



A Comprehensive  
Assessment of  
Breast and Cervical  
Cancer Control  
in Zambia



A Comprehensive Assessment of Breast and Cervical Cancer Control in Zambia.

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# Executive Summary



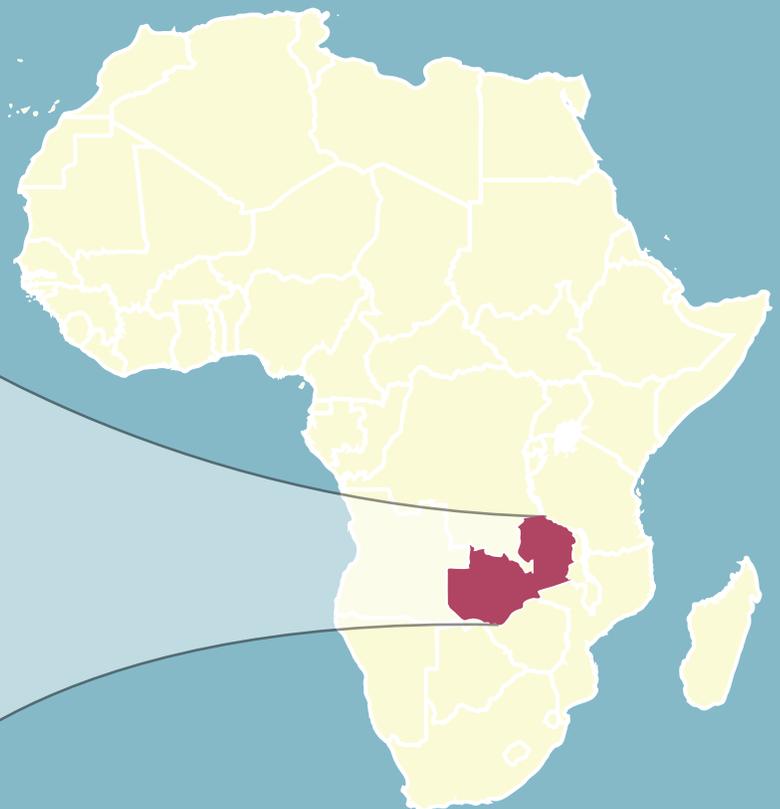
Cancer, among the world's leading causes of death, is projected to increase at a staggering rate. Population growth, aging, changing dietary patterns, health inequity, and specific exposures are thought to be major driving forces. Africa will be hardest hit, as it is estimated that by 2030 cancer will kill one million Africans each year. Within Africa, women will bear the heaviest

burden, because breast and cervical cancer are the most common malignancies and cause of cancer-related death on the continent.

This survey assesses the status of breast and cervical cancer control services in Zambia at the provincial level, and provides critical information for public policy and planning. By summarizing

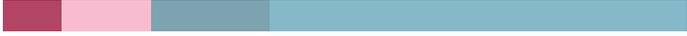
## Zambia's Provinces

- |                |            |
|----------------|------------|
| 1 Northwestern | 6 Lusaka   |
| 2 Western      | 7 Luapula  |
| 3 Copperbelt   | 8 Northern |
| 4 Central      | 9 Muchinga |
| 5 Southern     | 10 Eastern |



available resources and gaps in infrastructure and coverage, the report highlights areas where programming should be initiated, modified, and/or expanded to rapidly reduce breast and cervical cancer death rates.

Zambia has been at the forefront of cervical cancer prevention in resource-limited settings and has a strong program in every province. The primary mode of cervical screening is visual inspection with acetic acid (VIA), enhanced by digital photography of the cervix, followed by cryotherapy, cold coagulation, or loop electrosurgical excision procedure (LEEP). Invasive cancers are generally referred to the Cancer Diseases and University Teaching Hospitals (CDH and UTH) in the capital city, Lusaka. Breast cancer screening (mammography), early detection (clinical breast examination, diagnostic ultrasound), and biopsy services also exist at the provincial level, albeit on a much smaller scale. While incisional and excisional wedge resections and mastectomy can be performed in provinces where general surgeons are located, breast conserving (lumpectomy and sentinel lymph node mapping and sampling) and reconstructive surgery is not available. Similar to cervical cancer, radiation and chemotherapy treatment for breast cancer are only available at CDH and hormone therapy at CDH and UTH. Pathology services nationwide are woefully inadequate and will severely



This nation-wide survey is designed to provide critical information for planning the next steps in women's cancer control policies in Zambia.

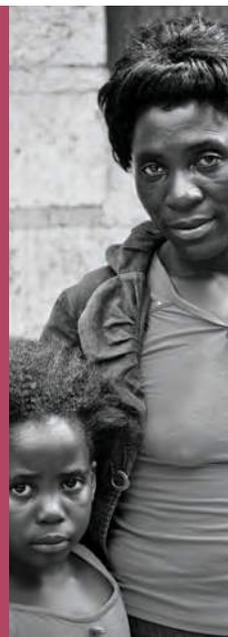


inhibit efforts to further expand cancer control services.

Much remains to be done to ensure that all women in Zambia are aware of and have routine access to cancer prevention, early detection and treatment services. There is a notable shortage of trained mid- and high-level healthcare providers who can provide advanced diagnostic and therapeutic services. Marked disparities between urban and rural service provision also remain.

This assessment reveals that women's cancer control services in Zambia may be significantly improved by:

1. Establishing a national women's cancer control coordinating center
2. Intensifying breast and cervical cancer public awareness campaigns
3. Transitioning from opportunistic to population-based cervical cancer screening
4. Applying for GAVI-supported HPV vaccines
5. Selecting and implementing a setting-appropriate model for breast cancer control
6. Supplementing existing pathology services through private sector collaborations and implementation of a national telepathology platform
7. Initiating training programs at the provincial level for early detection and treatment
8. Developing innovative financing approaches to improve sustainability



# Introduction



The global burden of cancer is growing steadily, with much of this burden falling on developing countries, where nearly 80% of disability adjusted life years lost to cancer occurs [1-4]. Although it is rising, breast cancer incidence in developing nations is much lower than that in developed nations. Death rates, however, remain the same. System level barriers to breast cancer care in these environments have been well documented and are primarily centered around the lack of accessible and affordable screening, early detection, diagnostic, and treatment facilities [5]. Other barriers include lack of awareness of the early signs and symptoms of breast cancer [6, 7], the belief that cancer has a supernatural origin [8] and is always fatal [9], the use of traditional therapies before or in lieu of seeking more modern treatment [10, 11],

and fear of spousal abandonment following mastectomy [12]. In 2010, there were an estimated 1,007 new breast cancer cases and 359 breast cancer deaths in Zambia. Although scarce, Zambia-specific data indicates that breast cancer incidence has been rising.

Cervical cancer is the most common cancer and the leading cause of cancer death among women in sub-Saharan Africa, accounting for one in five cases of cervical cancer reported globally [13, 14]. Zambia has disproportionately high rates of cervical cancer incidence and mortality [4, 15] (FIGURE 1), as well as a generalized HIV/AIDS epidemic [16]. This epidemic contributes heavily to the cervical cancer burden, as women infected with HIV are at increased risk of persistent high-risk human papillomavirus (HPV) infection, cervical cancer precursors, and more rapid progression from cancer precursors to invasive cancer [17-19]. Given the advances in HIV/AIDS treatment in sub-Saharan Africa, women are living longer with HIV, but unfortunately, they are dying from cervical cancer due to the failure in implementing screening programs.

Zambia has disproportionately high rates of cervical cancer incidence and mortality, as well as a generalized HIV/AIDS epidemic.

