

# Lessons from work on women's cancers for broader NCD prevention and management

Collaborating for Health Breakfast Seminar

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# Agenda

1. PATH – a quick organizational overview
2. Non-communicable disease (NCD) burden
3. NCD prevention and management in developing countries—  
cervical cancer example
4. Opportunities for diabetes diagnosis and control
5. Conclusions and resources

# PATH - Seattle-based NGO whose vision is:

A world where innovation ensures that health is within reach for everyone.



# PATH's mission

Improving the health of people around the world by:

- § Advancing technologies
- § Strengthening systems
- § Encouraging healthy behaviors

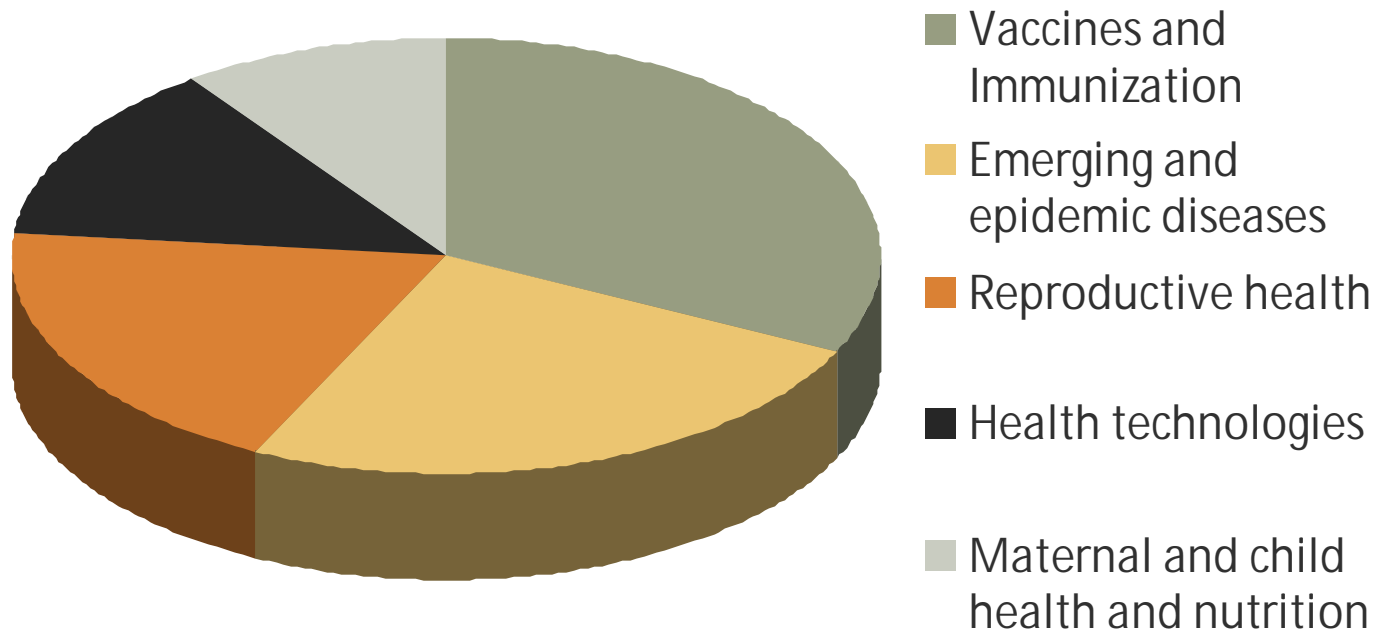


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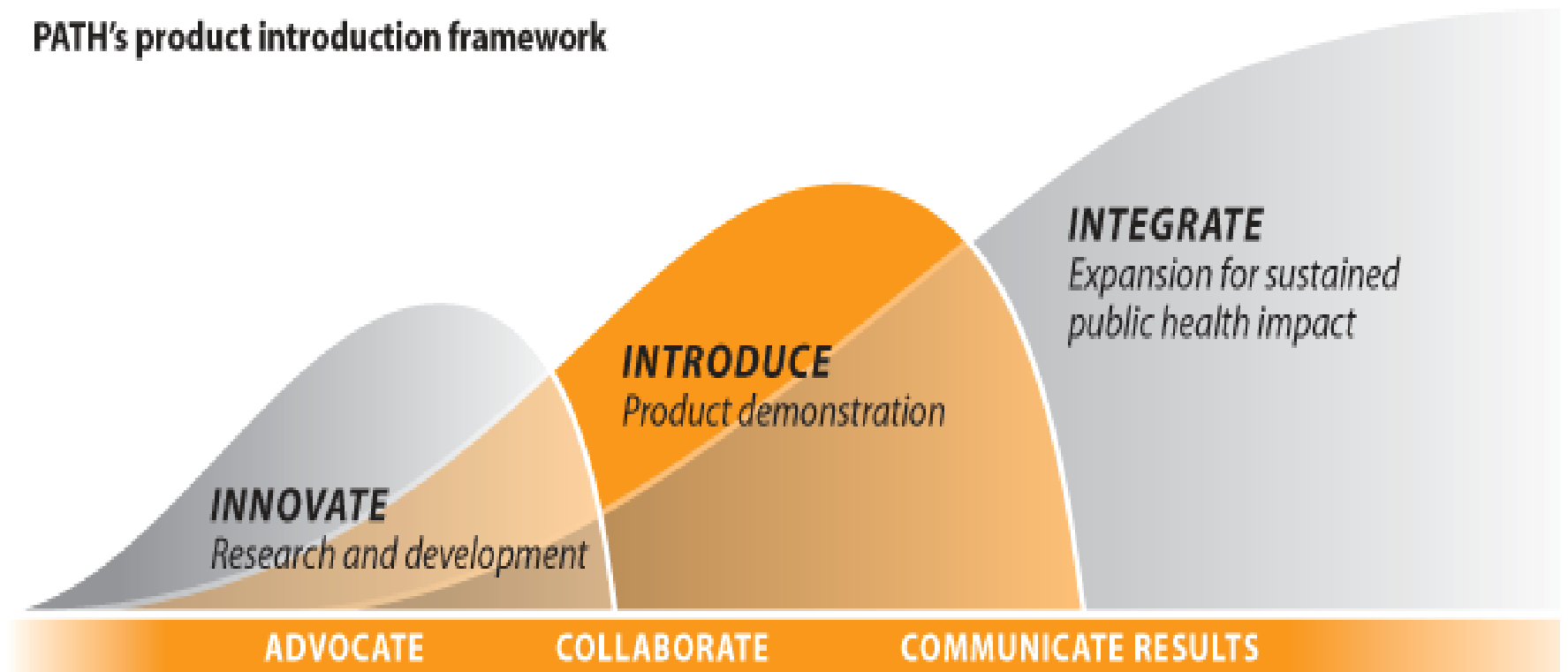
# 2010 in review

