BOTSWANA-UPENN PARTNERSHIP

Building a Healthy Future Together

Strengthening the Practice of Laboratory and Pathology Medicine in Africa-A clinician's Perspective

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ASLM 2014

02 Dec 2014

MINISTRY of HEALTH
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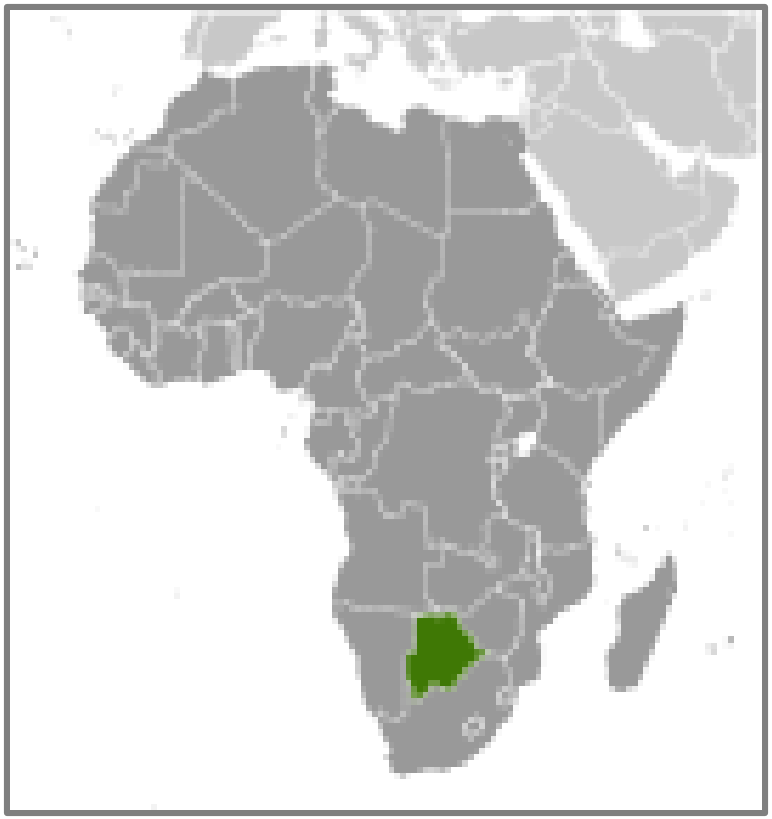
Outline

- Background
- Botswana Cervical Cancer Prevention Program
  - Two Decades Ago
  - Last Five years
- Challenges of Pathology
- Some solutions

Botswana

- Population: 2,128,000[1]
- High HIV prevalence rates
  - 24.8% among adults ages 15–49 (2009)[2]
  - Estimated 300,000 persons living with HIV (PLHIV)[2]
- Cervical cancer leading cause of cancer deaths in women



[1] U.S. Census Bureau International Data Base 2013 mid-year population
[2] 2013 AIDS Info. UNAIDS

Botswana-UPenn Partnership

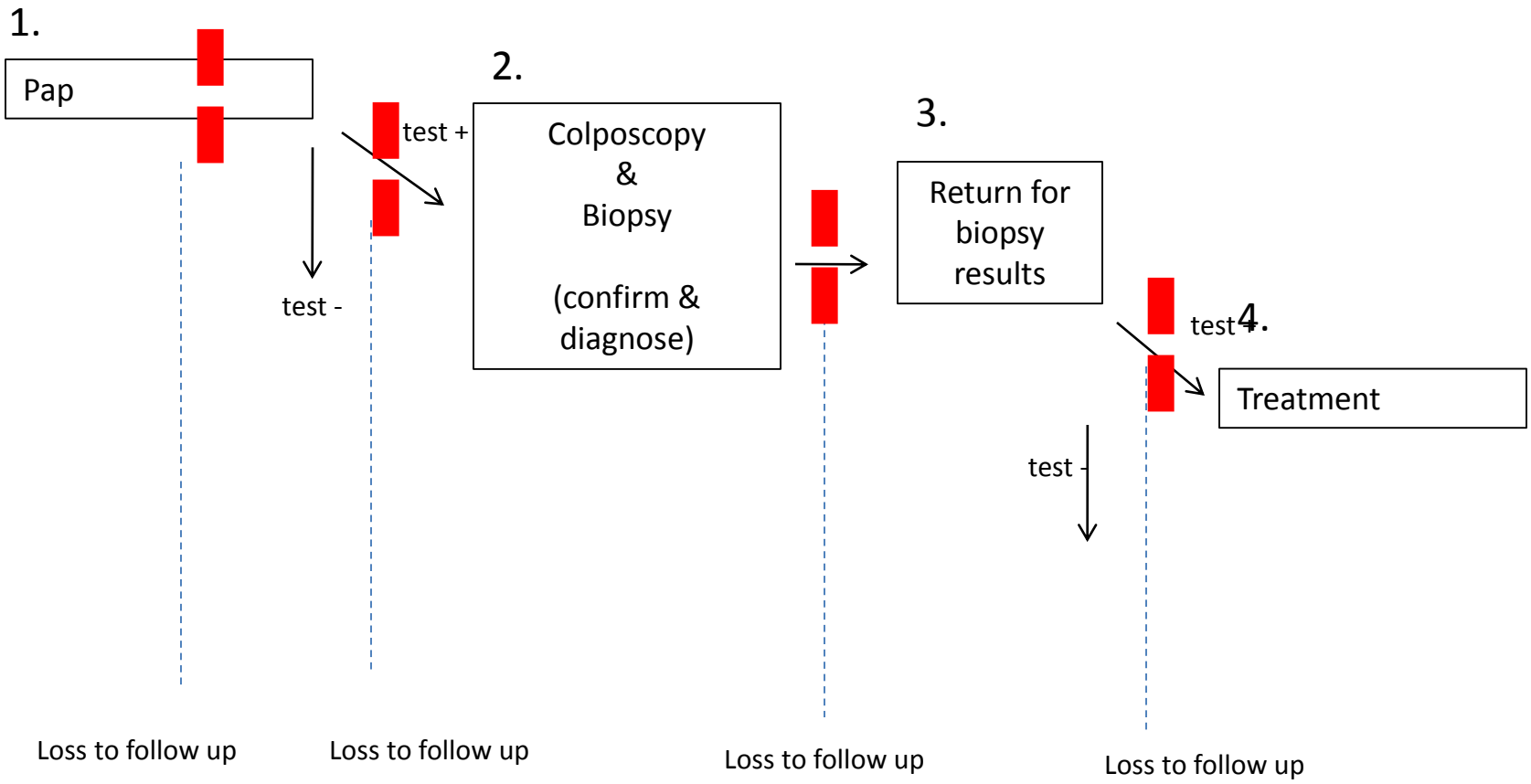
- Partnership between Government of Botswana, University of Botswana and University of Pennsylvania; active since 2001
- More than 170 full-time staff in Botswana
- Capacity building across
  - clinical care (Complicated HIV, TB/HIV, MDR TB, Cervical cancer)
  - teaching
  - research