In response to the country's high cervical cancer burden, the Zambian Ministry of Health facilitated the initiation of the Cervical Cancer Prevention Program in Zambia (CCPPZ) in 2006, a donor-sponsored program implemented by the Centre for Infectious Disease Research in Zambia (CIDRZ). Since its inception, the CCPPZ

has provided cervical cancer screening based on a “see and treat” approach, where women are screened by visual inspection with acetic acid (VIA), followed by immediate ablation with cryotherapy (cryocautery) or cold coagulation (thermocoagulation), or referral for biopsy [20]. To date CAPPZ has screened over 200,000 women through a service platform provided within government-operated public health facilities and integrated within the HIV care and treatment infrastructure [21-23]. What started as a small NGO-sponsored project providing cervical cancer screening services to women infected with HIV has now become a national, government-operated cervical cancer prevention service program that accommodates all women, regardless of HIV status. By implementing a local solution of nurse-led screening and treatment, supported with affordable technology, the program has optimized the potential of the “see and treat” approach in a severely resource-constrained environment. Supported by the U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention (CDC), as well as a prominent public-private partnership - Pink Ribbon Red Ribbon – CAPPZ was able to build a highly efficient management and quality assurance infrastructure that underpins its programmatic activities.

More recently, the Zambian government has accelerated its efforts to expand breast cancer early detection and treatment capacity, including the initiation of a donor-sponsored effort with the Susan G. Komen Breast Cancer Foundation, known as the Breast Cancer Program in Zambia.

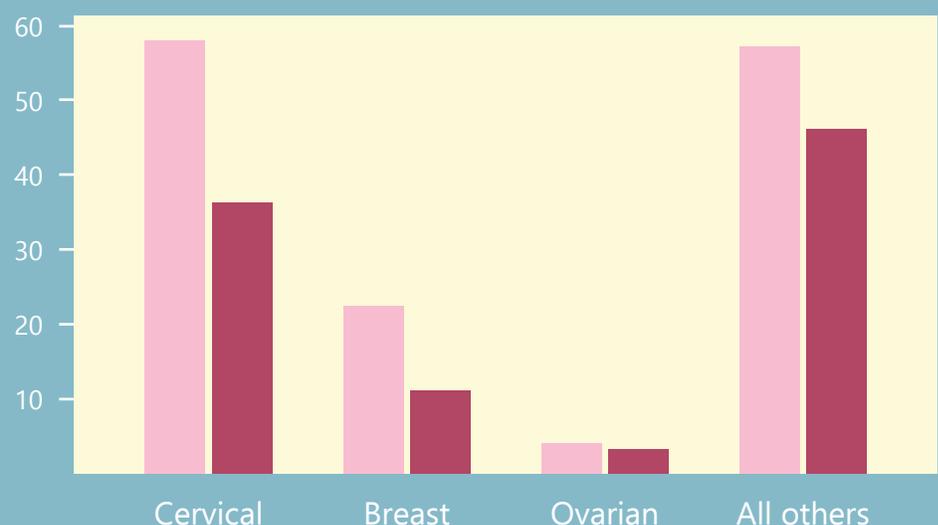
There are currently no national-level data that map women’s cancer control services in the country of Zambia.

Taken together these efforts consist of breast cancer public awareness campaigns led by community-based organizations, mammography where feasible, clinical breast examination (CBE) by nurses when performing cervical

FIGURE 1: Cancer Incidence and Mortality Among Zambian Women in 2012

Incidence\* Mortality\*

\*Age Standardized Rate (ASR) per 100,000



cancer screening, diagnostic ultrasound and ultrasound-guided biopsy of palpable breast masses by high-level healthcare providers in provincial and tertiary healthcare facilities, and referral for effective treatment. However, limited funding and the lack of an efficient delivery and management system preclude the routine availability of these services, except on a very small scale.

Despite these initiatives for women's cancers in Zambia, there are currently no national-

level data that map women's cancer control services in the country. Such data are needed to inform next steps in building capacity for cancer prevention and care. This assessment is designed to provide baseline information that is necessary for the development of a framework for women's cancer control in Zambia. This assessment also provides a basis for the design and implementation of future cancer control policies and programs, including human resource training, community education and mobilization, and setting-appropriate interventions to significantly reduce women's cancer mortality rates.

Right: Women wait for services outside a clinic in Monze, Southern Province.



Left: Traditional marriage counselors called Alangizi discuss delivering messages about cervical cancer to young brides.



Right: A nurse gives the first dose of the human papillomavirus (HPV) vaccine in Zambia on March 23, 2013.



Left: A nurse performs digital cervicography (a method for visualizing and magnifying the cervix) while a trainee looks on.



# Methods



The overall aim of this project was to quantify existing service delivery capacity and to identify gaps, challenges, and priority areas for building setting-appropriate and sustainable breast and cervical cancer control service platforms throughout Zambia.

The project provides an overview of services currently available for breast and cervical cancer screening, early detection, and treatment in Zambia, obtained through a nationwide survey. The survey included health facility assessments (HFAs) at all provincial hospitals in Zambia, as well as at the University Teaching Hospital (UTH) and Cancer Diseases Hospital (CDH) in the Lusaka Province. Provincial and tertiary facilities were the focus of the assessment because they have been identified by the Zambian National Cancer Control Strategic Plan as the highest priority facilities for expansion of cancer screening, early detection, and treatment services.

The survey team conducted site visits at 9 provincial hospitals and at the UTH and CDH. Specifically, the provincial hospitals surveyed were: Chinsali District (Muchinga), Chipata General (Eastern), Kabwe General (Central), Kasama General (Northern), Lewanika General (Western), Livingstone General (Southern), Mansa General (Luapula), Ndola Central (Copperbelt), and Solwezi General (Northwestern). Key-informant interviews were also conducted with all Provincial Health Offices

(PHOs). Fieldwork was completed between August 2014 and January 2015.

For each facility surveyed we assessed human resources (healthcare providers with specialized training in breast and cervical cancer screening, early detection, and treatment) and facility infrastructure (capacity, equipment, and supplies) to provide breast and cervical cancer screening, early detection, and treatment services, as well as HPV vaccination services. Relevant referral systems were also assessed. Concurrent with facility assessments, we conducted a structured interview with each PHO, which included questions on service provision, utilization, and costs to a patient for receiving breast or cervical cancer screening, early detection, diagnosis, and treatment in each district of the particular province. The availability of supplies and equipment was also evaluated.

We aimed to quantify existing service delivery capacity and to identify priority areas.

# Results



## Population

Zambia is divided into 10 provinces, comprised of 102 districts, with a total population of 14,891,010. This survey evaluated the availability of breast and cervical cancer screening, early detection, diagnosis, and treatment services. The target population for the assessment was women aged 25–59 years (n=2,208,870), who comprise ~15% of Zambia's population.

Provincial Health Offices reported 1,937 health facilities within the country, corresponding to a national rate of 1.3 health facilities per 10,000 (FIGURE 2). Although there are no established benchmarks for the ideal number of health facilities, hospitals, or hospital beds per 10,000 population, the World Health Organization reports an average of 0.8 hospitals per 10,000 for the African region [24].

