence rates for both infectious diseases and non-infectious diseases across sub-Saharan Africa [1-4], with Cardiovascular Diseases (CVD) including diabetes now the leading cause of death [2,5-7]. The appropriate management of infectious diseases is particularly important across sub-Saharan Africa with many of the world's infectious diseases emanating from Africa as well as growing Antimicrobial Resistance (AMR) rates, exacerbated by high and often inappropriate use of antimicrobials [8-13]. There are also an appreciable number of patients with multiple co-morbidities, including those with both infectious and non-infectious diseases, which requires consideration of multiple guidelines simultaneously to enhance appropriate and often complex care [14-19]. Reporting and Learning from Best Practice guidelines is a 'landmark initiative' in the World Health Organization World Alliance for Patient Safety 2021-2030 to reduce the global burden of avoidable medication related harm [20].

A number of approaches have been developed to assess and improve the quality of care provided across settings among Lower- and Middle-Income Countries (LMICs) including Sub-Saharan Africa. These include the World Health Organization/International Network for Rational Use of Drugs (WHO/INRUD) criteria for assessing the quality of prescribing in ambulatory care including African countries [21-24]. WHO/INRUD targets, and respective combined published rates across Africa, include [25, 26]:

- The average number of medicines per patient encounter with a physician (<2; 3.1);
- The percentage of encounters where an antibiotic is prescribed (<30%; 46.8%);
- The percentage of encounters where an injection is prescribed (<20%; 25%);
- The percentage of medicines prescribed by generic or International On-Proprietary Name (INN) (100%; 68.0%) and

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- The percentage of medicines prescribed contained within Standard Treatment Guidelines (STGs) and Essential Medicine Lists (EML) (100%; 88.0%).

However, there are concerns regarding the extent to which current WHO/INRUD indicators actually assess the quality of ambulatory care prescribing, especially with growing rates of both infectious diseases and Non-Communicable Diseases (NCDs), in addition to patients with co-morbidities, across Africa [26]. Alongside this, there is currently a lack of any diagnostic criteria or rationality to assess the quality of prescribing as opposed to just measuring the quantity of medicines prescribed, although this is a good start [27]. As they stand, current WHO/INRUD indicators represent activity (volume) or performance (cost) indicators rather than quality indicators (attribution to quality of care, guidelines and better clinical outcomes) [28].In addition, issues such as the use of injections as opposed to oral formulations where available may reflect current incentives in the system as opposed to the actual quality of prescribing [29-31]. In their recent study, Niaz found that the majority of WHO/INRUD indicators had low sensitivity and/or specificity with assessing the quality of prescribing versus adherence to national STGs, with the WHO/INRUD indicators typically having poor accuracy in predicting rational prescribing. Compliance to STGs was chosen as the reference point for assessing the quality of prescribing in Namibia as typically STGs in LMICs are based on the principles of rational medicines use, adapted from WHO and other leading society recommendations [26]. In addition, we do know that adherence to guidelines improves patient outcomes [32-37]. We have seen a range of compliance rates to STGs in ambulatory care across sub-Saharan Africa. These include an average rate of 73% of prescribed medicines complying with the Namibian STG (NSTG) in the study of Niaz either through the appropriate choice of medicines or a suggested treatment for the indicated diagnosis [26]. Compliance to the NSTGs were significantly higher among physicians at Primary Healthcare Facilities (PHCs) (76.1%) versus physicians at ambulatory care clinics in hospitals in Namibia (70.5%)[26]. However, Mashozhera in Namibia found only 61.4% of prescriptions for patients with hypertension complied with the NSTG in terms of treatment choice [7]. These rates though were all higher than an average of 45.1% compliance to STGs among physicians treating patients with infectious diseases attending public healthcare facilities in South Africa [38]. There have also been concerns with guideline compliance to ambulatory care patients with community acquired pneumonia in Ghana at just 32.5%, and for the treatment of patients with Sexually Transmitted Diseases (STDs) among PHCs facilities in South Africa [39,40]. Compliance to prescribed treatments for STDs according to the South African STGs ranged from 11.4% for patients with lower abdominal pain up to 75.9% for those with male urethritis syndrome [40]. There were also similarly low rates to guideline adherence for children with lower respiratory tract infections in Sierra Leone at only 14% [41]. Time pressures can be a key reason why healthcare professionals in PHCs in LMICs do not always follow national guidance when treating patients with infectious diseases [42]. More recently, there have been concerns with patients with COVID-19 where there have been high rates of antibiotic prescribing despite only a limited number of patients having bacterial infections [13,43,44]. This also needs urgently addressing though appropriate training and guidance.

