

# Evolution of the role of the pharmacist in preventing cervical cancer in low- and middle-income countries

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Despite being largely preventable, cervical cancer remains a global burden that has a significantly greater impact on low- and middle-income countries where access to prevention services are often limited. This article focuses on perspectives from Ghana and presents challenges and opportunities to address cervical cancer through efficient utilization of existing pharmacy services.

## The burden of cervical cancer

The severe inequality in cervical cancer outcomes globally is a public health issue of increasing concern (1). In 2018, cervical cancer cost the world 311,365 lives (2). In low- and middle-income countries (LMICs), it is the second most frequent cause of cancer in women aged 15–44 years (3). Although largely preventable, cervical cancer remains one of the top three causes of death among women in LMICs (4). The primary cause of cervical cancer is persistent or chronic infection with one or more of the “high-risk” types of human papillomavirus (HPV). While most pre-cancerous lesions caused by HPV in women resolve spontaneously, chronic infection with HPV can progress to invasive cervical cancer in some women (7).

The World Health Organization (WHO) estimates HPV infections cause approximately 68,000 cases of cervical cancer each year in Africa (1). However, these figures may be higher due to the challenges in data collection, poor record systems, as a result of the limited capacities of health information systems and established cancer registries.

In Ghana, cervical cancer is the second most frequent cause of cancer among women. It is estimated that every year 3,151 women are diagnosed with cervical cancer, with 2,119 fatalities. Also, the estimated crude incidence rate for cervical cancer in Ghana is 26.4 per 100,000 women per year (5).

According to the Kumasi cancer registry, between the years 2014 and 2016, cervical cancer accounted for 21% of all cancer cases among women. Nartey et al also found the mortality rates of cervical cancer in the Greater Accra region to be 14.7 cases per 1,000 population, and that of the Ashanti region to be 5.3 cases per 1,000 population. Despite a national cancer control plan being established in 2011 (5), challenges remain and very limited progress has been made in dealing with this public health issue. It is estimated that in the West Africa region, about 4.3% of women harbour cervical HPV-16/18 infection at any given time, and 55.6% of invasive cervical cancers are attributed to HPVs 16 or 18 (6). Data is not yet available on the extent of the HPV burden in the general population of Ghana, however, a study in North Tongu District indicated the prevalence may be above that of regional estimates (7).

## Approaches for prevention and early detection

There are interventions that exist to prevent, detect or treat cervical cancer across the life course. These include pharmacological approaches, such as vaccines for pre-adolescent and adolescent girls and methods to screen women for pre-cancerous lesions, which can be treated effectively in the clinic to prevent progression to invasive cancer. This is a cost-effective approach to prevent cervical cancer that was

included in the WHO's "best buys" for policy makers to prevent noncommunicable diseases (8).

WHO's comprehensive approach to cervical cancer prevention and control proposes the following measures:

- ➔ an introduction and scaling-up of HPV vaccination;
- ➔ introduction and expanding coverage of routine screening and treatment of pre-cancerous lesions;
- ➔ prompt management of invasive cancers;
- ➔ improving access to palliative care;
- ➔ monitoring using a standard set of indicators and tools to end cervical cancer (4).

WHO's comprehensive approach supports the Sustainable Development Goals (SDGs) relating to ensuring healthy lives and promoting well-being for all at all ages, as well as achieving gender equity and empowerment for all women and girls.

Critical to alleviate the cervical cancer disease burden are approaches for early detection and treatment. The high prevalence of HPV infection in LMICs indicates the need for improving access to effective cervical cancer screening to promote primary prevention and reduce the burden of the disease. Many high-income countries have effectively implemented and sustained population-based screening programmes in tandem with scaling up vaccination programmes to achieve high population coverage. In contrast, screening and vaccination services have been less widely implemented in LMICs due to financial, logistical, access and other socio-cultural barriers (9, 10). Also, inadequate infrastructure, limited health worker training, vaccine cost, cold chain capacity constraints, the stigma associated with HPV as a sexually transmitted infection, the lack of knowledge of HPV infection and vaccination-associated misconceptions and fear of pain and adverse events are major contributing factors to the low coverage of screening and vaccination (11).

The high prevalence of HPV infection in LMICs points to a greater need for improving access to effective cervical cancer screening to promote primary prevention and reduce the burden of the diseases (12, 13). Cost-effective modelling studies have indicated this will be most effective if a wide coverage and uptake is achieved (14, 15). This will, therefore, require embedding access to such services in the community. In many high-income countries, the role of community pharmacists has been explored to varying degrees of success in improving access to screening and prevention (16). Pharmacists as the established "gatekeepers of medicines" have remained vital for the education of both patients and healthcare personnel on medicines and vaccines to ensure safety and efficacy. The role of pharmacists in education, screening, immunization and treatment of cervical cancer has often been overlooked in

LMICs. This has not only limited access to vaccination, but also supply chain efficiency and quality assurance in health delivery.