## Use of funds by health area



# Spanning the spectrum of product development and introduction

## PATH's product introduction framework



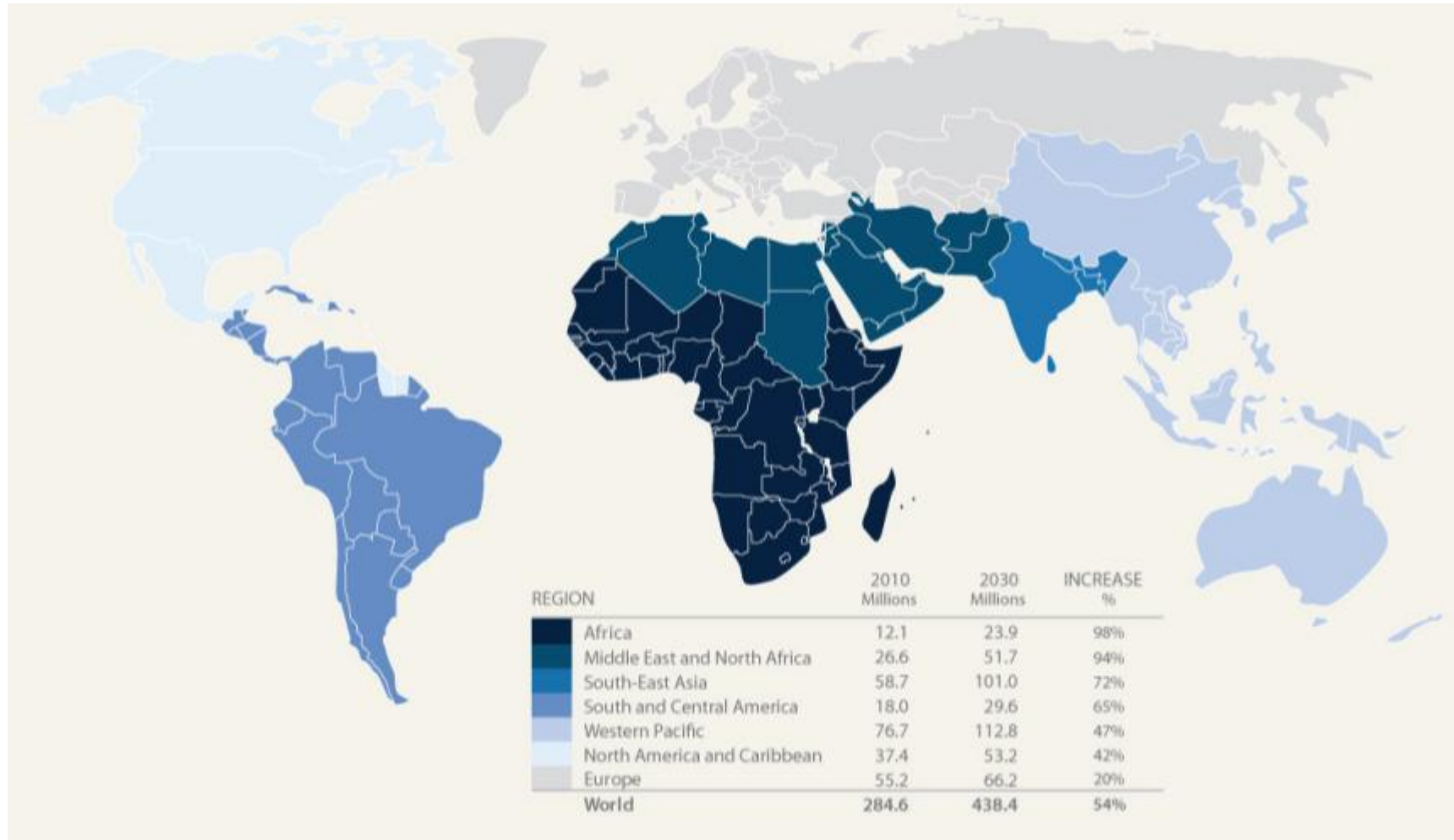
# Non-communicable disease (NCD) situation worldwide

- 60% of all deaths worldwide each year are due to chronic disease
  - Cardiovascular diseases
  - Diabetes
  - Cancer
  - Chronic respiratory diseases
- 80% of chronic disease deaths each year occur in developing countries, where people
  - Develop diseases at younger ages
  - Suffer longer
  - Die sooner

And where chronic diseases can be linked with HIV/AIDS, TB, malaria, etc

# NCD situation worldwide

- Global projections for the number of people with diabetes (20-79 years), 2010-2030