FIGURE 2: Number of Health Facilities per 10,000 Population\*

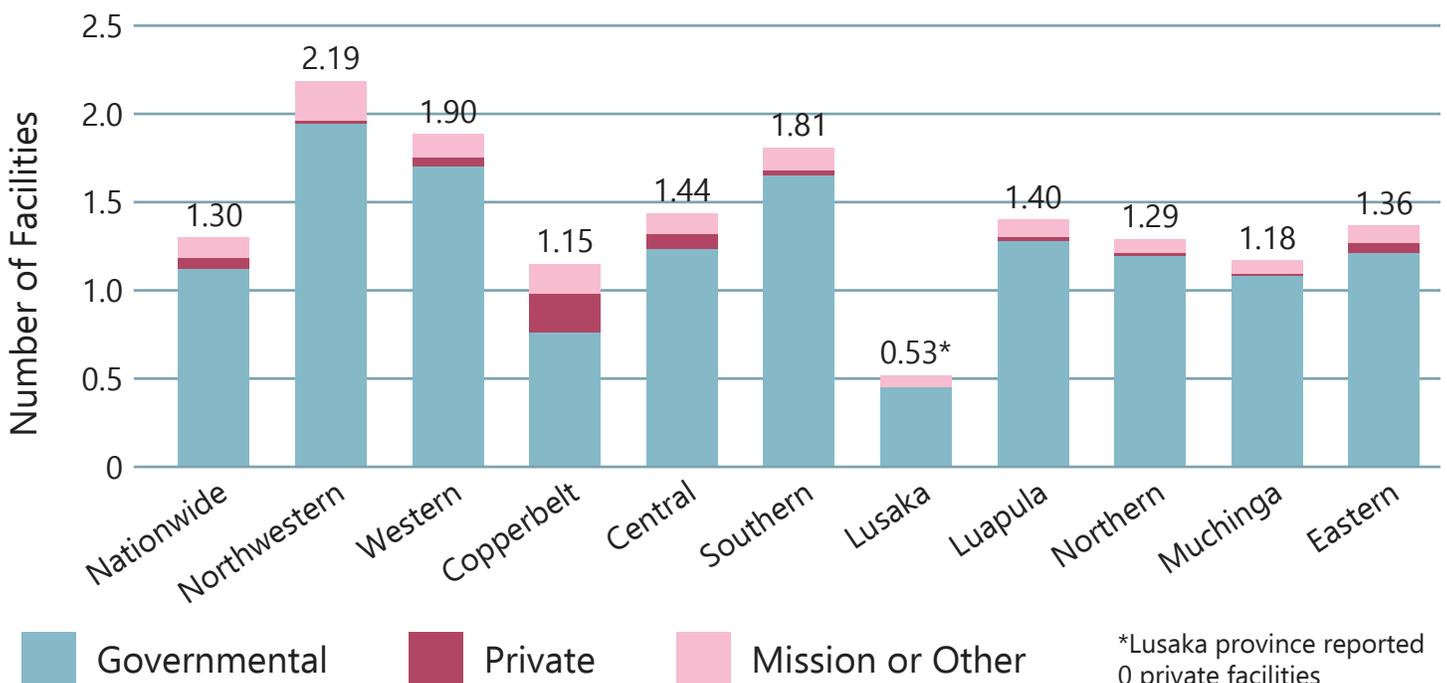
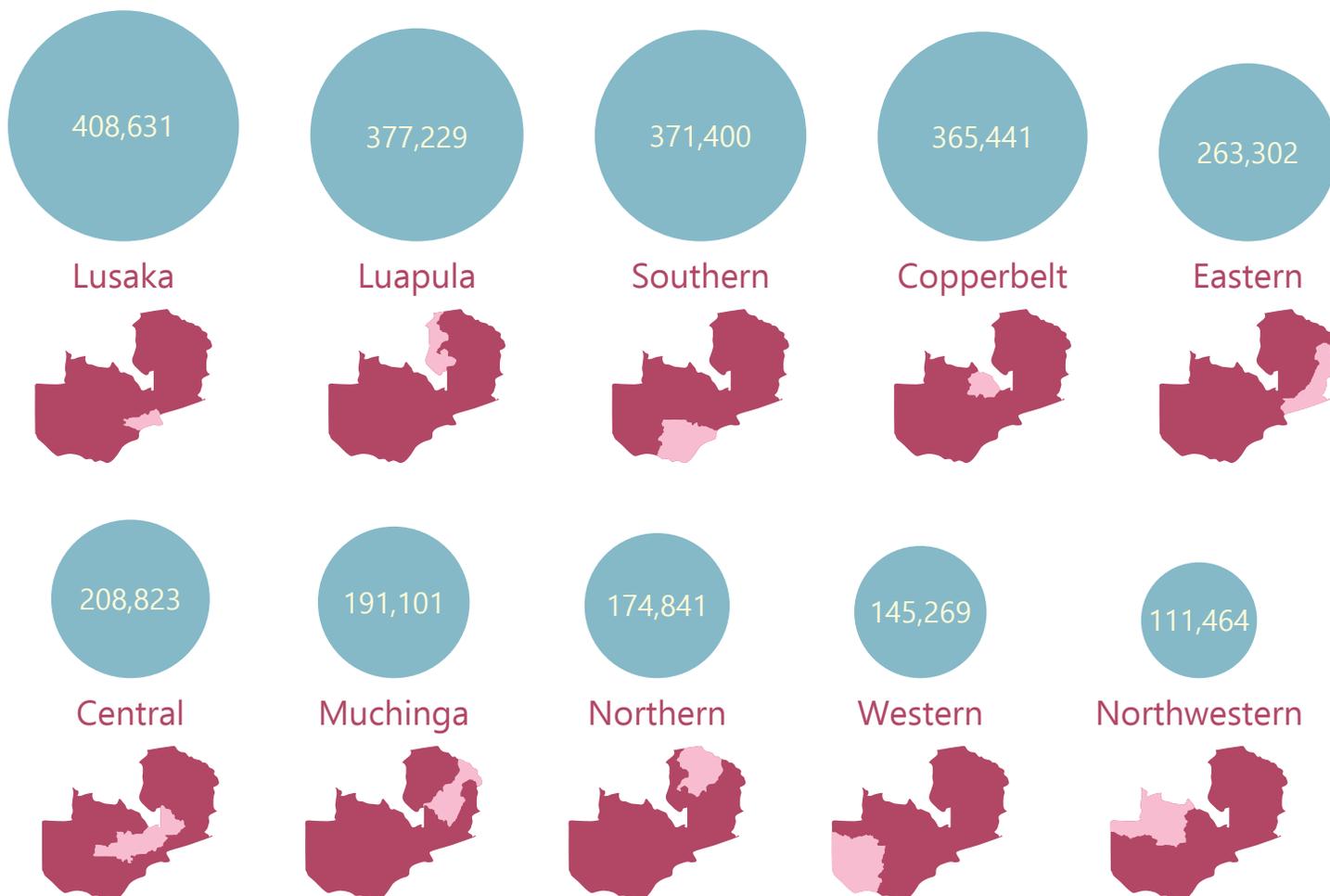


FIGURE 3: Number of Women Eligible for Breast and Cervical Cancer Screening and Early Detection by Province

