

15.232 Business Model Innovation: Global Health in Frontier Markets

Date: 09/12/2013

Subject: Cervical Cancer, why the most preventable cancer still a burden?

1. Background

Cancer is a generic term used for diseases in which abnormal cells divide without control and are able to invade other tissues¹. Cancer cells can spread to other parts of the body through the blood and lymph systems. When this happened is referred to as metastasis. Cancer is not just one disease but many diseases. Most cancers are named for the organ or type of cell in which they start. For instance, we call Cervical Cancer because starts in the cervix. The cervix is the lower, narrow end of the uterus.²

2. The Problem

Cancer is a leading cause of death worldwide and accounted for 7.6 million deaths (around 13% of all deaths) in 2008. The main types of cancer are: lung (1.37 million deaths); stomach (736 000 deaths); liver (695 000 deaths); colorectal (608 000 deaths); breast (458 000 deaths); cervical cancer (275 000 deaths). About 70% of all cancer deaths occurred in low- and middle-income countries. Deaths from cancer worldwide are projected to continue to rise to over 13.1 million in 2030 (WHO)

It is clear that the Non-Communicable Disease (NCD) such as cancer will be a huge economic burden in the emerging markets. However there is a lot of opportunity to improve the access to healthcare and mitigate the economic burden. This assumption come by considering that more than 30% of the cancer death could be prevented by modifying or avoiding key risk factors.

3. Cervical Cancer

- *Epidemiology*: Worldwide is the second most common³ and the fifth deadliest cancer in women affecting 500,000 women and kills 250,000 each year. Over 85% of cervical cancer cases and deaths occur in developing countries. The disproportionate burden of cervical cancer is highest in countries where effective screening, diagnosis, and treatment is limited or absent. In several developed countries, where screening programs that have been linked to effective treatment have long been established, cervical cancer rates have decreased by as much as 65%⁴.
- *Clinical History*: Virtually all cases are linked to persistent infection with human papillomavirus (HPV). The early stages of cervical cancer may be completely asymptomatic; signs or symptoms of vaginal bleeding, contact bleeding, or (rarely) a vaginal mass may indicate the presence of malignancy. Also, moderate pain during sexual intercourse and vaginal discharge can be symptoms of cervical cancer.

¹ <http://www.who.int/mediacentre/factsheets/fs297/en/index.html>

² <http://www.globalhealth.gov/global-health-topics/non-communicable-diseases/cc.html>

³ Armstrong EP (April 2010). "Prophylaxis of Cervical Cancer and Related Cervical Disease: A Review of the Cost-Effectiveness of Vaccination Against Oncogenic HPV Types". *Journal of Managed Care Pharmacy* **16** (3): 217–30. PMID 20331326.

⁴ <http://www.cdc.gov/globalhealth/ncd/cervicalcancer.htm>

- *Treatments:* Depends of the stage of the disease. Include use of radiation, chemotherapy, hysterectomy and local surgical procedures such as a loop electrical excision procedure (LEEP) or cone biopsy.⁵
- *Prevention:*
 - Pap-smear screening that can detect cervical cancer and pre-cancerous cervical lesions is available for limited resource settings in middle- and high-income settings
 - Visual inspection with acetic acid (VIA) in low-resource settings
 - Vaccination
 - Use of condoms

4.Caviets

Why cervical cancer, a preventable cancer still is an economic burden?

Some possible reasons include:

- ✓ Lack of education program that leads to lack of awareness
- ✓ Taboos against vaccination (including westerns countries and emerging countries) – moral hazard problems
- ✓ Lack of training of professionals to interpreted pap smear slides
- ✓ Lack of infra structure; difficult access to outreach underserve communities
- ✓ Lack of consistent and efforts of screening programs
- ✓ Lack of access to standard of care treatment
- ✓ Operation: vaccination consist in three doses (one each month)
- ✓ Cost: high price of each dose of HPV vaccine (\$150/dose)

⁵ <http://www.nlm.nih.gov/medlineplus/ency/article/000893.htm>

MIT OpenCourseWare
<http://ocw.mit.edu>

15.232 Business Model Innovation: Global Health in Frontier Markets
Fall 2013

For information about citing these materials or our Terms of Use, visit: <http://ocw.mit.edu/terms>.