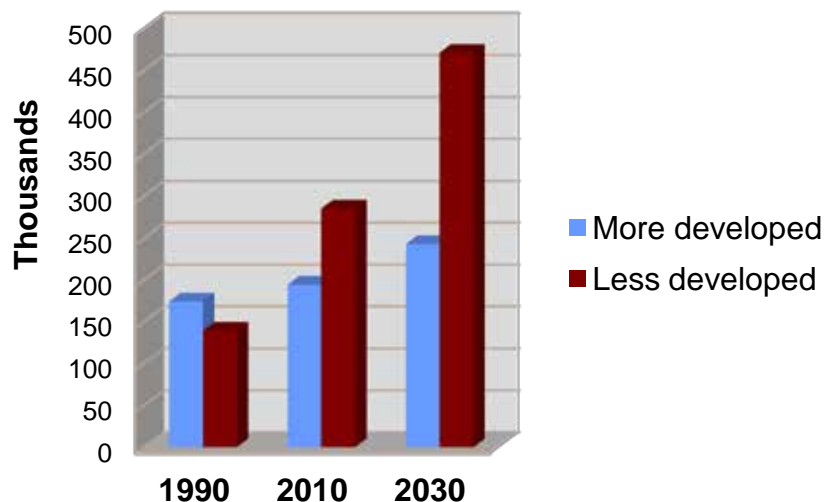


Source: *IDF Diabetes Atlas 4<sup>th</sup> Ed.*, International Diabetes Federation, 2009

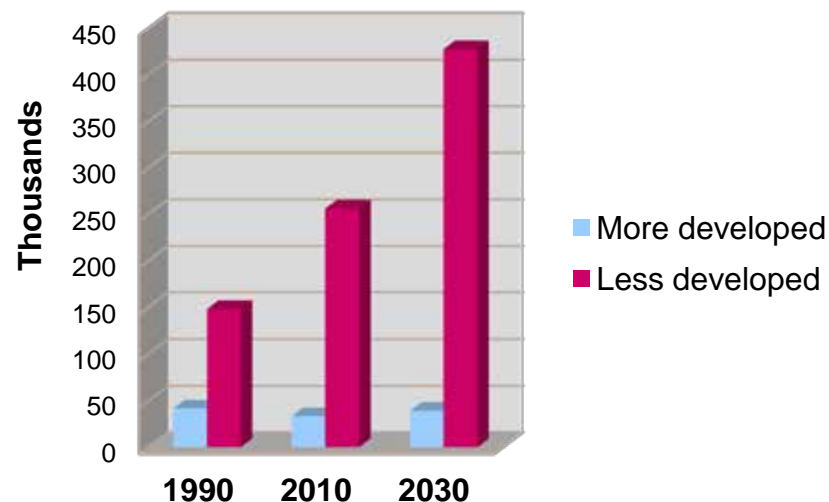
# Women's cancers: trends are worrying

- Numbers are going up, especially in developing countries
- Differences between rich and poor are increasing

## Estimated number of breast cancer deaths



## Estimated number of cervical cancer deaths



# UN Summit on NCDs, September 2011

## Final political declaration calling for:

- National NCD plans by 2013
- Policy changes and public campaigns to reduce smoking, improve diets, and increase physical activity
- Better screening, counseling and therapy to:
  - Reduce CVD risk
  - Detect cervical cancer early
  - Immunize against Hep B

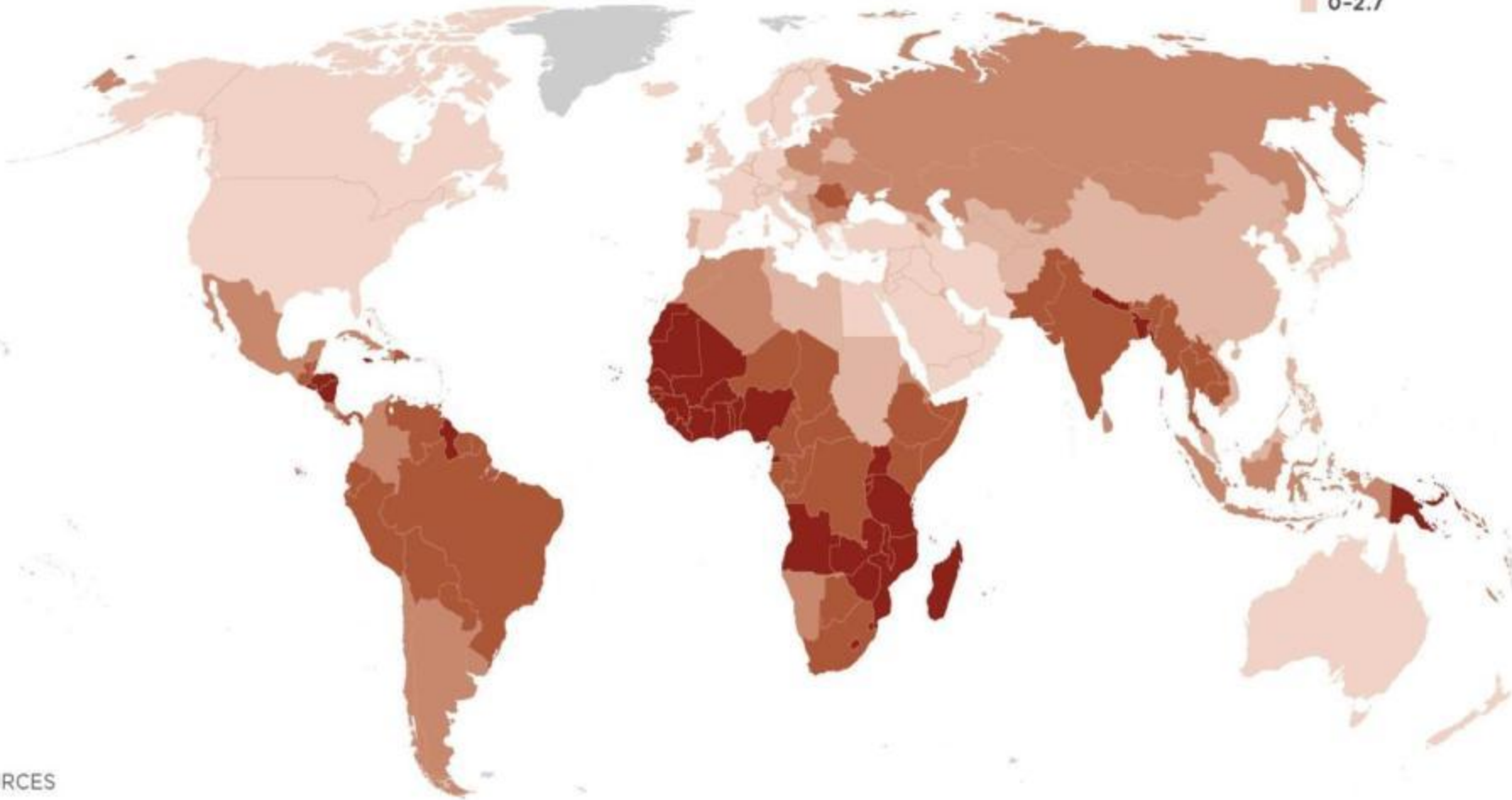
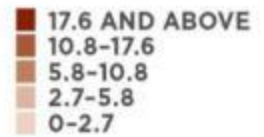
## Priorities moving forward