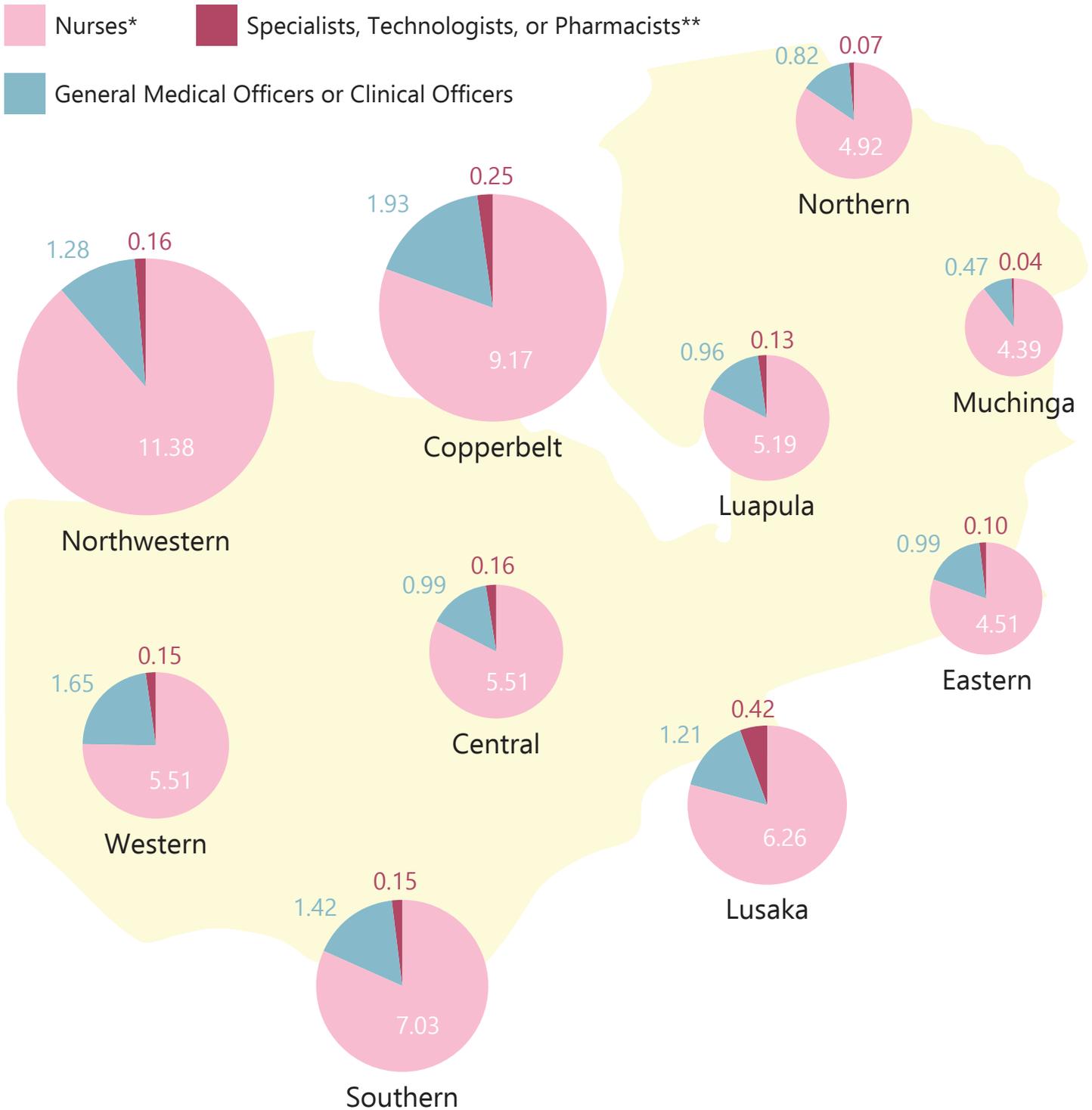


## Human Resources

Zambia's paucity of human resources for health limits access to breast and cervical cancer care. The Provincial Health Offices and hospitals surveyed reported a total of 11,746 healthcare workers, including nurses (n=9,609), clinical officers (n=1,179), general medical officers (n=665), specialists (n=104), technologists (n=109), and pharmacists or pharmacy technicians (n=80) (TABLE 1). Of these healthcare workers, 2,955 (26%) are employed in the provincial, tertiary, and specialty hospitals

(2,587 nurses, 249 general medical officers, and 119 clinical officers). The provincial and tertiary hospitals surveyed reported an additional 104 specialists (40 general surgeons, 28 gynecologists, 6 clinical oncologists, 14 anesthesiologists, 7 radiologists, 9 pathologists), and 109 technologists (36 anesthetists, 42 radiographers, 27 histology technologists, and 4 cytology technicians) (TABLE 1). The largest cadre of healthcare workers in the public sector is nurses, who account for 82% of the total healthcare workers, while specialists and technologists make up only 2%.

FIGURE 4: Number of Healthcare Personnel Employed per 10,000 Population by Province



The number of nurses, general medical officers, and clinical officers are from the Provincial Health Office; the number of specialists, technologists, and pharmacists are from the health facility assessments.

\*In 11 districts, the number of nurses was reported as “don’t know”, and are therefore missing in the total number of nurses. \*\*In Lusaka Province, specialist, technologist, and pharmacist reporting includes both UTH and CDH.

TABLE 1: Healthcare Personnel by Province

Province	Total	Nurses	GMOs*	Clinical Officers	Specialists	Technologists	Pharmacists
Nationwide	11,746	9,609	665	1,179	104	109	80
Northwestern	1,041	924	35	69	1	7	5
Western	713	537	53	108	2	10	3
Copperbelt	2,616	2,113	251	195	15	24	18
Central	987	817	25	122	5	10	8
Southern	1,432	1,171	103	133	6	5	14
Lusaka	2,174	1,725	63	269	66	37	14
Luapula	689	570	37	68	5	3	6
Northern	712	603	27	74	1	3	4
Muchinga	394	353	15	23	0	2	1
Eastern	988	796	56	118	3	8	7

\*GMOs = General Medical Officers

## Service Distribution

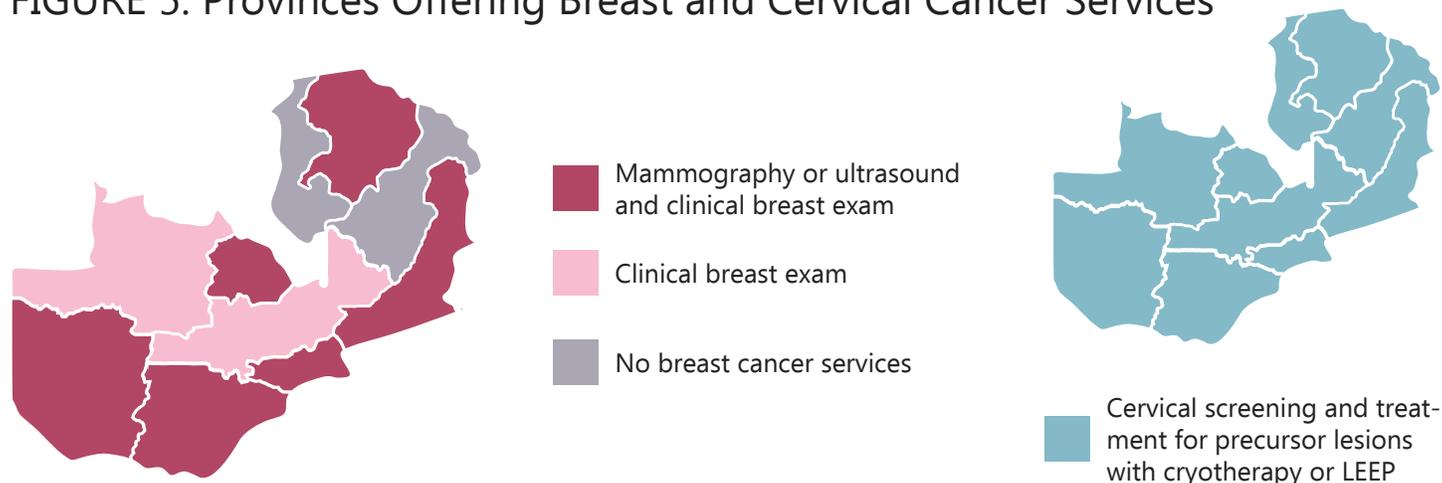


Breast cancer screening (mammography), early detection (clinical breast examination, diagnostic ultrasound), biopsy, and pathology services are not universally available; neither Muchinga nor

Luapula Provinces report offering of any of these services. Six out of 10 provinces offer CBE and either mammography or ultrasound (FIGURE 5).

All provincial hospitals provide free cervical cancer screening and treatment services or

FIGURE 5: Provinces Offering Breast and Cervical Cancer Services



refer to a nearby clinic; as a result, all provinces have at least one district providing cervical cancer prevention. FIGURE 5 shows the provinces providing cervical cancer screening

and treatment in at least one facility. With the exception of Muchinga Province, all provinces also have at least one district outside the capital that provides cervical cancer screening services.

## Breast Cancer Services

With respect to early detection and screening services, healthcare workers trained to perform either CBE, ultrasound, or mammography are present in 8 of 11 hospitals. Breast ultrasound is free to patients in 3 of the 8 hospitals. Mammography is free to patients at 6 of the 8 hospitals. Two of the hospitals surveyed do

not have the capacity for CBE, ultrasound, or mammography (FIGURE 6).

