Threshold for Elimination as a Public Health Problem:
Age-adjusted incidence rate $< 4 / 100,000$ women

2030 Targets

- **90%** of girls fully vaccinated with HPV vaccine by 15 years of age
- **70%** of women are screened with a high-performance test by 35 and 45 years of age
- **90%** of women identified with cervical disease (precancer or cancer) receive treatment and care

SDG 2030 Target 3.4:
30% reduction in mortality from NCDs
Vaccination
90% of girls fully vaccinated with HPV vaccine by 15 years of age

70% of women are screened with a high-performance test by 35 and 45 years of age

90% of women identified with cervical disease (precancer or cancer) receive treatment and care

SDG 2030 Target 3.4: 30% reduction in mortality from NCDs
100 Countries Included HPV Vaccine in the National Immunization Program (Nov 2019)

~30% of girls 9-14yr Globally
Achieving 90% Coverage of HPV Vaccination: Strategic Actions

- Secure sufficient supply of affordable HPV vaccines
- Introduce HPV vaccine into more countries
- Increase quality and coverage of service delivery
- Improved communication and social mobilization
Screening and Treatment
90% of girls fully vaccinated with HPV vaccine by 15 years of age

70% of women are screened with a high-performance test by 35 and 45 years of age

90% of women identified with cervical disease (precancer or cancer) receive treatment and care

SDG 2030 Target 3.4: 30% reduction in mortality from NCDs
Proportion of Women Between 30-49 Screened for Cervical Cancer At Least Once

Source: WHO STEPS
Achieving 70% Coverage of Screening and 90% Treatment of Precancer: Strategic Actions

- National scale-up of screen & treat
  - Simple algorithms need to be introduced for different settings
- Sufficient, affordable supply of screen and treat technologies & products
  - Prompt certification of new products
  - Price reductions
- Increased quality and coverage of service delivery
  - Countries detailed implementation plans to introduce and scale-up products and delivery models
  - Strengthen patient retention and linkage to treatment
### Approaches to Cervical Cancer Screening and Future Tests

3 approaches to Cervical Cancer Screening

<table>
<thead>
<tr>
<th>Molecular</th>
<th>Cytologic</th>
<th>Visual Inspection</th>
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</table>
| **A.** Nucleic Acid tests (NAT)  
  • HPV DNA  
    (e.g. Abbott, Roche Cobas, Qiagen, Cepheid Xpert, others)  
  • mRNA  
    (Hologic Aptima)  
**B.** Protein biomarkers  
  • HPV antibodies  
  • Oncoproteins  
    (e.g. OncoE6 / QlAasure)  
| **A.** Conventional PAP smear  
**B.** Liquid-based cytology (LBC)  
| **A.** Visual Inspection with Acetic Acid or with Lugol’s Iodine (VIA / VILI)  
**B.** Digital Imaging Approaches  
  • i.e. Automated visual evaluation (AVE)  
|
To Accelerate **Access** We Need to Move Toward High Performance Tests

**Complex or Low-Sensitivity**

Cytology:
Successful in high-resource countries, but implementing quality cytology screening is challenging in middle and low resource countries

VIA:
Naked eye visual inspection with 3-5% acetic acid

**High Performance Alternatives**

- **HPV Testing**
  - No triage
  - Followed by treatment with cryotherapy or thermal ablation

- **HPV Testing**
  - Plus triage with VIA or other tests
  - Followed by treatment with cryotherapy or thermal ablation
Achieving 70% Coverage of Screening and 90% Treatment of Precancer: Strategic Actions

• National scale-up of screen & treat
  • Simple algorithms need to be introduced for different settings
• Sufficient, affordable supply of screen and treat technologies & products
  • Prompt certification of new products
  • Price reductions
• Increased quality and coverage of service delivery
  • Countries detailed implementation plans to introduce and scale-up products and delivery models
  • Strengthen patient retention and linkage to treatment
Cervical Cancer Management
90% of girls are fully vaccinated with HPV vaccine by 15 years of age

70% of women are screened with a high-performance test by 35 and 45 years of age

90% of women identified with cervical disease (precancer or cancer) receive treatment and care

SDG 2030 Target 3.4: 30% reduction in mortality from NCDs
Cervical Cancer Mortality Rates (Globocan 2018)

Estimated age-standardized mortality rates (World) in 2018, cervix uteri, all ages

Source: GLOBOCAN 2018
Achieving Management of 90% of Invasive Cancer Cases: Strategic Actions

- Invest in pathology, surgical oncology, radiotherapy, chemotherapy and palliative care capacity
- Optimize health workforce competencies across continuum of care
- Implement cervical cancer management guidelines
- Reduce cancer stigma
- Ensure financial protection
Health Systems Implications of 90-70-90 Targets

Health Systems
- Health systems governance
- Domestic regulatory systems
- Health financing
- Human resources for health
- Pre-service & in-service training
- Procurement & supply chain

Monitoring
- Dynamic monitoring of relevant indicators
- Population-based cancer registries
- Patient referral & tracking mechanisms

Universal Health Coverage
- Service & maintenance of medical devices
- Quality Assurance programs
- Referral networks
- Laboratory systems
- Data systems

Universal Health Coverage
- Service performance monitoring
- Population-based surveys
- Prevent & control costing information
Innovations on the Horizon

- Improved immunization schedules
- Single dose HPV vaccine
- Additional vaccine manufacturers
- Self-collection devices
- AI-based screening
- Lower cost HPV tests
- Point-of-care screening technology

Concluding Remarks
• **Elimination is feasible at** 4/100K in most LMICs before 2100

• **Status quo is no option** – number of cases will increase dramatically due to population growth, demographic changes and changes in behavior

• **Near Term Benefits**
  • **100,000** cervical cancer cases averted by 2030
  • **250,000** cervical cancer deaths prevented by 2030.
For 95% of countries, scale-up to the 90-70-90 targets by 2030 will result in elimination and be cost-effective.

Predictions across three models are broadly consistent. Results are based on findings for at least two out of three models for 2020-2120.

Canfell, Kim, Brisson et al. In publication.