- Accountability mechanisms
- Country (not just donor) leadership
- New and non-traditional funders in a challenging economic environment



## 1.1 CURRENT CERVICAL CANCER MORTALITY RATE

ESTIMATED AGE-STANDARDIZED MORTALITY RATE PER 100,000, CERVIX UTERI.



### SOURCES

- Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 10. Lyon, France: International Agency for Research on Cancer; 2010. [globocan.iarc.fr](http://globocan.iarc.fr). Accessed October 5, 2010.

~274,000 deaths annually; 88% in low-resource areas

# Stigma and loneliness

Women with cervical cancer often suffer pain, and face death, isolated from family & friends



# Why have cervical cancer screening programs not been initiated and scaled?

- A problem of poor women
- Belief that problem was too difficult to tackle
- Accepted practice (Pap screening) not viable in many low-resource settings
- Scientific evidence on new approaches needs to be more broadly communicated
- Health system preparedness
- Shortage of providers, especially physicians (and lack of support for and to frontline providers)
- Funding and pricing
- Donor priorities

# PATH's Work on Cervical Cancer

- Started early 1990s with descriptions of problem, new approaches for screening
- Moved to broader assessment of screening and precancer treatment options—especially cryotherapy – that could be provided at community-level clinics
- Coordinated Alliance for Cervical Cancer Prevention (ACCP), established 1999
  - By 2007 ACCP had published 43 peer-reviewed articles, scaled screening in 13 countries, provided assistance to 47 additional countries, and more
- With Qiagen, developed *careHPV* test, starting in 2003
- Demonstrated introduction of HPV vaccines, starting 2007
- Chaired Cervical Cancer Action coalition from 2008

# Cervical cancer screening options 2000

Conventional pap smear



Visual inspection with acetic acid (VIA)



Hybrid Capture<sup>®</sup> 2 DNA test





## 2008 conclusions



Every woman has the right to cervical screening at least once in her lifetime. In low-resource settings, the optimal age for screening to achieve the greatest public health impact is between 30 and 40 years old.

The most efficient and effective strategy for secondary prevention of cervical cancer in low resource settings is to screen using either HPV DNA testing or VIA (visual inspection), then treat using cryotherapy.

## 2.1 INTRODUCTION OF VISUAL INSPECTION (VIA) FOR CERVICAL CANCER SCREENING

STATUS: END OF 2010



- **NATIONAL PROGRAMS:** VISUAL INSPECTION IN THE NATIONAL SCREENING NORMS AND AVAILABLE ON A LIMITED OR UNIVERSAL BASIS THROUGH THE PUBLIC SECTOR
- **PILOT PROGRAMS:** VISUAL INSPECTION AVAILABLE THROUGH PILOT OR DEMONSTRATION PROJECTS ORGANIZED BY THE MINISTRY OF HEALTH OR NGO PARTNERS
- **NO VIA PROGRAM**

The information represented here has been collected through interviews with individuals and organizations involved with the countries represented and has not been verified with individual Ministries of Health. Any oversights or inaccuracies are unintentional.

# Key need for the developing world

## CareHPV public-private partnership mandate

- Identify, adapt, develop an appropriate, more sensitive technology for low-resource settings
- Understand systems capacities and requirements
- Consider user needs, perceptions, and attitudes
- Explore feasibility of self-sampling
- Aim for broad access where need is great



# Recent data on *CareHPV*



Screening method	Sensitivity* (95% CI)	Specificity* (95% CI)
<i>CareHPV</i> <sup>TM</sup> (86% vaginal self-sampling)	80.0% (59.3, 93.1)	87.3% (85.5, 88.9)
<i>CareHPV</i> <sup>TM</sup> (cervical sampling)	84.0% (63.9, 95.5)	90.5% (88.9, 91.9)
VIA	72.0% (50.6, 87.9)	72.2% (69.8, 74.4)
Pap smear (ASCUS+)	36.0% (17.9, 57.5)	98.5% (97.8, 99.1)

\* Clinical sensitivity and specificity estimates. Based on results from 1,515 women with screening and final diagnosis completed. 25 cases of CIN2+.