Three hospitals have dedicated breast specialty clinics, each of which offers CBE, mammography, ultrasound, and ultrasound-guided breast biopsy (fine needle aspiration and core needle biopsy). These clinics operate in Kabwe General Hospital (Central Province) one day per week,

TABLE 2: Distribution of Health Workforce Trained to Provide Breast Cancer Services

	Nurses			General Medical Officers					
	Employed	Trained in CBE	Provide CBE	Employed	Trained in CBE	Provide CBE	Trained in breast biopsy or FNA	Trained in wedge biopsy	Trained in mastectomy
Nationwide	2,587	628	137	249	104	91	26	39	4
Northwestern	227	3	6	9	0	9	1	1	1
Western	150	0	17	15	0	14	0	0	0
Copperbelt	365	365	57	86	8	0	8	8	0
Central	239	204	1	28	28	0	0	2	0
Southern	174	0	0	50	50	50	11	11	1
Lusaka	1,041	55	55	18	18	18	6	15	0
Luapula	105	0	0	19	0	0	0	2	2
Northern	114	1	1	15	0	0	0	0	0
Muchinga	37	0	0	3	0	0	0	0	0
Eastern	135	0	0	6	0	0	0	0	0

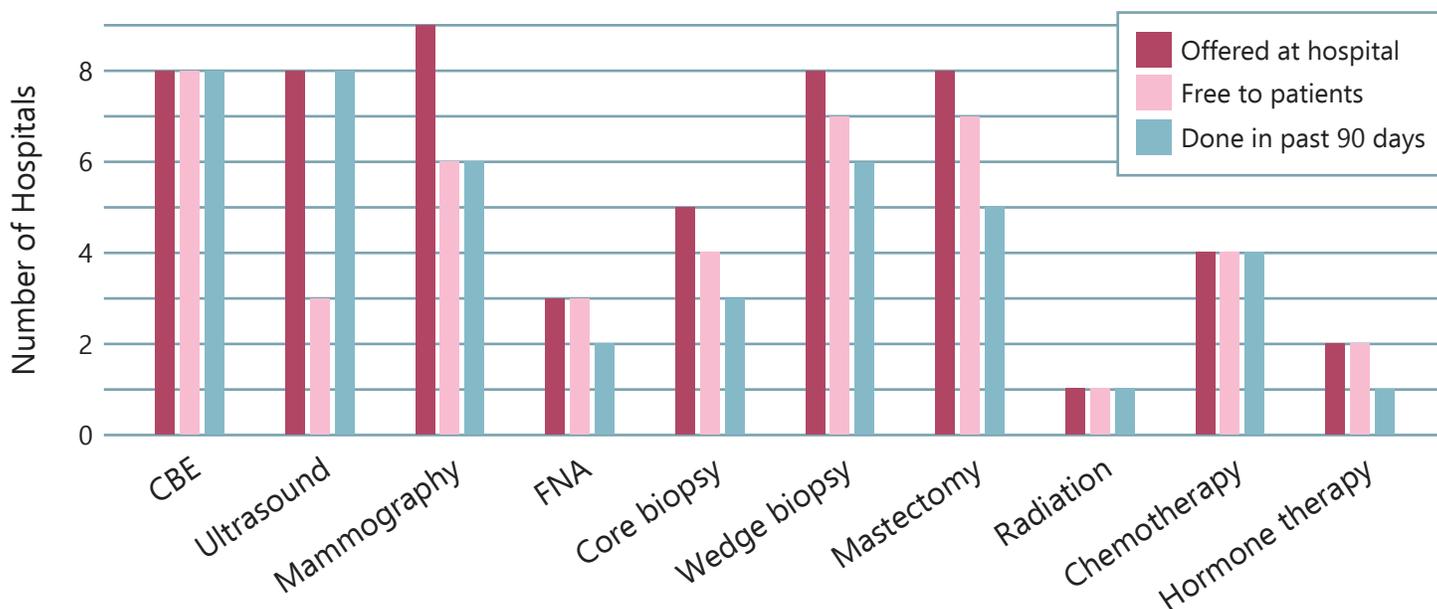
(TABLE 2 Continued)

	Employed	Trained in CBE	Provide CBE	Trained in breast biopsy or FNA	Employed	Trained in FNA	Trained in wedge biopsy	Trained in mastectomy
Nationwide	28	26	27	19	40	37	22	22
Northwestern	0	-	-	-	1	1	1	1
Western	0	-	-	-	1	0	0	0
Copperbelt	5	5	5	0	5	5	5	5
Central	2	2	2	0	2	2	2	2
Southern	2	1	2	1	1	1	1	1
Lusaka	18	18	18	18	26	26	11	11
Luapula	0	-	-	-	2	0	0	0
Northern	0	-	-	-	1	1	1	1
Muchinga	0	-	-	-	0	-	-	-
Eastern	1	0	0	0	1	1	1	1

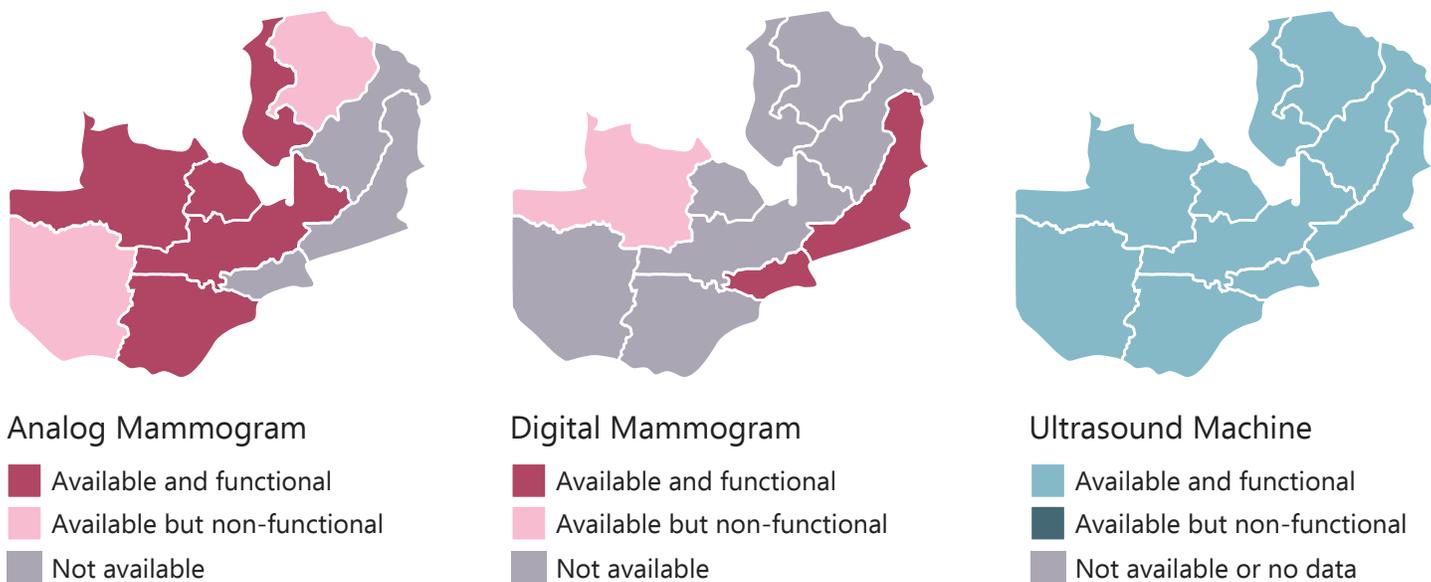
Gynecologists

General Surgeons

FIGURE 6: Breast Cancer Screening, Diagnosis, and Treatment Services at 11 Provincial, Tertiary, and Specialty Hospitals



**FIGURE 7: Availability and Functionality of Mammography and Ultrasonography by Province**



University Teaching Hospital (Lusaka Province) every weekday, and Cancer Diseases Hospital (Lusaka Province) three days per week. Only 5 of the 11 hospitals were able to report numbers of women assessed for breast cancer in the 12-month period preceding the survey. The total number reported was 1,414; of these, 839 (~60%) were screened at the Cancer Diseases Hospital.

The most common forms of breast cancer evaluation and treatment are incisional or excisional wedge biopsy and mastectomy, both of which are performed at 8 hospitals. One hospital charges for these services. Radiation therapy is only offered at the Cancer Diseases Hospital. Chemotherapy is offered at 4 hospitals, but mainly provided at the Cancer Diseases Hospital. Endocrine (hormonal) therapy is offered at the Cancer Diseases and University Teaching Hospitals.

Only a small proportion of the frontline healthcare workforce has been trained to provide breast cancer specialty services. Of 2,587

nurses and midwives in the hospitals surveyed, 628 (24%) are trained in CBE, but only 137 (5%) provide it. Of 249 General Medical Officers, 104 (42%) are trained in CBE and 91 (37%) provide it. The majority of gynecologists are trained in (26; 93%) and provide CBE (27; 96%). Among 40 general surgeons, 22 (55%) are trained in incisional or excisional wedge biopsy and mastectomy (TABLE 2).