Evolution of Cervical Cancer Prevention Program in Botswana

History of cervical cancer prevention in Botswana

- For two decades, opportunistic cytology screening
  - No impact on cervical cancer
- National Cervical Cancer Prevention Programme (NCCPP) Strategy (2004–2009)
  - Strong sensitization screening→ Pap backlog at lab
  - Limited plans for:
    - Treatment for women with positive screening results
    - Program monitoring and evaluation

Pap smear Screening: Barriers



- No communication between screening & referral facilities
- No ability to recall patients for follow-up

(recall system or cytology/histology registry)

Slide courtesy of Sara Forhan CDC

Cervical Cancer Prevention in HIV-Infected Women Using the "See and Treat" Approach in Botswana

Pilot prevention project started 2009

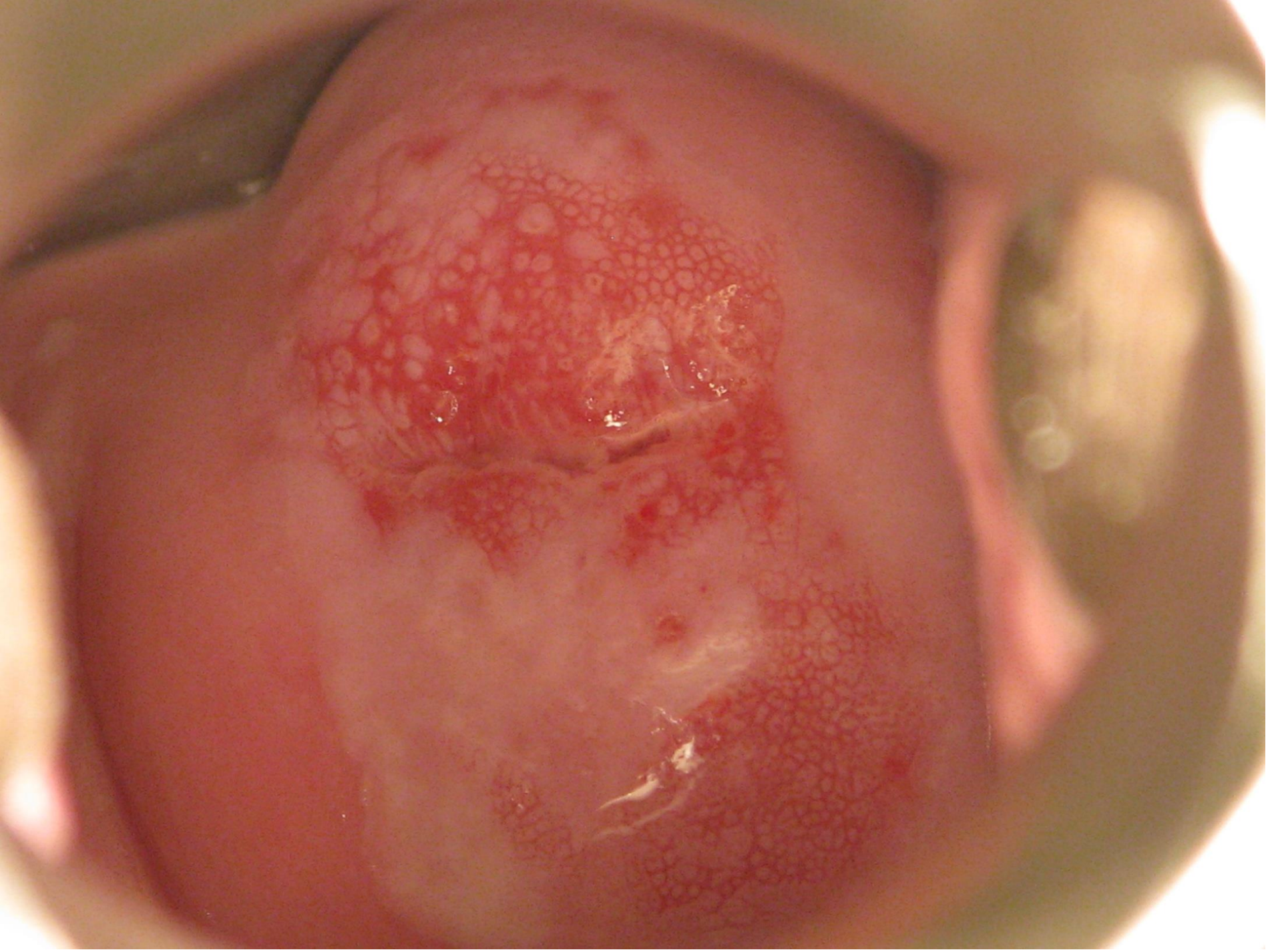
Primary Clinic: Bontleng

- Nurse led clinic
- Screening with VIA
- Picture taken with camera - enhanced digital imaging (EDI)
- Treatment with Cryotherapy
- Women with severe abnormalities referred
- All pictures reviewed by team weekly

