Quality control in cervical cancer screening in Slovenia

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Quality control

Pathology

Cytopathology

Gynecological cytopathology
Organised cervical cancer screening programme in Slovenia

- Introduced in 2003
- 10 laboratories with legal permission from Ministry of Health
- 250,000 smears/year screened
- Target age group: 20-64
- Screening period: 3 years
- Cervical Screening Registry - obligatory reporting of all cytology (Bethesda system) and pathology results
Important elements of organised CC screening programmes

• Legal basis

• Training of all professionals - cytologists (school, workshops), gynecologists (colposcopy workshops....)

• Education of population and promotion of the programme

• Quality management and audit (guideliness, standards etc.)
Professional guideline

- Guideliness for cytology laboratories: for uniform smear reporting (PAP, in 2006 adaptation of Bethesda, in 2011 Bethesda), in 2006 establishment of School for screeners at the Institute of Oncology Ljubljana.

- Guideliness for management of screen-positive women.
NAVODILA
za poenotenje izvidov brisov materničnega vratu

2. prenovljena izdaja

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NAVODILA
ZA CITOLOŠKE IZVIDE BRISOV
MATERNIČNEGA VRATU -
KLASIFIKACIJA PO BETHESDI

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European Guidelines for Quality Assurance in Cervical Cancer Screening 2008
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Cervical cancer cases (2003-2009)

![Graph showing the number of cervical cancer cases from 2003 to 2009. The number of cases decreases from 210 in 2003 to 129 in 2009.]
Cancers should be placed in the context of high-grade CIN detected during the same period of time.
Clinicopathological characteristics of cervical cancer between 2003 and 2005, after the introduction of a national cancer screening program in Slovenia

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Cervical Cancer Screening: A Slovenian Experience

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ABSTRACT

In Slovenia, opportunistic screening was introduced in regular gynaecological practice in 1960. The population screened was unknown, as well as there were no standards for quality assurance and control. The number of smears read, there were no major changes in invasive cervical cancer incidence in the period, but in 1994 the incidence rate started to increase again to reach its peak in 1997 (23.1/100,000, 241 new cases). The experiences from the countries with effectively organised screening programmes, a decision was made by the Minister of Health to nominate a group of experts to prepare a proposal for organised cervical cancer screening on the basis of a similar study. In the pilot these experts questioned information...
Main methodologies for internal quality control in cytology:

- Methods based on re-screening of slides (random re-screening, retrospective re-screening of negative cytology results in patients with high-grade abnormality)

- Methods based on monitoring screening detection and reporting rates

- Methods based on correlation of cytology with clinical/histological outcome
Rapid Prescreening (RPS) – a pilot study

- 2,521 consecutive Pap smears
- 30-60 seconds per slide
- The threshold for pathologic smear: ASCUS
- Average sensitivity: 62.2%

- RPS affects the work flow
- In case of implementation of RPS the daily workload should be lowered
Rapid Prescreening as a Quality Assurance Measure in Cervical Cytology

Alenka Repše-Fokter, M.D., Ph.D., and Tina Čakš-Golec, M.D.

Objective
To assess the diagnostic validity of rapid prescreening (RPS) as a quality control method in our laboratory.

Study Design
All consecutive routine conventional Pap smears (n = 2,521) underwent RPS before full screening. Thirty to 60 seconds were allowed to prescreen each slide. The threshold for pathologic smear was atypical squamous cells of undetermined praxis the daily workload of 50 smears per day should be lowered. (Acta Cytol 2009;53:268–270)

Keywords: cervical cytology, quality control, rapid prescreening.

When prescreening is used, expectations of finding abnormal smears are higher.