In previous assessments of service availability in Zambia, lack of equipment and supplies has also been noted to limit service provision. In this assessment, 9 of the hospitals reported having at least 1 mammography machine (10 machines in total, with 6 hospitals with analog machines, 2 with digital machines, and 1 with both an analog and a digital machine). Of the 9 hospitals with mammography machines, 7 had machines that were functional. All facilities reported at least one functioning ultrasound machine (FIGURE 7). However, we did not verify the functional status of mammography and ultrasound machines, nor whether ultrasound machines were equipped with probes required for scanning the breast.

There were no major gaps reported in availability of surgical equipment or supplies for surgery or incisional/excisional breast biopsy. All surgical facilities reported available and functional anesthesia and IV equipment, laryngoscopes, oropharyngeal airways, endotracheal tubes, oxygen cylinders, operating tables, anesthetic facemasks, and suction

aspirators. All facilities also reported IV solution, scalpels, sutures, and disinfectant currently in stock. CDH reported having functional radiotherapy equipment. Once again, however, we did not verify the functional status, quality, or quantity of supplies or equipment.

## Cervical Cancer Services

All 11 facilities provide cervical cancer screening, diagnosis, or treatment of cancer precursors. In the 12-month period preceding the survey,

27,369 women were screened for cervical cancer across the 11 facilities surveyed. An additional 18,432 women were screened at CCPPZ-supported facilities not included in this survey (i.e., 45,801 women were screened in total).

TABLE 3: Distribution of Health Workforce Trained to Provide Cervical Cancer Services

	Employed	Trained in Pap	Trained in VIA	Trained in cryotherapy	Trained in LEEP	Trained in cervical biopsy	Provide cervical cancer screening	Employed	Trained in PAP	Trained in VIA	Trained in cryotherapy	Trained in LEEP	Trained in cervical biopsy	Provide cervical cancer screening
Nationwide	2,587	11	31	27	10	16	33	249	20	18	15	28	45	17
Northwestern	227	5	5	1	2	0	4	9	1	1	1	1	1	1
Western	150	0	4	4	0	0	3	15	0	2	2	2	2	2
Copperbelt	365	1	3	3	0	0	4	86	4	1	1	1	4	1
Central	239	1	1	1	0	4	5	28	0	1	1	1	1	3
Southern	174	0	3	3	3	3	2	50	0	2	2	2	15	2
Lusaka	1,041	4	5	5	5	9	5	18	15	4	4	15	15	2
Luapula	105	0	3	3	0	0	3	19	0	2	2	2	2	2
Northern	114	0	1	1	0	0	1	15	0	2	2	2	2	2
Muchinga	37	0	3	3	0	0	3	3	0	2	0	2	2	2
Eastern	135	0	3	3	0	0	3	6	0	1	0	0	1	0

Nurses

General Medical Officers

(TABLE 3 Continued)

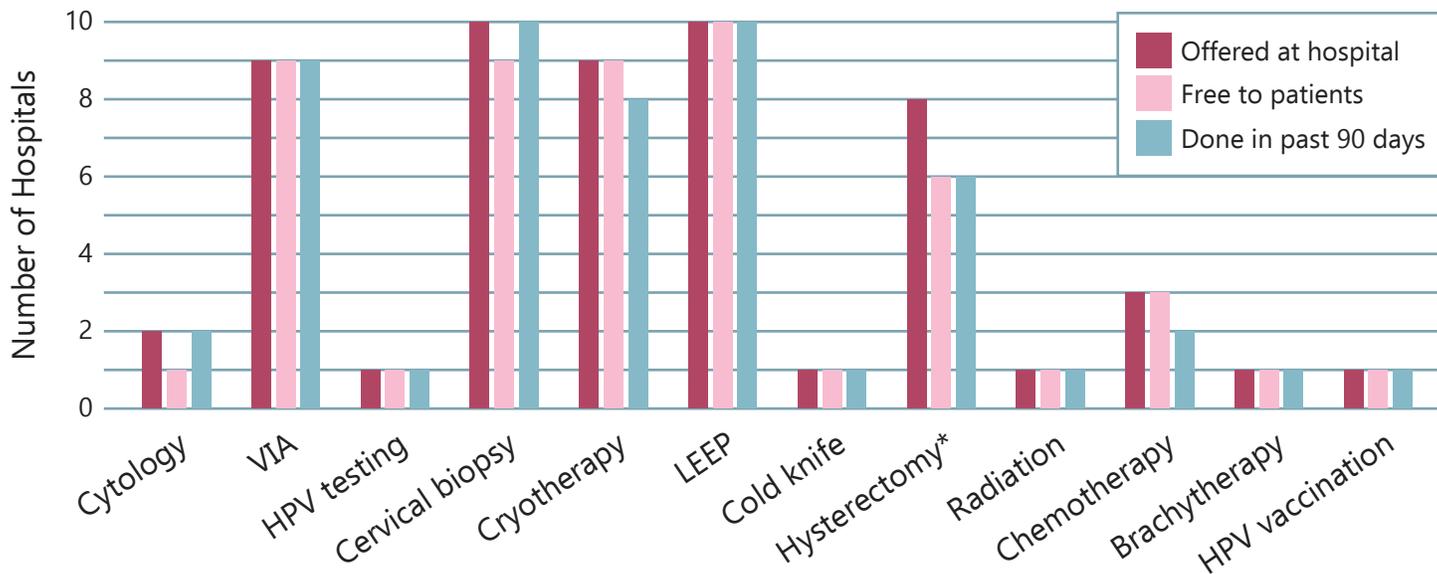
	Employed	Trained in Pap	Trained in VIA	Trained in cryotherapy and LEEP	Trained in cervical biopsy	Trained in cold knife conization	Trained in simple hysterectomy	Trained in radical hysterectomy	Provide cervical cancer screening	Employed	Trained in simple or extended hysterectomy
Nationwide	28	26	21	20	26	25	28	4	25	40	22
Northwestern	0	-	-	-	-	-	-	-	-	1	1
Western	0	-	-	-	-	-	-	-	-	1	0
Copperbelt	5	5	0	0	5	5	5	0	5	5	5
Central	2	2	2	1	2	2	2	0	2	2	2
Southern	2	1	0	0	1	0	2	2	0	1	1
Lusaka	18	18	18	18	18	18	18	2	18	26	11
Luapula	0	-	-	-	-	-	-	-	-	2	0
Northern	0	-	-	-	-	-	-	-	-	1	1
Muchinga	0	-	-	-	-	-	-	-	-	0	-
Eastern	1	0	1	1	0	0	1	0	0	1	1
Gynecologists										General Surgeons	

While Kabwe General Hospital does not provide cervical cancer screening, it refers patients to a nearby primary health center (Ngombe Clinic) which has an active “see and treat” program. Two facilities offer cytology-based cervical cancer screening and none currently offers HPV-based screening. Nine facilities offer VIA, which is free of charge to patients in all and is conducted primarily by nurses and midwives. Cervical punch biopsy is offered in 10 facilities. For cervical cancer precursors there are three types of treatment available: 9 of the facilities surveyed provide cryotherapy, 10 provide loop electrical excision procedure (LEEP), and 1 offers cold-knife cervical conization. For cases of early invasive cervical cancer, simple or extended hysterectomy is available at 8 facilities and radical hysterectomy with lymphadenectomy

at UTH and in Southern Province. As with breast cancer treatment, radiation is available only at CDH. Chemotherapy for cervical cancer treatment is offered at UTH, CDH, and Livingstone General Hospital, but primarily administered at CDH. Brachytherapy is available only at CDH. Chemoradiation and brachytherapy services are offered free of charge to patients. HPV vaccination is not currently offered at any of these hospitals, but was available in four districts in Lusaka Province through an externally-funded demonstration project.