Referral Clinic: PMH

- Physician led Colposcopy/LEEP service
- Colp and LEEP

- Also provide Colposcopy/LEEP service for patients with abnormal Pap Smears



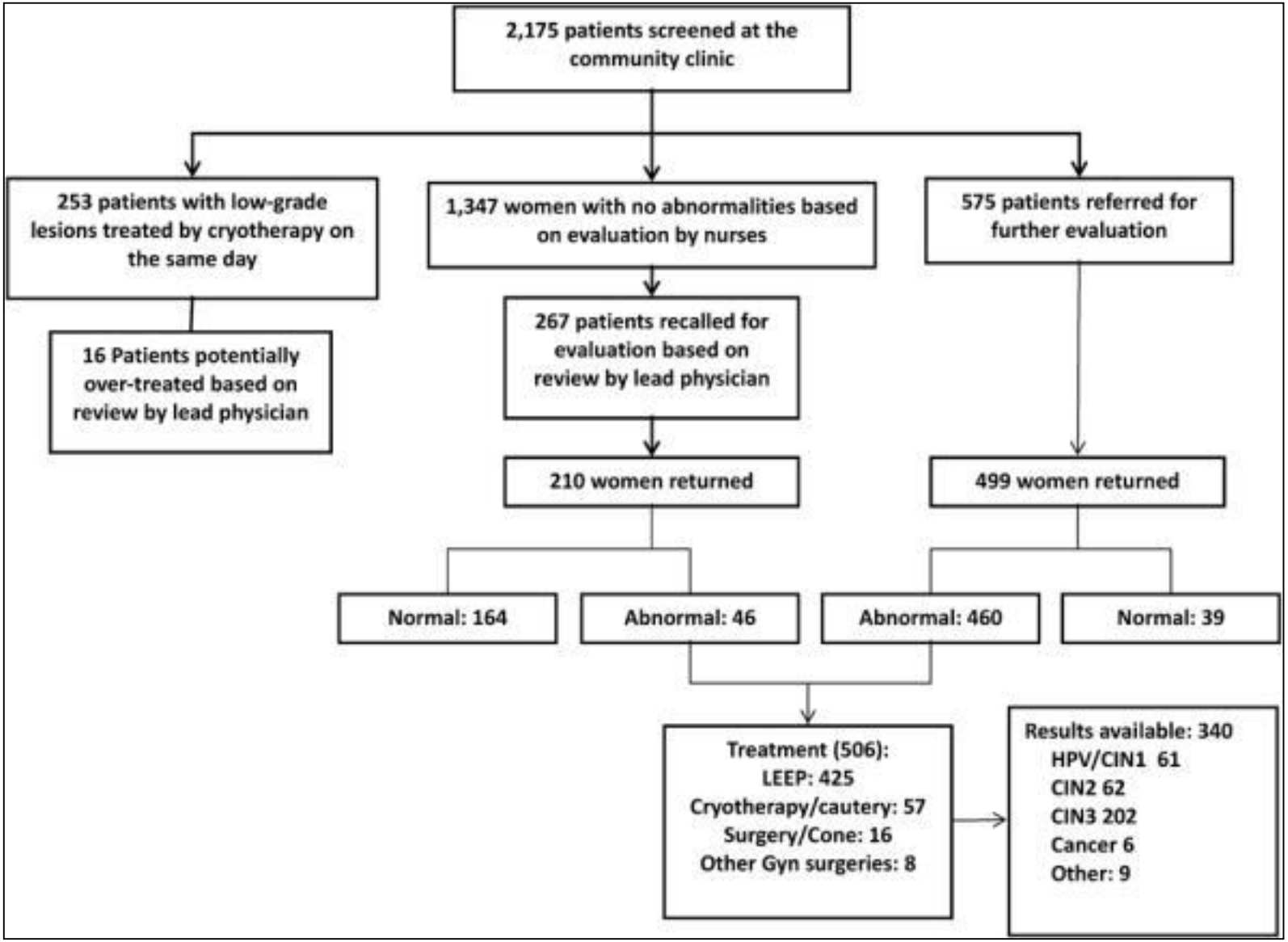


FIGURE 1 . Distribution of the number of HIV-infected women screened and treated by a "see-and-treat" cervical prevention program, Botswana 2007-2011.

New NCCPP comprehensive strategy (2012–2016)