These findings regarding the management of infectious diseases in ambulatory care in Africa do contrast with the management of NCDs. In Kenya, rates of prescribing appropriate doses and concurrent medicines to treat patients with hypertension were high at 96.4% and 95.4% respectively. However, there were concerns that compliance with treatment for patients with stage 2 hypertension was lower at 75.2% [45]. As mentioned, there was a compliance rate of 61.4% among patients treated for their hypertension in Namibia [7]. This contrasts with Nigeria where only 46.7% of physicians treating patients in primary care were aware of hypertension guidelines to improve their care [46]. This is similar to the North West Province, South Africa, where compliance to agreed guidelines was 51.9%among physicians treating patients with hypertension attending PHC clinics [47]. In addition in Botswana, only a limited number of patients with diabetes attending ambulatory care clinics were prescribed statins. This is a concern given the impact of diabetes on CVD morbidity and mortality [48,49].

Literature Review

A number of factors have been identified that impact on adherence to guidelines among sub-Saharan African countries. These include guideline availability among ambulatory care clinics, which can be very variable [50,51]. It is imperative to address identified barriers to guideline adherence as a central part of any subsequent intervention [52]. Ways forward include

- Addressing a number of programmatic activities incorporating training on the use of STGs,
- Ensuring easy access to up-to-date and objective STGs,
- Improving the feasibility of guideline use including ease of referencing,
- Ensuring consensus among key stakeholder groups on suggested treatments,
- Addressing any restrictions on the prescribing of medicines by level of care despite being recommended in the STGs,
- Ensuring regular availability of all the medicines listed in STGs/EML in ambulatory care clinics thereby reducing potential stock-outs and the need for patients to purchase their prescribed medicines out-of-pocket in community pharmacies, and
- Regular auditing of prescribing practices and follow-up [36,40,53-57].

There also needs to be robust approaches to the inclusion of medicines within STGs to enhance their acceptance among ambulatory care physicians. This builds on the high acceptance rates and adherence among prescribing physicians to the 'Wise List' in Stockholm County Council, Sweden, with their robust approaches. This includes the ability of prescribing physicians to question each multidisciplinary expert group in each disease area on the rationale behind their recommendations for first-line and second-line treatments [58-60]. There is also the potential to develop quality indicators surrounding adherence to guidelines building on the targets in the WHO/INRUD criteria [25]. However, quality indicators need to be robustly developed, accepted by physicians and practical to administer to enhance their use and impact [28,61,62]. There also needs to be a common, standardized coding system enable neef of intra country comparision

and inter-country comparison, tracking data and hence improvement [63]. This is because differences in data collection make comparison among studies and countries challenging [64]. Involving patients in any quality indicator and improvement activities is also recommended [65]. This is because patients are known to affect prescribing practices through influencing prescribers to prescribe certain medicines for them, as seen particularly for acute respiratory infections [12,13,57].