# HPV vaccination

- Two vaccines have been WHO prequalified
  - Cervarix®: HPV types **16** and **18**
  - Gardasil®: HPV types **6, 11, 16, 18**
- Both very safe: No deaths, SAEs very rare
- 3 doses within six months
- Vaccines do not eliminate need for future cervical cancer screening (up to 30% cervical cancers caused by other HPV types)
- Suggested partial cross-protection
  - Cervarix® types 31, 33, and 45
  - Gardasil® type 31
- NOTE—HPV vaccines not effective for treating current HPV infection



# PATH's *HPV Vaccines: Evidence for Impact* project 2006–2011

## Goal

Generate and disseminate evidence  
for informed public-sector introduction  
of HPV vaccines



# PATH demonstration projects



# Project aim & research questions

- **Which delivery strategies achieve high COVERAGE?**

What level of coverage can be achieved by using different strategies?

What strategy is best for reaching out-of-school girls?

- **Which strategies show FEASIBILITY?**

What are the challenges of selecting girls by grade versus age?

What is the impact on other services?

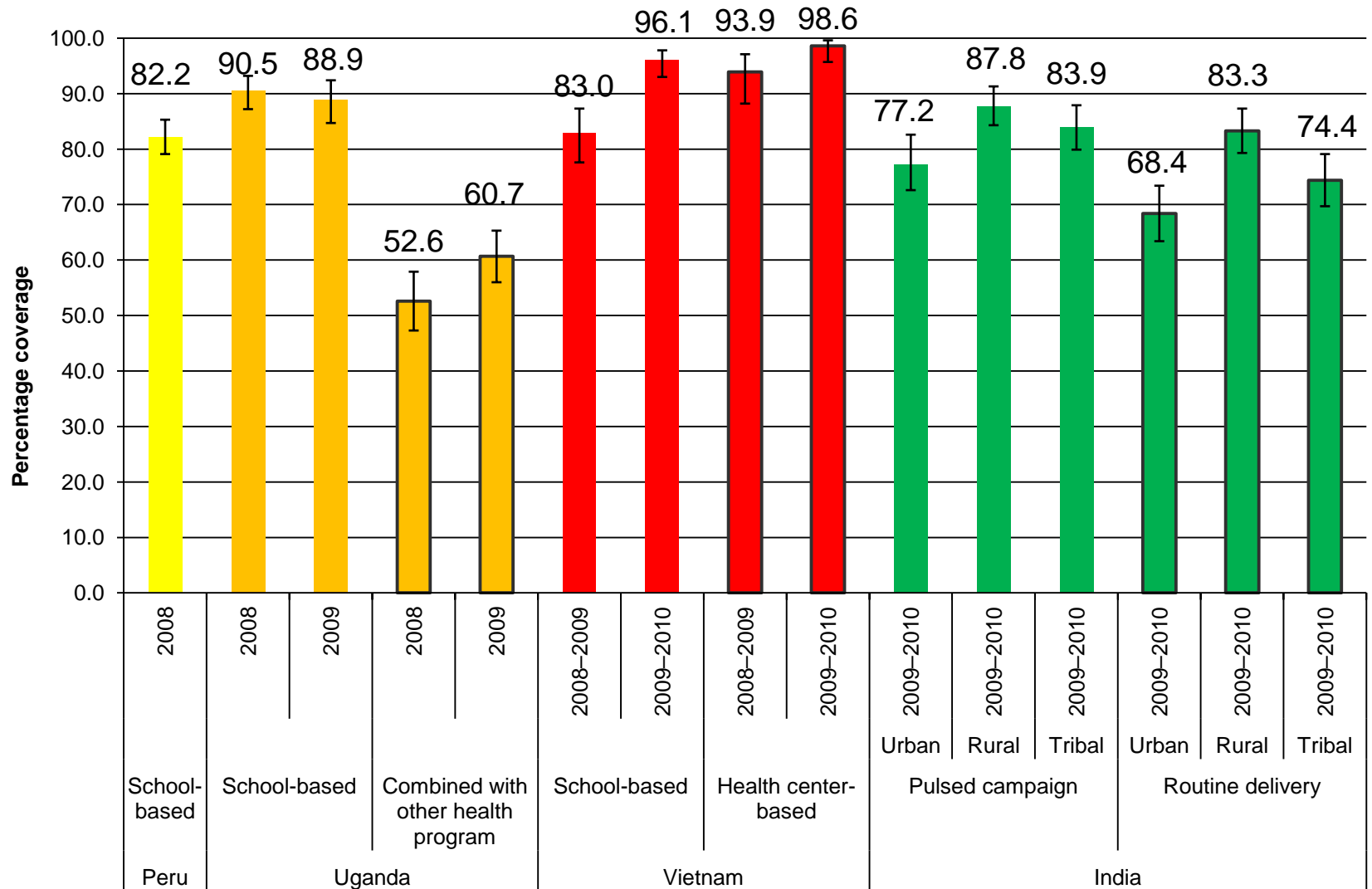
- **Which show ACCEPTABILITY?**

What are the information needs and best communication strategies for various target audiences?

- **How much do the various strategies COST?**

What is the cost per girl immunized for each strategy?