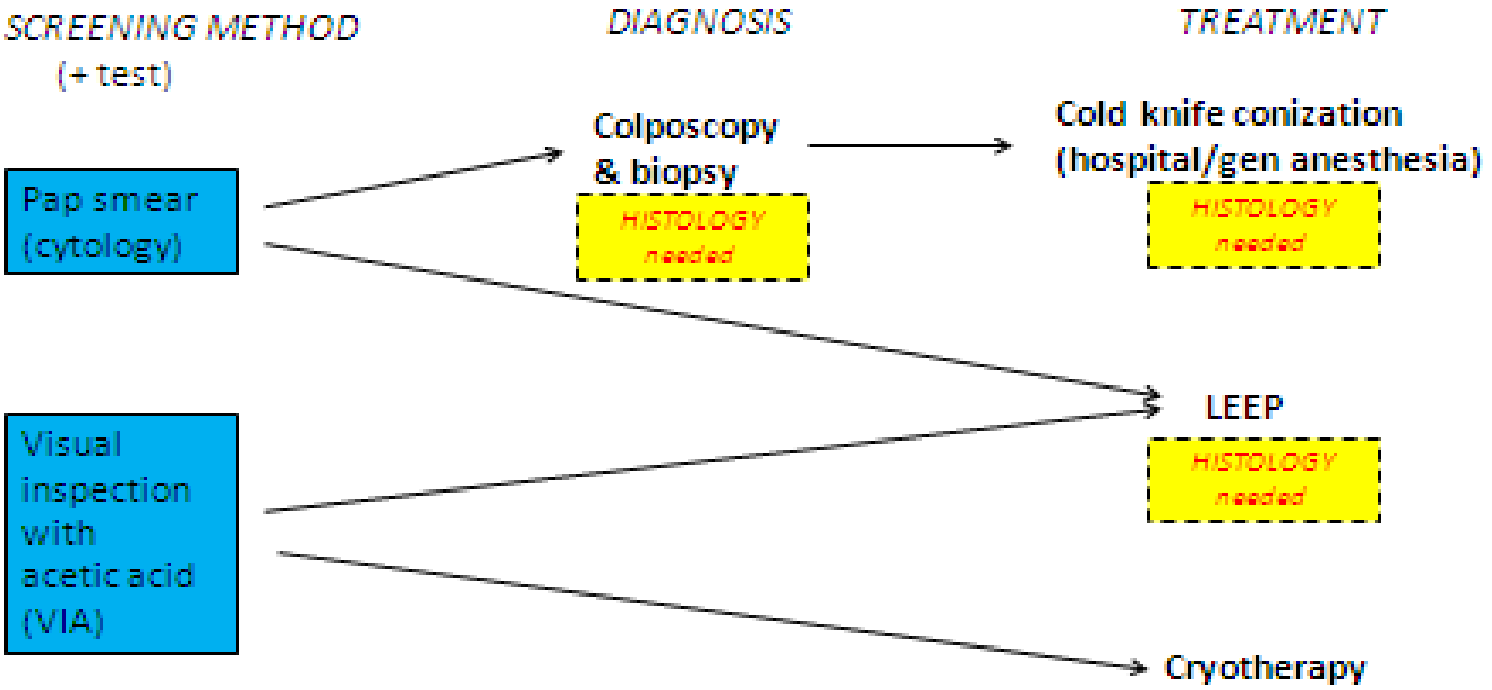
- Secondary prevention scale up
  - Introduce and scale up VIA screening
  - Continue Pap screening
  - Focus on assuring treatment for women with positive screening (cryotherapy/LEEP)
  - Monitoring and evaluation (M&E) of programme
- Primary prevention (HPV vaccine) demonstration project
- HPV DNA demonstration project

Scale Up Sites

Map of Botswana.