The Pap smear is one of the modern success stories in the field of preventive medicine. Since its introduction as a screening test, there has been a dramatic reduction in the inci-
Quality control

- Control of sample quality
- Double reading of all abnormal smears (CT+CP)
- Double reading of normal smears with suspicious clinical signs (CT+CP)
- Review of smears with inconsistent histology results
- Periodical re-reading of smears
Quality control

- Cyto-histologic correlation
- Interdisciplinary consultation meetings
- Slide seminars, workshops
- Monitoring cytologic findings/sensitivity, specificity
Cytology findings in Slovenia in 2008, overall and by age

<table>
<thead>
<tr>
<th>Cervical cytology result</th>
<th>Stevilo</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>217.978</td>
<td>83,6</td>
</tr>
<tr>
<td>Negative for i.e. lesion</td>
<td>17.417</td>
<td>6,7</td>
</tr>
<tr>
<td>Neoplastic epithelial lesion</td>
<td>22.281</td>
<td>8,5</td>
</tr>
<tr>
<td>Undetermined</td>
<td>621</td>
<td>0,2</td>
</tr>
<tr>
<td>Total</td>
<td>258.297</td>
<td>100,0</td>
</tr>
</tbody>
</table>

![Graph showing cytology findings by age](chart.png)

Legend:
- Normal
- Negative for i.e. lesion
- Neoplastic epithelial lesion
- Undetermined
Rescreening of smears in patients with cervical cancer

“Rescreening of smears from patients with negative or low-grade test results less than 3-5 years before the diagnosis of invasive cancer forms an important part of quality control but should be taken in the context of all components of the screening history including cytological screening errors, sampling errors, non-compliance with follow-up recommendations, incomplete treatment and whether or not the cancer was screen-detected”

EU guidelines, 2nd edition 2008
Rescreening of smears in patients with CC

• National review with participation of all laboratories
• Slide selection: all negative, LSIL and inadequate smears last three years before the diagnosis of CC
• Slide in question + 2 additional slides
• Identifying marks (dots, circles) are removed from the glass
• Slides are covered with a new label (prevents the evaluator from seeing the original laboratory label)
Rescreening of smears in patients with CC

- Review of slides by four experienced cytopathologists
- Consensus diagnoses
- Analysis of results
- Feed-back information
- Review and discussion at workshops every year
Review of negative and low-grade cervical smears in women with invasive cervical cancer after the first 3 years of the national cervical screening programme in Slovenia

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Distribution of patients according to histologic type of carcinoma

- Squamous carcinoma: 121
- Adenocarcinoma: 26
- Adenosquamous carcinoma: 15
- Other: 3

(all cases 2006 (N=161), study cases 2006, study cases 2009)
Results of Slovenian audit

- Women with previous cytology (with or without recent high-grade smears) were more likely to have stage I cancers than those without cytology ($P < 0.0001$).

- A higher proportion of smears preceding adenocarcinomas were true negative.

- Many false negatives relate to sampling errors or are of limited quality (air drying, obscured by exudate, blood, etc)

- Under-diagnosed smears were not related to cancer stage or last cytology report before diagnosis.
Review of the literature

- Meta-analysis of 28 published series (N=1545): 47% (0%-85.7%) of smears reclassified as abnormal (from R. Mac DeMay, The Pap Test)
- 27/47 cases upgraded (Bofin et al, 2007)
- 100/209 smears were considered to have been reported appropriately (Coleman and Poznansky, 2006)
- Abnormalities in 33.3% of slides originally reported as negative (Herbert et al, 2010)
- FN rate at the cutoff of LSIL or worse 35% (Lonnberg et al, 2010)
Reasons for false negatives

- Few abnormal cells
- Small abnormal cells (difficult to find)
- Bland abnormal cells (difficult to interpret)
- Hyperchromatic crowded groups
- Obscuration: excess exudate, blood; poorly preserved
- Glandular atypia not recognised
Conclusions

• A zero screening error rate is impossible to achieve.

• It is also probably impossible to define an acceptable screening error rate

• Cervical cancer audit identifies areas where screening procedures could be improved and screening error rate reduced

• Cervical cancer audit demonstrates the importance of quality assurance guidelines
"Mistakes, obviously, show us what needs improving. Without mistakes, how would we know what we had to work on?"

(Peter McWilliams)
Thank you!