# Coverage results



# Feasibility

## Key findings related to feasibility of service provision

- Training key to health worker and teacher preparedness
- Coordination between health and education sectors is crucial
- Existing cold-chain systems were adequate
- Adding HPV vaccination did not seriously impact other services
- School-based programs must be coordinated with school schedules
- Determining eligibility can be problematic (e.g. age vs grade)



# Acceptability

## Key factors influencing community acceptance

- Vaccine promoted as protection against a cancer
- Communities received and understood information about cervical cancer and HPV vaccination
- Interpersonal communication from health workers, teachers, and community leaders was important channel
- Reinforced messages through multiple channels
- Endorsement by government, teachers, community leaders



## Key areas of concern or confusion among parents and girls

- Their main questions focused on vaccine safety, effectiveness, side effects, and fertility; they felt reassured when that information was provided
- Parents sometimes were confused about the eligibility criteria for inclusion in the study and for follow-up for missed doses.

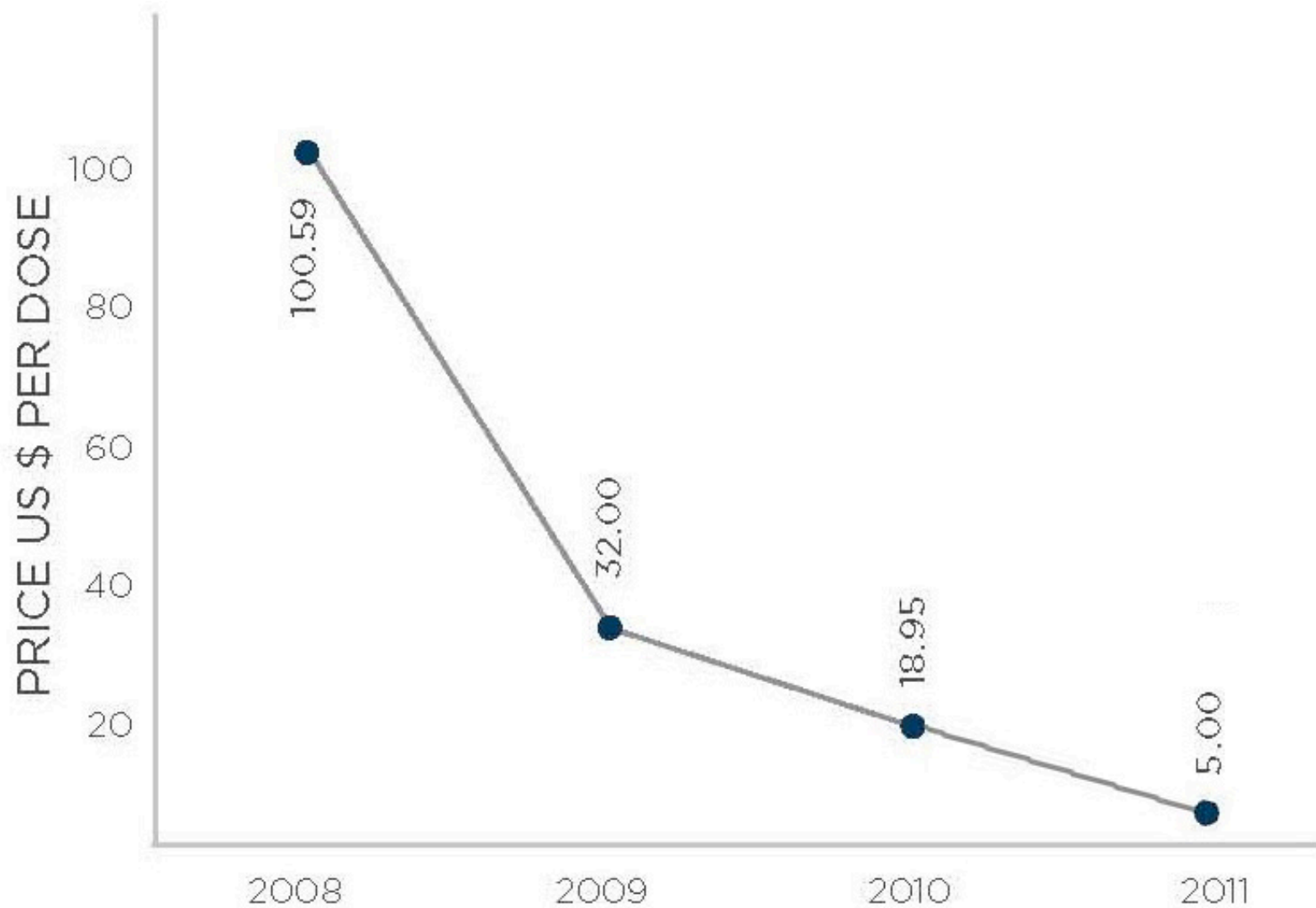
# Affordability and Cost Effectiveness (C-E)

- Vaccine price, costs of reaching adolescents had the greatest influence on C-E of vaccine programs
- In countries with GDP/capita of <\$1000 the price/dose may need to be \$1 to \$2 to make vaccination both affordable and C-E
- \$5/dose is C-E at \$150/life year saved; vaccination combined with screening women 3 times would be a very C-E intervention
- Opportunity to provide additional vaccinations, deworming, vitamin A, bed nets, etc., via 'Child Days Plus' in Uganda has potential to raise C-E

Agosti & Goldie, NEJM 356;19 2007



# HPV vaccine prices dropping fast



# Call to Action

- Every woman has a right to screening and necessary follow up at least once in a lifetime
- All girls should have access to HPV vaccines within 5 years\*
- Women with cervical cancer have the right to palliative care now, and basic surgical treatment options within 5 years.

\*Except in lowest incidence regions

# How can NGOs like PATH contribute to broader NCD prevention?

- Developing and/or introducing low-cost technologies.
- Modeling service integration (including within women's health programs and using private sector providers).
- Addressing supply chain challenges.
- Building public-private collaborations.
- Promoting community engagement and behavior change strategies.