SECONDARY PREVENTION ALGORITHM

(2012–2016)



Slide courtesy of Sara Forhan CDC

Challenges of Pathology in Africa

- These are numerous and impact negatively on patient care. They include:
  - Inadequate infrastructure
  - Limited personnel (pathologists and technicians)
  - Limited training opportunities
  - Poor funding for pathology services

Lack of Health Care Personnel

- Competing Needs
- Brain drain
- Scheffler et al* estimated that in 31 SSA countries in 2015 shortage of health care professionals (doctors, nurses and midwives)
  - 792 000 with estimated wage bill of $2.6 billion annually to eliminate

*Health Affairs 2009;28(5):849 – 862 Slide Courtesy Lyn Denny

Current Situation: Botswana 1

- Anatomical Pathologists: Botswana

Institution	No
Government NHL	3
Government NRH	1
University of Botswana	2
Private laboratory	1
TOTAL	7

Slide Courtesy Dr Kayembe

Current Situation: Botswana 2

- Anatomical Pathology Technical Staff

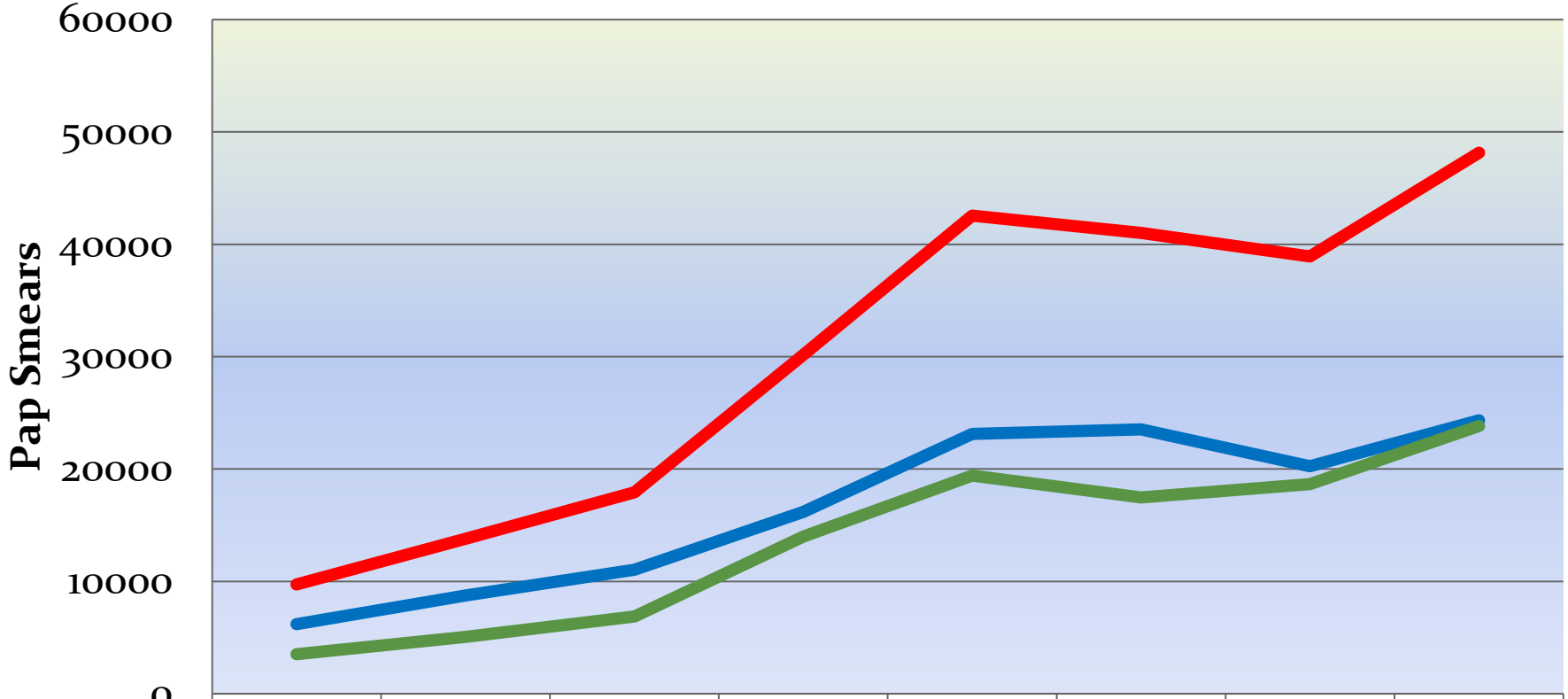
	NHL	NRH	TOTAL
TOTAL	**15 including 3 cytotechnologists**	**8 including 5 cytotechnologists**	**22 including 8 cytotechnologists**

Slide Courtesy Dr Kayembe

Current Situation: Botswana 3

- Anatomical Pathology Services
  - National Health Laboratory, Gaborone
  - Nyangabgwe Referral Hospital, Francistown
- Services:
  - Surgical Pathology including Immunohistochemistry
  - Cytology
    - Gynaecological
    - Non-Gynaecological
    - Fine needle aspiration
  - Autopsy