Another area of concern in sub-Saharan Africa and wider is the self-purchasing of antibiotics, which can account for the highest proportion of dispensed antibiotics, much of which is inappropriate for essentially self-limiting conditions enhancing AMR [12,13,66-68]. Education of pharmacist, coupled with treatment guidelines, can reduce inappropriate dispensing. This is especially important in rural areas where potentially fining pharmacists for selling antibiotics without a prescription may be counter-productive [69-72]. This is because community pharmacists may be the only healthcare professional available; they operate more convenient hours than physicians and do not charge consultation fees [73-77]. They can also be a trusted source of medical advice especially in rural areas [78,79]. The same situation has been seen in sub-Saharan Africa in the recent COVID-19 pandemic where the presence of trained pharmacists and regulations limited any increase in the dispensing of hydroxychloroquine with or without an antibiotic despite the initial hype [72,80,81]. These findings provide guidance on potential future guideline and other activities among pharmacists in sub-Saharan Africa. We also see variable adherence to STGs among hospitals in sub-Saharan Africa, with adherence to agreed guidelines again seen as a key indicator of the quality of prescribing [13, 82,83]. However, adherence to guidelines can be a real challenge in hospitals in sub-Saharan Africa especially if there are no STGs available and the principal educational input is from pharmaceutical companies [84,85]. For instance, in Kenya, only 53.6% of patients among 14 public hospitals in a recent study received appropriate antibiotic treatment according to national STGs, with the physical availability of STGs increasing adherence [86]. There were similar concerns in Ghana with only 50.0% to 66.7% adherence to STGs among two surveyed hospitals; however, for many indications no guidelines existed [87]. In Namibia, adherence to national guidelines among referral hospitals was also similar at just 62%, appreciably lower than the 95% target [88]. This compares with high rates of adherence among South African public hospitals to antimicrobial STGs and those listed in the EML at between 90.2% to 98% of surveyed hospitals [89,90]. This may be facilitated in South Africa by a history of active Pharmacy and Therapeutic Committees and Antimicrobial Stewardship (AMS) groups monitoring adherence to STGs as well as monitoring compliance against the national AMR strategy [91-93]. There was also high adherence to prescribing guidance for ceftriaxone among a leading hospital in Ghana, which is also encouraging building on previous educational initiatives [94]. A key area to address in hospitals in sub-Saharan Africa is the prescribing of antibiotics to prevent Surgical Site Infections (SSIs). This is because their use in this indication can account for an appreciable proportion of overall antibiotic use in hospitals [82,95-97]. In addition, concerns with poor timing of the first antibiotic dose, coupled with extended prophylaxis, can increase adverse drug reactions, AMR, and costs without reducing infection rates [98-101]. However, there can be poor compliance to available guidelines in practice [98,102-104]. For instance, in Botswana, poor timing of Surgical Antibiotic Prophylaxis (SAP) was common with only 15% of patients receiving antibiotics pre-operatively, i.e., within 60 minutes of the first incision, 58.3% received antibiotics post-surgery, and 26.8%of patients were not prescribed any antibiotic [105]. Prolonged surgical prophylaxis was also common with a mean duration of 5 days [105]. In Ghana, the duration of antibiotic use for SAP was typically more than one day among 69.0% to 77.0% of patients surveyed [87], and in Kenya the average number of antibiotic doses in one study for SAP was 19.1 [106]. In Nigeria, Abubakar in their study found that the timing of SAP was suboptimal with 83.5% of patients administered their first dose outside of the 60-minute window prior to the first incision and prolonged SAP was seen in all patients with a mean duration of 8.7 days [107]. In another study in Nigeria, 98.7% of all antibiotic prescriptions for SAP were given for more than one day [108].

Discussion

The instigation of AMS programmers among hospitals in Africa can enhance future adherence to guidelines improving antimicrobial prescribing and reducing costs [109-112]. These include initiatives to improve antibiotic use to prevent SSIs through a variety of measures including education, prescribing toolkits and regular audit [13,97,98]. In Kenya, Ntumba found their multifaceted programme resulted in the percentage of patients receiving antibiotics post-operatively decreasing from 50% to 26% [113]. Brink in South Africa found that extensive programmes including education resulted in the timely administration of antibiotics for SAP increasing to 56.4% of surgical patients and Allegranzi found their multiple activities including educational activities among hospitals in Kenya, Uganda, Zambia and Zimbabwe improved appropriate use of SAP from 12.8%(baseline) to 39.1% of patients among the studied hospitals [114,115]. In a follow-up study in Nigeria, Abubakar etagain found that multiple activities resulted in patients being 5.6 times more likely to receive SAP within the 60-minute window before the incision versus the pre-intervention period [116]. We are also seeing that the instigation of smartphones/mobile apps containing antimicrobial prescribing guidelines can improve antibiotic prescribing in hospitals in Africa, and this usage is likely to grow [117]. Alongside this, the use of web-based applications can reduce the time taken to perform point prevalence survey studies as well as monitor the outcome of interventions in real time, which their use also likely to grow [90,118-120].

Conclusion

In conclusion, adherence to agreed national and local guidance is seen as a key activity to monitor the quality of prescribing across sectors. Consequently, this activity needs to be encouraged across sub-Saharan Africa through multiple initiatives given current high rates of both infectious and non-infectious diseases, as well as patients with multiple co-morbidities. A sub-Saharan Africa Guideline network and collaborative efforts are needed to transfer skills and learning between countries on communicable diseases, NCDs, patient diseases of multiple network

medication guidelines adherence as well as applying quality under indicator and improvement strategies. Such activities are beginning to grow. However, any guidelines produced need to adhere to the principles of the rational use of medicines, especially building on the level of misinformation surrounding the management of patients with COVID-19, be easily accessed including the equal reference system, be regularly updated and with care management subsequently monitored against agreed guidance.

Acknowledgement

This can include establishing prescribing targets with all key stakeholder groups building on current WHO/INRUD criteria. This will be the subject of future research projects. In the meantime, typically multifaceted and coordinated activities are needed for improving the quality of medicine use across countries. This applies to prescribing guidance to improve future quality and efficiency of prescribing across sub-Saharan Africa.

Conflict of Interest

The authors have no conflicts of interest and there was no funding for this paper.

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