# Diabetes: Technology needs

## Exploring new, context-appropriate diabetes screening technologies

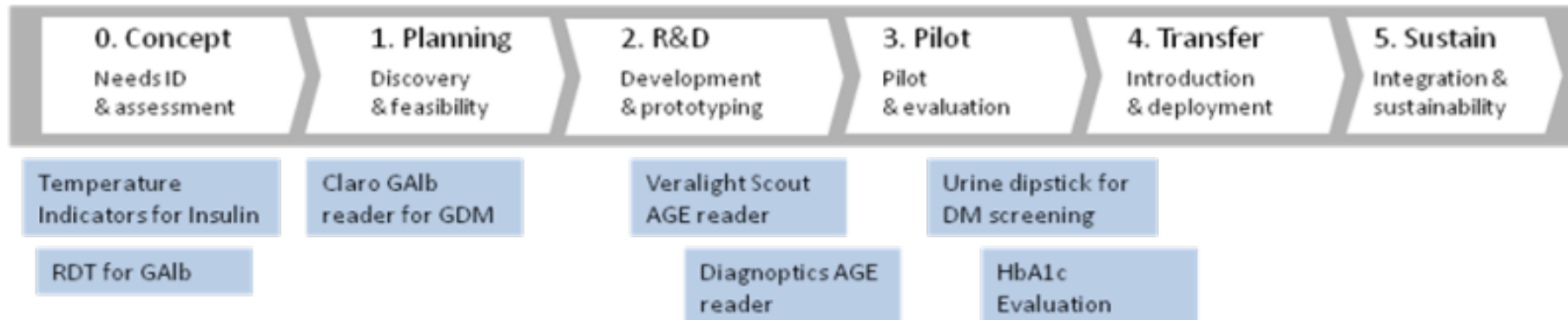
- Investigating novel, low-cost technologies for diabetes screening
- Establishing relationships with private-sector
- Conducting landscape analysis of appropriate technologies, including innovative, non-invasive technologies
- Conducting small, pilot evaluations in various settings of promising candidate technologies
- Considering introduction needs throughout product development framework for leading candidate technologies



# Some needs are already identified

- Type 2 diabetes: low-cost, less-invasive screening
- Gestational Diabetes: low-cost screening that does not require fasting or prolonged clinic visit