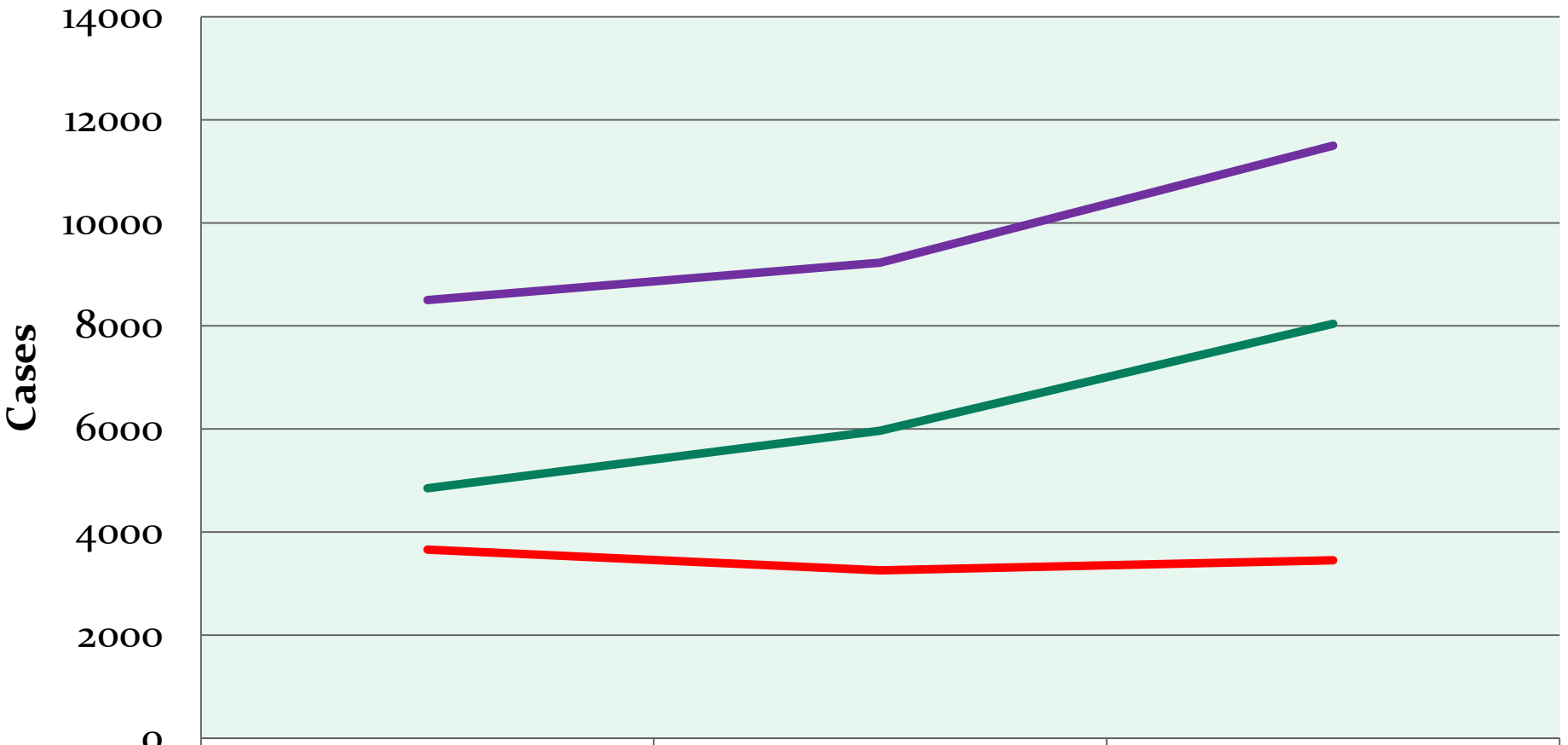
Gynaecological Cytology (Pap Smears) Workload Trends 2005-2012



	2005	2006	2007	2008	2009	2010	2011	2012
NHL	6195	8727	11038	16179	23122	23521	20245	24332
NRHL	3517	5051	6882	13986	19420	17480	18664	23832
TOTAL	9712	13778	17920	30165	42542	41001	38909	48164

Slide Courtesy Dr Kayembe

HISTOLOGY WORKLOAD TRENDS 2010-2012



	2010	2011	2012
NHL	4848	5968	8043
NRH	3657	3259	3454
TOTAL	8505	9227	11497

Slide Courtesy Dr Kayembe

Mar 2009 – Mar 2014

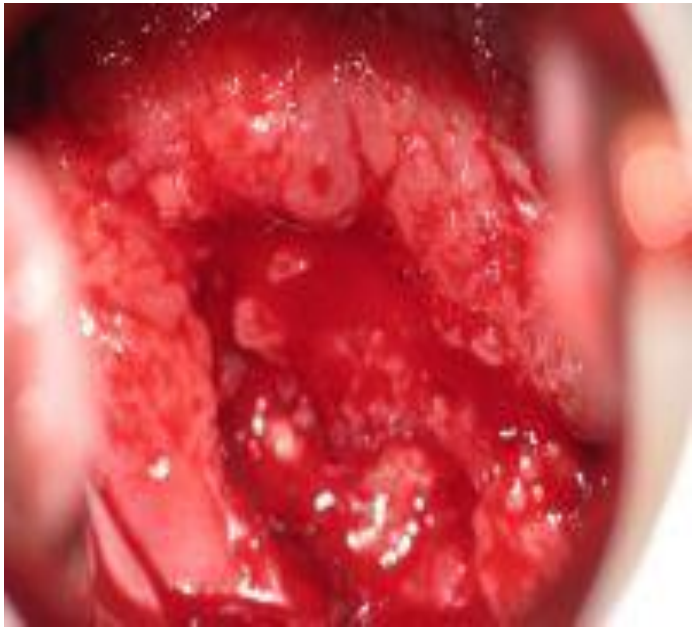
Total Screened with vinegar: more than 7000