### The evolution of pharmacy roles in public health

Globally, the pharmacy profession has demonstrated dynamism in its roles over the decades, with the introduction of new roles and the extension of its services from the traditional roles of simply dispensing medicines to reporting adverse drug reactions, therapeutic drug monitoring and patient counselling services. This unique quality makes the profession highly adaptable to the times and demands of its clients (patients and health professionals). An area where pharmacists remain underutilized is public health services, including vaccination and immunization. In considering multidisciplinary healthcare professional collaboration towards combating cervical cancer, there are several roles the pharmacist can play, including education, screening, vaccination and cold chain management of vaccines. These roles have been implemented in several high-resource settings, with demonstrated effect. For example, in North America and Europe, pharmacists' role in flu immunization is routine and widespread (17). Community pharmacists in the United States screen for cervical cancer and administer HPV vaccines (16, 18). In several LMICs, like Ghana, pharmacists are actively involved in health advocacy, education, and breast cancer screening through the Pharmaceutical Society of Ghana's Lady Pharmacists Association in the United Kingdom and United States, and oncology pharmacists contribute significantly to cancer management in hospitals and the community. However, these roles remain underutilized in most countries with community pharmacists playing such roles under restricted circumstances. The employment of pharmacists in combating cervical cancer, especially in LMICs, needs to be thoroughly explored to reduce the disease burden.

### Pharmacists in cancer prevention

Community pharmacists are one of the few health professionals in constant contact with the community, earning their trust and confidence. The local proximity of community pharmacists to the community they serve places them in the best position to provide access to high-risk persons, including the most deprived. Their nearness makes them the most feasible personnel to provide education, access to HPV self-testing kits and HPV vaccines. However, this approach is not without social barriers to uptake. The accuracy and efficacy of the test is also limited by the capacity of the healthcare professional conducting it (19). Increasingly, self-testing HPV kits are being implemented to offer rapid results at point-of-care (19). In one Ghanaian study, this was provided by community health workers (7). Ghanaian pharmacists could be upskilled to

provide education, access to screening, vaccination and follow-up service to clients at a convenient time and in a trusted community setting. Pharmacists are uniquely positioned for this, given that their training already equips them to ensure quality and safety in medical interventions, and use recording and tracking systems for medicines and patients.

Upskilling has already been piloted in about 30 countries, with some 26 countries incorporating it into their national programmes, often using nurses (20). In the United States and Europe, vaccination, early screening, and testing form a major part of community pharmacy practice (16, 17). Community pharmacists in the European Union (EU) contribute significantly towards the EU vaccination target against influenza and a wide range of public health services (21). Community pharmacies' preferable opening hours and locations mean they play a significant role in reaching those who would otherwise not attend, often the most vulnerable and those subject to health inequality. The advantages of having community pharmacists administer influenza vaccines can be translated to the administration of HPV vaccines in LMICs, as is routine in most states in the United States (22). This contributes significantly to curbing the cervical cancer burden. The potential advantages of community pharmacists administering the HPV vaccine in LMICs like Ghana are immense, but as yet untapped.

### Feasibility in Ghana

The Pharmacy Council 2018 data estimates approximately 2,500 community pharmacies in Ghana who provide different services to their communities. A study conducted by Karikari-Agyeman et al (2017) demonstrated community pharmacist's willingness and readiness to participate in immunization and vaccination services in Ghana (23). The study explored the perspective of the stakeholders and regulators on the suitability of the use of community pharmacies for immunization services. The findings highlighted additional training, a review of the legal framework as an important consideration to facilitate pharmacists' involvement in providing services, including the delivery of HPV. The Pharmacy Council makes provisions for pharmacists to be involved in activities such as immunization provided they have received the required training and certification (23). The introduction of the Doctor of Pharmacy programme provides an additional potential for pharmacists in Ghana to deliver these services. The Doctor of Pharmacy programme was introduced in 2012. The programme offers a more patient-centred training to students and saw the graduation of 132 students in the first batch. These numbers have increased exponentially as more universities have rolled out the programme. The programme prepares students

to be clinically oriented and prepared to meet the needs of patients in terms of vaccination, patient counselling and drug monitoring.