## PATH Diabetes Technology R&D pipeline



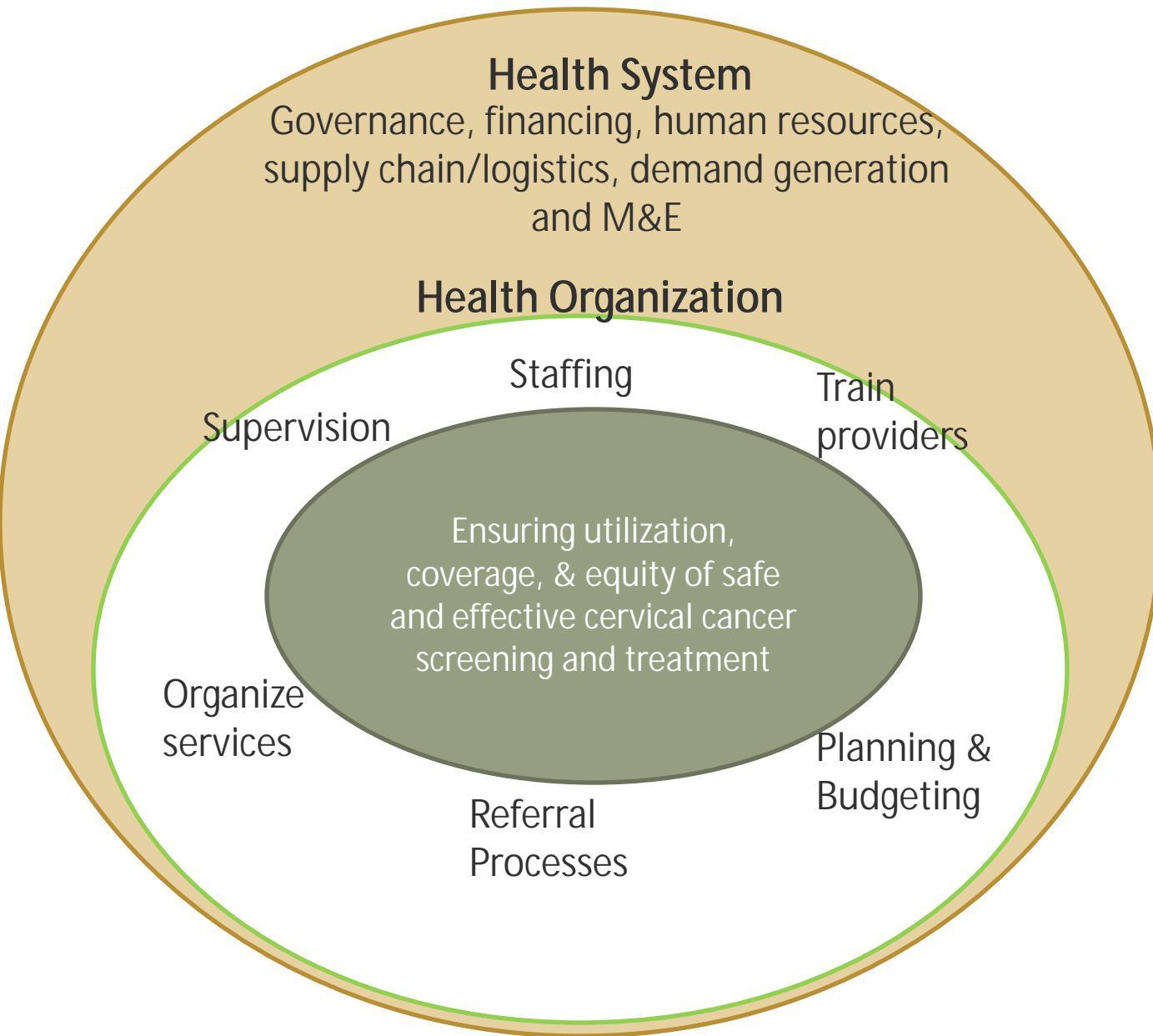
# Diabetes: Systems needs

## Strengthening systems

- Assess health-systems capacities in key countries to establish baseline for progress
- Identify globally transformative steps to integrate diabetes prevention and management, especially in primary health care systems
- Begin with an integrated approach, considering staffing, training, referrals, clinic organization, budgeting, supervision, M&E, and more



# Health System Strengthening for Cancer Prevention and Care



# Diabetes: Behavior change needs

## Encouraging healthy behaviors

- Risk factor reduction and community engagement
- Self-management education and support groups
- Awareness-raising regarding available health services
- Build evidence for successful approaches



# Conclusions

1. Chronic disease burden in low- and middle-income settings is real and growing.
2. Approaches to disease prevention and control from higher-income settings will require adaptation for low-income settings.
3. Any new technology must be developed considering community realities, systems, and integration needs from the outset
4. Key opportunities exist to build on cervical cancer experience
  - Outreach to adolescents for HPV vaccination can provide a platform for education about tobacco, nutrition, exercise, and other issues.
  - Outreach to adult women for cervical screening creates opportunities for screening for breast cancer, anemia, hypertension, and diabetes.
5. Provision of NCD care will stress – but ultimately strengthen – health systems
6. The recent UN High level meeting on NCDs will stimulate resources and action; innovative partnerships are essential

# Cervical cancer prevention partners



NATIONAL INSTITUTE OF HYGIENE AND EPIDEMIOLOGY



International Agency for Research on Cancer



# Resources for planning and advocacy

RHO Cervical Cancer Library [www.rho.org](http://www.rho.org)

Outlook, May 2010 [www.path.org](http://www.path.org)

Cervical Cancer Action [www.CervicalCancerAction.org](http://www.CervicalCancerAction.org)

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# Outlook

## The growing chronic disease burden: Implications for reproductive health

Currently, 80% of deaths from chronic disease occur in low- and middle-income countries, where people develop these diseases at younger ages, suffer longer, and die sooner.<sup>1</sup> Chronic diseases have been defined as illnesses that are preventable, prolonged, unlikely to resolve spontaneously, and impossible to cure completely.<sup>2</sup>

This issue of Outlook discusses the emerging chronic disease burden in terms of likely challenges and opportunities for reproductive health, with a focus on cardiovascular conditions, diabetes, and the risk factor of obesity. This focus was identified due to clear relationships with reproductive health (e.g., hypertension and diabetes in pregnancy, contraceptive choice for women with cardiovascular conditions and risk factors). Additionally, these conditions represent large burdens of ongoing illness: an estimated 246 million people in the developing world are living with diabetes, and around 1 billion are living with hypertension.<sup>3</sup> Finally, this focus represents less redundancy with ongoing initiatives in other areas (e.g., cancer and reproductive health,<sup>4</sup> tobacco control), and therefore, more opportunities for new thinking.

## Epidemiology of chronic diseases

Of the 58 million deaths that occurred globally in 2005, 35 million (60%) were due to chronic diseases—twice the number of deaths due to infectious diseases, maternal and perinatal conditions, and nutritional deficiencies combined.<sup>4</sup> As the overall burden of infectious diseases decreases in developing countries—due in large part to effective public health programs implemented over the past several decades—the burden of chronic diseases is growing. It is estimated that between 1990 and 2020, mortality due to heart disease in developing countries will increase by 120% in women and 137% in men.<sup>5</sup> Between 2007 and 2025, the number of people living with diabetes globally will increase from 246 to 380 million, and the majority will live in developing countries.<sup>6</sup> These increases are partly accounted for by increasing life expectancy and aging populations, but there are also increases in age-specific disease rates due to migration and modernization that affect diet, working, and activity patterns.<sup>7</sup>

## Patterns of disease: a complex global picture

In general, cardiovascular disease, diabetes, and obesity are more common in lower-middle-income countries than in low-income countries. For example, chronic diseases account for the majority of deaths in China, Egypt, Nicaragua, Peru, Thailand, Ukraine, and Vietnam, and nearly the majority in India (Table 1, page 2). By contrast, the majority of deaths are still due to communicable diseases in many sub-Saharan African countries, as well as in Cambodia.

Nationally representative prevalence rates for cardiovascular disease and diabetes are not available in many countries. However, the World Health Organization (WHO) has collected comparable data on overweight and obesity (body mass index, or BMI,  $\geq 25$  kg/m<sup>2</sup>). Rates of overweight and obesity in

<sup>1</sup>In addition, cancer is often less of an ongoing or chronic issue in low resource settings, due to the low survival rates. More generally, if detected and treated early, cancer does not require the same kinds of long-term treatment as hypertension, diabetes, and obesity. For more information on cancer in the developing world, visit: [www.who.int/topics/cancer/en/](http://www.who.int/topics/cancer/en/)

Also visit WHO resources on NCDs at <http://www.who.int/nmh/publications/en/>

### In this issue

- Epidemiology of chronic diseases
- Addressing chronic diseases in developing countries
- Chronic diseases and reproductive health: challenges and opportunities
- The way forward



# Thank you!

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