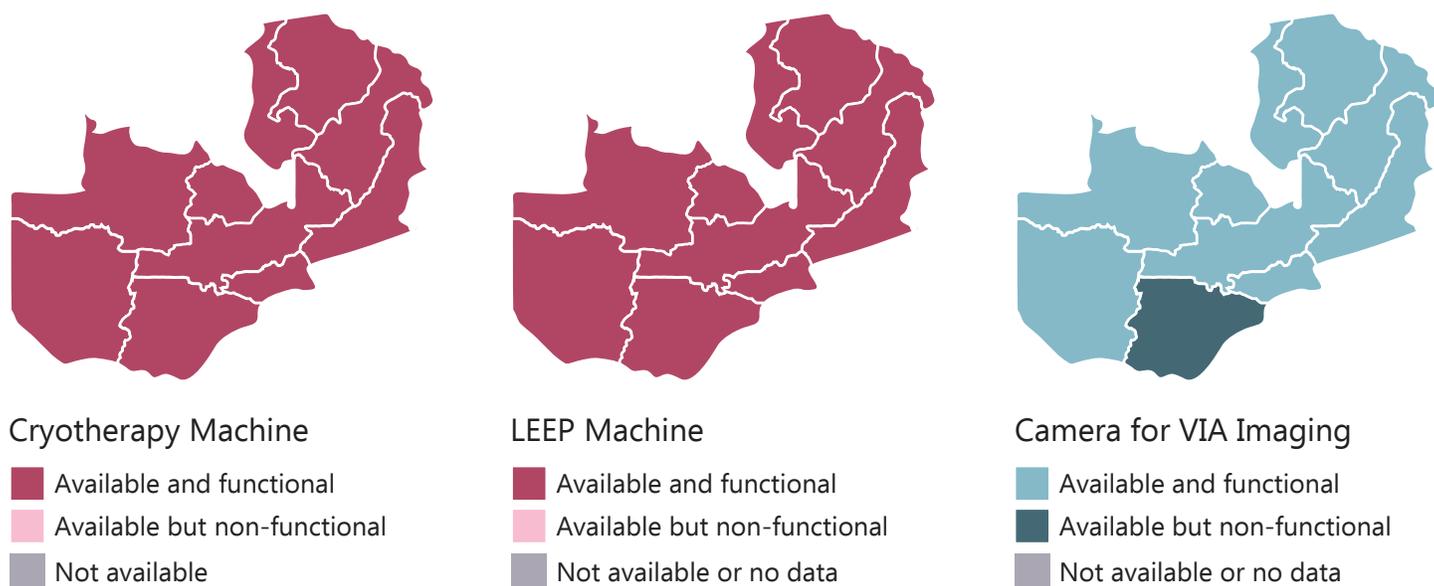
Cervical cancer prevention and treatment capacity is distributed among the healthcare workforce in the following manner: among the 2,587 nurses and midwives, 11 (<1%) are trained to perform Pap smears and 31 (1%) VIA, 27

FIGURE 8: Cervical Cancer Screening, Diagnosis, and Treatment Services at 11 Provincial, Tertiary, and Specialty Hospitals



\*Simple or extended

FIGURE 9: Availability and Functionality of Cameras for VIA, Cryotherapy Machines, and LEEP Machines by Province



(1%) cryotherapy, and 10 (<1%) LEEP. Only 4 (<1%) nurses are trained in HPV testing. Overall, only 33 (1%) nurses and midwives are involved in the provision of cervical cancer prevention services. Of 249 General Medical Officers, 20 (8%) are trained to perform Pap smears and 18 (7%) VIA, 15 (6%) cryotherapy, 28 (11%) LEEP, and 45 (18%) cervical punch biopsies. Overall, 17 (7%) GMOs are involved in the provision of cervical cancer prevention services. Almost all of the gynecologists are trained to perform Pap smears and cold-knife conization, 21 VIA, and 20 cryotherapy and LEEP. Overall, 25 (89%) gynecologists are involved in the provision of cervical cancer prevention services. Of 40 general surgeons, 22 (55%) are trained in simple

or extended hysterectomy. In some facilities, hysterectomies are conducted by visiting gynecologists or expatriate gynecological surgeons, who are not counted in the number of staff at that facility (TABLE 3).

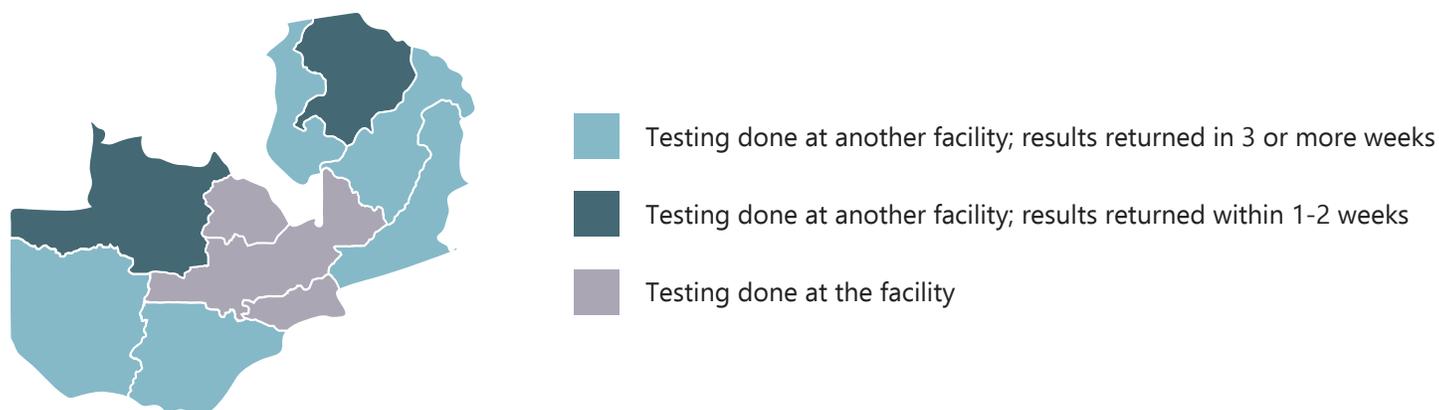
In this assessment, 10 of the hospitals reported having at least 1 cryotherapy machine and at least 1 LEEP machine. Nine hospitals had at least one functioning digital camera for VIA. (One additional hospital had a non-functioning camera.) Nine hospitals had lithotomy beds, and all hospitals reported having at least 1 speculum. All facilities that perform VIA screening reported having 5% acetic acid for VIA in stock (FIGURE 9).

## Pathology Services

Three hospitals reported having pathology labs at their facility: UTH, Ndola Central Hospital, and Kabwe General Hospital. Patients pay for pathology services at these facilities. Hospitals without pathology labs send their specimens to private facilities (n=6) and/or UTH (n=7). Of the hospitals that send specimens to other facilities, 2 hospitals usually receive results within 1–2 weeks and 6 hospitals receive results within 3 or

more weeks. In the 12-month period preceding the survey, the UTH Pathology Lab processed 1,800 specimens, Ndola Central Hospital Pathology Lab processed 2,325 specimens, and the Kabwe General Hospital Pathology Lab processed 660 specimens. Key pathology supplies such as 10% buffered formalin, H&E and Geimsa stain solutions, pipettes, and microtome blades were available. All three facilities' centrifuges, microtomes, and tissue processors were reported as functional.

FIGURE 10: Turnaround Time for Pathology Specimens



# Summary of Findings



This report highlights important cervical cancer prevention gains that have been made in Zambia since the establishment of CCPPZ in 2006. Notably, cervical cancer screening services are provided in all 10 provinces of Zambia, with over 45,000 Zambian women receiving screening services in the 12-month period preceding our survey. By contrast, breast cancer screening and early detection services are available in 8 of Zambia's 10 provinces, but only 1,414 women accessed them in the year preceding the survey. These numbers include women attending both fixed and mobile clinics.

Several challenges common to both cervical and breast cancer services emerged: (i) utilization of screening and early detection services remains low, particularly for breast cancer; (ii) the capacity of provincial- and tertiary-level facilities to further expand and improve the quality of women's cancer services is severely curtailed by a lack of appropriately trained mid- and high-level health personnel, limited funding, and pathology services; (iii) existing breast cancer screening and early detection services are not well coordinated; and (iv) advanced therapies (chemotherapy, radiation and surgery) are concentrated within Lusaka Province.