Total Treated with LEEP: 2860

Biopsies: 405

Endocervical curretages: 440

Cancers diagnoses during "screening": 85(*to date*)- biopsy confirmed and linked to radiotherapy treatment paid for government of Botswana



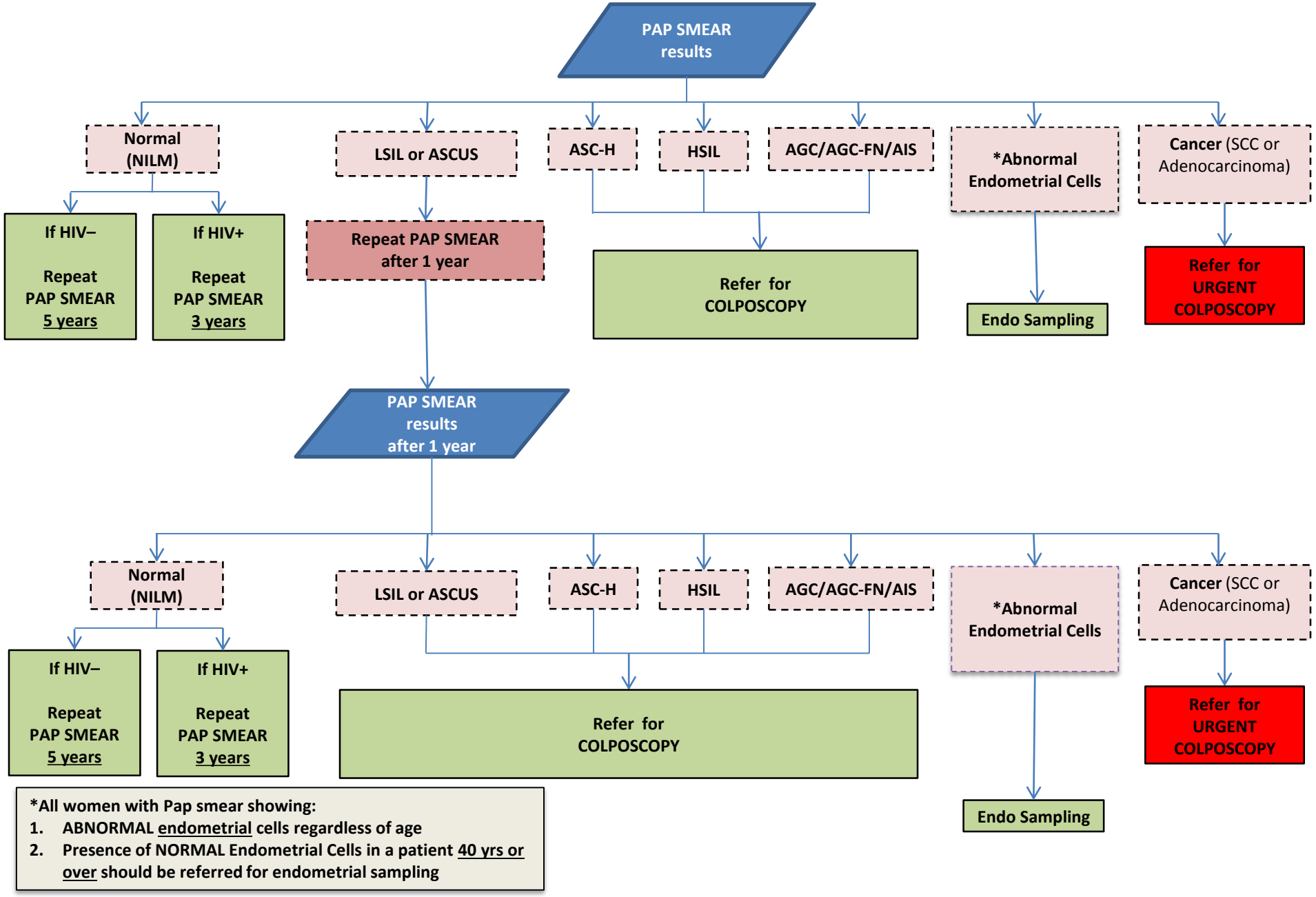
Some solutions

Standardising Care: Algorithms

- These aid decision making:
  - Triaging of Pap smear results at the lab and clinics
  - Clinical guidance to nurses and doctors doing procedures
    - VIA/Cryotherapy, including follow up
    - Colpo/LEEP, including follow up
  - Management of Histology Results