Since the introduction of the HPV vaccine in 2006, few women in LMICs like Ghana, where the incidence and mortality rates are highest, have been vaccinated. Just 1% out of 59 million vaccinated women in the world are from a LMIC (24). A study carried out by Adageba et al, showed that there was very low knowledge of screening locations among some women in Ghana (25). This highlights the role of pharmacists in increasing the locations of education sources and prevention centres for women in Ghana. Community pharmacies provide proximity, close patient-personnel relationships and extended hours of operation which are crucial support frameworks required for the completion of multi-dose vaccines like the HPV vaccine. This unique role is being underutilized, putting more Ghanaian women at risk of cervical cancer every day. In Ghana, the Lady Pharmacists' Association (LAPAG) currently plays a key role in breast cancer awareness and screening exercises. This has been done in specific pharmacies and special outreach activities ensuring the privacy of the women. Their activities have also involved interacting with women in different social settings and sharing with them critical information concerning their health in general and breast cancer. These social settings include schools, faith institutions such as churches and sometimes market spaces. The awareness sessions are often held in groups, while screening and further counselling takes place on an individual basis and under strict patient confidence. Referrals are made to the closest treatment centre based on the location and preference of the patient, for the hospital to follow up with treatment. Extending these services to cover cervical cancer would be feasible if LAPAG members and pharmacists are provided with training and resources.

### Harnessing digital innovation for cancer prevention through pharmacies

The services and skills of pharmacists could be synergized with information communication systems given the widespread use of mobile technology. Telecommunication companies have been utilized to send out public health messages and could be used to send reminders and connect women and young girls in communities to the nearest pharmacy where screening and vaccination are conducted. This has been explored by Family Health International (FHI360-Ghana) in its community-based hypertension improvement project. Similar strategies have been explored in Rwanda, Zambia and South Africa through telehealth for cervical cancer screening and care to sensitize women to get screened and start treatment where necessary. This tricycle relationship serves to benefit all parties involved

while eliminating cervical cancer. Most women do not seek screening because of a lack of awareness and myths surrounding the disease, testing and treatment (25). Education in the community, delivered by pharmacists could seek to correct this situation and improve health-seeking behaviour of community members. This not only evolves the traditional roles of pharmacists to meet the digitalized world, but serves to bring the pharmacist closer to the patient.

### Pharmacists in quality accuracy at point of access

One important aspect of the success of any vaccination programme lies in cold chain management. The pharmacist is recognized as the expert in this. In Ghana, the importance of the pharmacist in the maintenance of medicines cold chain cannot be overemphasized. Effective cold chain management is crucial for HPV vaccine quality assurance. As pharmacists become involved in the vaccination process, the maintenance of the cold chain can be better supervised; especially in remote areas where storage may be prolonged before use, the pharmacist's expertise is crucial. A study jointly conducted by the Pharmacy Council and Pharmaceutical Society of Ghana with the support of Management Sciences for Health (MSH) shed more light on this. The study showed the dire need for pharmacists' integration in the cold chain maintenance of drugs during transportation and storage (26). In such systems and processes, the community pharmacist can make a significant contribution, particularly in relation to maintaining the cold chain until the use of the HPV vaccine, ensuring patients receive only viable vaccines.

### Contemporary concerns and challenges

In the present situation, concerns around profit-led motivations overtaking the ethical senses of pharmacists have often been raised. For example, customer demands and profits have been indicated to drive antibiotic dispensing in Tanzania (27). A strong regulatory procedure can safeguard against this. For instance, (i) adopting licensed centres into the national health insurance scheme will reduce the cost burden from the patient and further increase access; (ii) only registered facilities where due training of personnel at the facility has been carried out may undertake screening and vaccination. The setting up of protocols can also be established to guide pharmacists in implementing approaches. Such regulatory measures have been established in most states in the United States, where only approved community pharmacies with trained pharmacists are permitted to carry out screening and vaccinations. In these states, screening and treatment are carried out according to national and state guidelines.

Contrary to these concerns, pharmacists are an extremely

underutilized resource and the potential to work harmoniously with small-scale pharmacy businesses is an untapped asset. Community pharmacies in Ghana are self-sustaining and employ pharmacists without requiring government funding. Funding models could be established to provide reimbursement in return for the delivery of specific national health insurance services which would not necessarily require additional workforce investment by governments. This poses both a highly feasible and sustainable proposition for implementing a nationwide HPV plan.

### Concluding remarks

Amplifying the role of pharmacists as medical representatives through training to screen and treat HPV, act as a source of readily available information and effectively store vaccines is a crucial first step and a key opportunity for multisectoral collaboration, towards the common goal of eliminating cervical cancer. Pharmacists from almost all spheres of practice can play a significant role in reducing the cervical cancer burden. In settings where resources are limited, their roles are multiple and key. Their community contribution to the education of girls and women on cervical cancer and reproductive health, screening, and vaccination of especially high-risk patients, as well as supply regulation to ensure proper use and storage of vaccines are vital.

The role and inclusion of the community pharmacist in cancer control and care has been omitted for far too long (28). The day and age has arrived for the evolution and inclusion of the pharmacist, especially the community pharmacist, in oncology management of cervical cancer. ■

### Acknowledgements

*The authors would like to show their gratitude and appreciation to Dr Rev. Dennis Sena Awitty and Yvonne Yirenyiwa Esseku from Pharmaceutical Society of Ghana and Ghana College of Pharmacists respectively for kindly reviewing drafts of the article.*

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