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# Recommendations Based on the Survey Findings

## Short-Term Programmatic Recommendations

1. Convene a Breast Cancer Control Consultative Meeting to determine the best model for breast cancer control in Zambia, based on burden of disease, scientific evidence, costs, available resources, potential for scaling, and sustainability.
2. Create cadres of Women's Cancer Control Trainer of Trainers (TOT) in each province, who will disseminate the following skills to provincial and district level health facilities, where appropriate:
  - Women's cancer health promotion through public awareness campaigns and educational outreach initiatives;
  - Ablation and local excision of cervical cancer precursors;
  - Clinical breast examination and diagnostic breast ultrasound;
  - Ultrasound-guided breast biopsy (core needle biopsy and fine needle aspiration);
  - Point of care touch preparation cytology of breast biopsy specimens.
3. Assess existing pathology and laboratory capacity in the private and public sectors; explore the options of contracting private sector pathology services.
4. Develop a contextually-appropriate HPV vaccine roll-out plan and submit to immunization partners such as GAVI.





## Medium-Term Programmatic Recommendations

1. Convene a Cervical Cancer Control Consultative Meeting to determine how best to transition the cervical cancer prevention program from opportunistic to population-based screening, once again considering the burden of disease, scientific evidence, costs, available resources, potential for scaling, and sustainability.
2. Establish a Women's Cancer Surgical Training Institute at UTH to fulfill the need for surgical oncologists.
3. Expand the number of training positions (slots) and faculty in the post-graduate pathology training program at UTH; collaborate with partners to implement a national telepathology service platform.

## Long-Term Programmatic Recommendations

1. Expand and strengthen the present national cancer registry to monitor trends in cancer incidence, as well as to project future funding and service delivery needs.

## Administrative Recommendations

1. Provide adequate administrative and financial support support to ensure the continuation of HPV vaccination beyond the vaccine donation program.
2. Establish an Office of Women's Cancer Control Services responsible for the oversight and coordination of all aspects of women's cancer screening, early detection, treatment and pathology services in the nation. The office should be supported by the following:
  - Clinical Coordinator of Women's Cancer Control Services – responsible for the coordination and management of all women's cancer training and clinical activities in the nation;
  - Provincial Women's Cancer Control Specialists (one per province) – responsible for the coordination, implementation, monitoring and evaluation of women's cancer screening, early detection, treatment and pathology services at the provincial level.

# References



1. Bray F, Ren JS, Masuyer E, Ferlay J. Global estimates of cancer prevalence for 27 sites in the adult population in 2008. *Int J Cancer* 2013,132:1133-1145.
2. Sylla BS, Wild CP. A million africans a year dying from cancer by 2030: what can cancer research and control offer to the continent? *Int J Cancer* 2012,130:245-250.
3. Jemal A, Bray F, Center MM, Ferlay J, Ward E, Forman D. Global cancer statistics. *CA Cancer J Clin* 2011,61:69-90.
4. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. Estimates of worldwide burden of cancer in 2008: GLOBOCAN 2008. *Int J Cancer* 2010,127:2893-2917.
5. Kingham TP, Alatise OI, Vanderpuye V, Casper C, Abantanga FA, Kamara TB, et al. Treatment of cancer in sub-Saharan Africa. *Lancet Oncol* 2013,14:e158-167.
6. Machlin A, Wakefield M., Spittal M., Hill D. Cancer-related beliefs and behaviours in eight geographic regions.: [http://www.uicc.org/sites/main/files/private/survey\\_report.pdf](http://www.uicc.org/sites/main/files/private/survey_report.pdf) Accessed: January 2015.
7. Maree J, Wright S, Lu X. Breast cancer risks and screening practices among women living in a resource poor community in Tshwane, South Africa. *Breast J* 2013,19:453-454.
8. Opoku SY, Benwell M, Yarney J. Knowledge, attitudes, beliefs, behaviour and breast cancer screening practices in Ghana, West Africa. *Pan Afr Med J* 2012,11:28.
9. De Ver Dye T, Bogale S, Hobden C, Tilahun Y, Hechter V, Deressa T, et al. A mixed-method assessment of beliefs and practice around breast cancer in Ethiopia: implications for public health programming and cancer control. *Glob Public Health* 2011,6:719-731.
10. O'Brien KS, Soliman AS, Annan K, Lartey RN, Awuah B, Merajver SD. Traditional herbalists and cancer management in Kumasi, Ghana. *J Cancer Educ* 2012,27:573-579.
11. Ezeome ER. Delays in presentation and treatment of breast cancer in Enugu, Nigeria. *Niger J Clin Pract* 2010,13:311-316.
12. Odigie VI, Tanaka R, Yusufu LM, Gomna A, Odigie EC, Dawotola DA, et al. Psychosocial effects of mastectomy on married African women in Northwestern Nigeria. *Psychooncology* 2010,19:893-897.
13. Institute for Health Metrics and Evaluation. The Challenge Ahead: Progress and setbacks in breast and cervical cancer.: Seattle, WA: IHME, 2011. [http://www.healthdata.org/sites/default/files/files/policy\\_report/2011/TheChallengeAhead/IHME\\_ChallengeAhead\\_FullReport.pdf](http://www.healthdata.org/sites/default/files/files/policy_report/2011/TheChallengeAhead/IHME_ChallengeAhead_FullReport.pdf) Accessed: January 2015.
14. Louie KS, de Sanjose S, Mayaud P. Epidemiology and prevention of human papillomavirus and cervical cancer in sub-Saharan Africa: a comprehensive review. *Trop Med Int Health* 2009,14:1287-1302.
15. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, et al. GLOBOCAN 2012 v1.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013. Available from: <http://globocan.iarc.fr>, accessed on 12 January 2015.
16. UNAIDS. Global Report on the AIDS Epidemic 2013: [http://www.unaids.org/en/media/unaids/contentassets/documents/epidemiology/2013/gr2013/UNAIDS\\_Global\\_Report\\_2013\\_en.pdf](http://www.unaids.org/en/media/unaids/contentassets/documents/epidemiology/2013/gr2013/UNAIDS_Global_Report_2013_en.pdf) Accessed: January 2014.
17. Denny LA, Franceschi S, de Sanjose S, Heard I, Moscicki AB, Palefsky J. Human papillomavirus, human immunodeficiency virus and immunosuppression. *Vaccine* 2012,30 Suppl 5:F168-174.
18. Singh DK, Anastos K, Hoover DR, Burk RD, Shi Q, Ngendahayo L, et al. Human papillomavirus infection and cervical cytology in HIV-infected and HIV-uninfected Rwandan women. *J Infect Dis* 2009,199:1851-1861.
19. Denny L, Boa R, Williamson AL, Allan B, Hardie D, Stan R, et al. Human papillomavirus infection and cervical disease in human immunodeficiency virus-1-infected women. *Obstet Gynecol* 2008,111:1380-1387.
20. Pfaendler KS, Mwanahamuntu MH, Sahasrabuddhe VV, Mudenda V, Stringer JS, Parham GP. Management of cryotherapy-ineligible women in a "screen-and-treat" cervical cancer prevention program targeting HIV-infected women in Zambia: lessons from the field. *Gynecol Oncol* 2008,110:402-407.
21. Parham GP MM, Sahasrabuddhe VV, Westfall AO, King KE, Chibwesa C, Pfaendler KS, Mkumba G, Mudenda V, Kapambwe S, Vermund SH, Hicks ML, Stringer JSA, Chi BH. Implementation of cervical cancer prevention services for HIV-infected women in Zambia: measuring program effectiveness. *HIV Therapy* 2010,4:713-722.
22. Mwanahamuntu MH, Sahasrabuddhe VV, Pfaendler KS, Mudenda V, Hicks ML, Vermund SH, et al. Implementation of 'see-and-treat' cervical cancer prevention services linked to HIV care in Zambia. *AIDS* 2009,23:N1-5.
23. Mwanahamuntu MH, Sahasrabuddhe VV, Stringer JS, Parham GP. Integrating cervical cancer prevention in HIV/AIDS treatment and care programmes. *Bull World Health Organ* 2008,86:D-E.
24. World Health Organization. World Health Statistics 2014. [http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671\\_eng.pdf?ua=1](http://apps.who.int/iris/bitstream/10665/112738/1/9789240692671_eng.pdf?ua=1) Accessed: March 2015.

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