ALGORITHM #1

PAP SMEAR RESULTS - Management Algorithm



*All women with Pap smear showing:

1. ABNORMAL endometrial cells regardless of age
2. Presence of NORMAL Endometrial Cells in a patient 40 yrs or over should be referred for endometrial sampling

TABLE 1. NEW MANAGEMENT RECOMMENDATIONS FOR CERVICAL CYTOLOGY (PAP SMEAR) RESULTS[1]

PAP RESULT	RECOMMENDATION FOR MANGEMENT
NILM (Normal)	If HIV-negative -> repeat Pap smear 5 years If HIV-positive -> repeat Pap smear 3 years
LSIL or ASCUS	Repeat Pap smear 1 year If 2nd LSIL or ASCUS result -> REFER for colposcopy
HSIL ASC-H AGC or AGC-FN AIS	REFER FOR COLPOSCOPY
SCC Adenocarcinoma	URGENT REFER FOR COLPOSCOPY

NILM=Negative for intraepithelial lesion or malignancy
HSIL= High grade squamous intraepithelial
ASC-H= Atypical squamous cells cannot exclude high-grade squamous intraepithelial lesion
LSIL= Low grade squamous intraepithelial lesion
ASCUS= Atypical squamous cells of undetermined significance
AGC= Atypical glandular cells
AGC-FN= Atypical glandular cells favour neoplasia
AIS= Adenocarcinoma insitu
SCC= Squamous cell carcinoma

[1] NCCPP Five Year Comprehensive Cervical Prevention and Control Strategy(2012-2016)

Role of Partnerships: ASCP Assessment January 2013

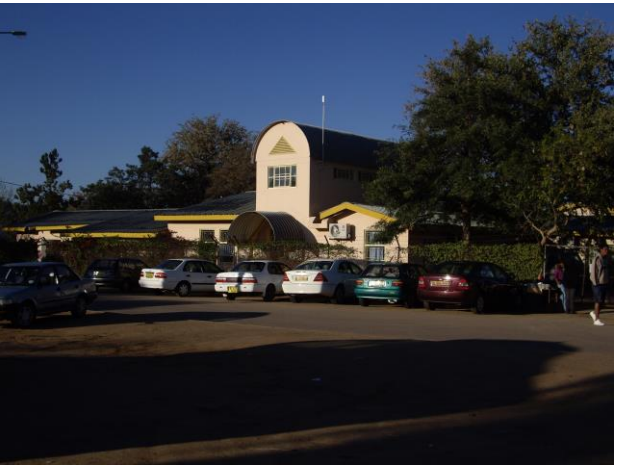
- They found the following:
  - Lack of (functioning) equipment
  - Limited number of trained histo-techs to process tissue
  - Volume of specimen had doubled between 2010 and 2012 due to the success of the SAT program, completely eroding limited existing lab infrastructure
- Provided a comprehensive plan to develop a sustainable system to meet current and future histo-path needs at the country's two main labs

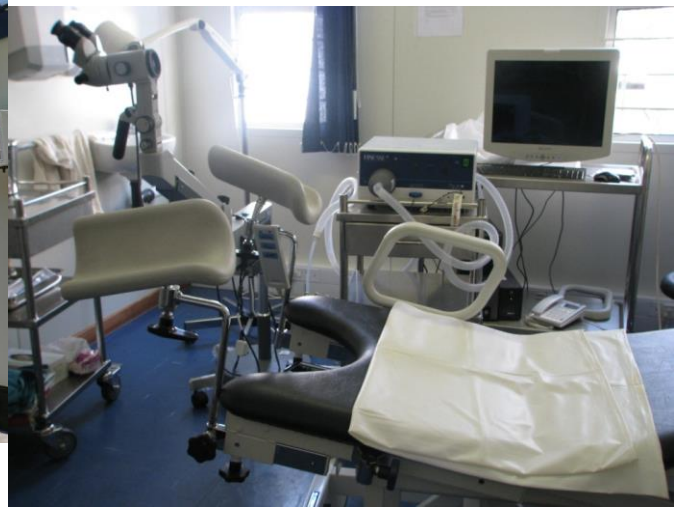
ASCP Three-Prong Strategy

- To alleviate histo-pathology backlog and provide long term scalable solution
  - Install semi-automated tissue processor equipment
  - Train pool of histo-techs to effectively use equipment
  - Provide diagnostic support to small number of pathologists in country

Longer term solutions Required

- On going Partnerships
- Training and Retaintion
  - Enrolment of technical staff into the University of Botswana newly established Histotechnology and Cytotechnology degree programme
  - Residency Programme in Pathology at University of Botswana using National Health Laboratory as training centre.
    - Affiliated to the University of Cape Town, South Africa
    - Residents to spend 1-2 years of their training in South Africa
    - Fellowship of the College of Pathologists of South Africa





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Acknowledgements

- Ministry of Health, Botswana
- USG : CDC, PEPFAR
- Pink Ribbon Red Ribbon
- ASCP
- ASCCP
- University of Botswana
- University of Pennsylvania
- BUP
- Our wonderful patients!