ACGME Competency / Milestone Assessment

The Pap Test

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*The 6 ACGME Competencies*

- Medical Knowledge
- Practice Based Learning
- System based practice
- Interpersonal and communication skills
- Patient care
- Professionalism
1. Normal cytology
   a. Medical Knowledge
      i. Recognize the normal cellular and non-cellular elements visible in a Pap smear.
      ii. Recognize normal squamous cells and their degree of squamous differentiation according to cytoplasmic and nuclear features.
         1. Basal cells
         2. Parabasal cells
         3. Intermediate cells
         4. Superficial cells
      iii. Recognize normal glandular cells and their potential site of origin according to cytoplasmic and nuclear features.
         1. Endocervical cells vs. endometrial cells.
      iv. Recognize the morphologic features of exodus.
      v. Identify and recognize the significance of Barr bodies in normal cells.
      vi. Understand the concept of maturation index.
      vii. Identify intrinsic and extrinsic conditions and factors that result in the various maturation patterns.
      viii. Recognize normal bacterial flora identifiable in Pap smears.
   b. Practice Based Learning
      i. Understand how the patient’s age and time in menstrual cycle influence the findings in Pap smears.
      ii. Identify the representative maturation patterns according to the percent parabasal, intermediate and superficial cells present.
      iii. Understand the importance of clinical history and other significant conditions in the accurate interpretation of the maturation index.
      iv. Understand how varying hormonal status affect the presence of Barr bodies and the number thereof.
      v. Recognize artifacts that might obscure cellular detail or mimic neoplasia.
         1. “Cornflake” artifact
         2. Endocervical brush artifact
         3. Cone biopsy artifact

2. Benign Cellular Changes
   a. Medical Knowledge
      i. Recognize normal benign squamous proliferative reactions according to their cytoplasmic and nuclear features.
         1. Reserve cell hyperplasia
         2. Immature squamous metaplasia
         3. Mature squamous metaplasia
      ii. Recognize normal benign glandular proliferative reactions according to their cytoplasmic and nuclear features.
         1. Reactive endocervical cells
2. Microglandular endocervical hyperplasia
3. Tubal metaplasia

iii. Understand the clinical significance of the benign squamous and glandular proliferative reactions.
iv. Understand the importance of benign squamous proliferative reactions as potential mimickers of neoplastic conditions.
v. Recognize the various keratotic reactions.
   1. Hyperkeratosis
   2. Parakeratosis
   3. Atypical parakeratosis

b. Practice Based Learning
   i. Understand the nuclear features that allow distinction between proliferative reactions and neoplastic conditions.
   ii. Identify artifacts commonly seen in benign proliferative reactions, such as spider cells and cytoplasmic vacuolization.
   iii. Understand the significant conditions that might be related to the various keratotic reactions.

3. Organisms and the PAP Test
   a. Medical Knowledge
      i. Recognize morphologic features of *Trichomonas vaginalis* infection.
      ii. Recognize morphologic features of *Candida species* infection.
      iii. Recognize morphologic features of *Actinomyces* infection.
      iv. Recognize morphologic features of *Gardenella vaginalis* infection and non-specific bacterial vaginosis, including the characteristic “clue cells”.
      v. Recognize morphologic features suggestive of *Chlamydia trachomatis* infection.
      vi. Recognize morphologic features of leptothrix infection.
      vii. Recognize morphologic features of herpes infection.
      viii. Recognize morphologic features of cytomegalovirus infection.
   b. Practice Based Learning
      i. Understand the clinical presentation and implication of these infections.
      ii. Identify the characteristic epithelial changes that might be seen in association to *Trichomonas* and *Candida* infections.
      iii. Identify underlying clinical conditions that predispose to certain infections.
      iv. Recognize non-specific epithelial changes associated with infections as mimickers of neoplastic disease.

4. Effects of Therapeutic Agents
   a. Medical Knowledge
      i. Recognize the morphology associated to the presence of intrauterine devices (IUDs).
      ii. Recognize the morphology of acute and chronic radiation change.
      iii. Recognize the morphology of changes associated to chemotherapeutic agents.
iv. Recognize the changes seen in exogenous estrogen and/or progesterone administration.

b. Practice Based Learning
   i. Understand how to differentiate post-radiation and chemotherapy changes from recurrent/residual carcinoma.
   ii. Understand how to differentiate atypical cells associated to IUDs from neoplastic disease.
      1. Hypervacuolated endocervical cells
      2. Hypervacuolated metaplastic cells
      3. Endometrial cells
   iii. Understand the utility of topical estrogen therapy in evaluation of atrophic pattern Pap smears.

5. Cytology of Pregnancy
   a. Medical Knowledge
      i. Understand the effect of hormones during pregnancy and puerperium on the cervical epithelium and the maturation index.
      ii. Recognize glycogenated intermediate cells or “navicular cells” characteristic of pregnancy.
      iii. Recognize reactive endocervical cells and increased number of histiocytes as normal changes seen in pregnancy.
      iv. Recognize decidual cells.
      v. Recognize Arias-Stella reaction.
      vi. Recognize throphoblastic cells, including cytotrophoblasts and syncytiotrophoblasts.
      vii. Recognize non-cellular elements present during pregnancy, such as radiate crystalline arrays (“Cockleburrs”).
      viii. Recognize characteristic changes of puerperal endometritis.
      ix. Understand the significance of dysplasia or carcinoma diagnosis in the Pap smear of a pregnant patient.
   b. Practice Based Learning
      i. Understand how changes in the maturation index of a pregnant patient can be explained by underlying fetal abnormalities.
      ii. Understand the significance of decidual cells, Arias-Stella reaction and throphoblasts as mimics of neoplastic disease.
      iii. Understand the differential diagnosis of multinucleated giant cells during pregnancy.
         1. Syncytiotrophoblasts
         2. Viral infection – Herpes
         3. Giant cell histiocytes
         4. Dysplasia/neoplasia
      iv. Understand the management of cervical neoplasia during pregnancy.

6. Miscellaneous non-Neoplastic Conditions
   a. Medical Knowledge
      i. Recognize Fallopian Tube cells.
ii. Recognize benign glandular cell in post-hysterectomy patients.
iii. Recognize ferning of cervical mucus.
iv. Recognize Curshmann’s spirals.
v. Recognize changes consistent with fistulae formation.
   1. Rectovaginal fistula
   2. Vesicovaginal fistula
vi. Recognize changes consistent with neovagina according to the graft site of origin.
vii. Recognize the presence of seminal vesicle cells and spermatozoa.
viii. Recognize the presence of psammoma bodies.
ix. Recognize reparative and regenerative changes and understand the settings in which these present.
   x. Recognize atypia of atrophy and maturity and understand the clinical settings in which these present.

b. Practice Based Learning
   i. Understand the potential origin and significance of benign glandular cells in post-hysterectomy patients.
   ii. Understand the significance of reactive atypia as a mimic of neoplasia in samples from patients with fistulae or neovagina.
   iii. Differentiate seminal vesicle cells from high-grade malignancy or melanoma.
   iv. Understand the relationship of psammoma bodies with underlying benign or malignant processes.
   v. Understand the significance of reparative/regenerative changes as mimics of neoplastic disease, recognizing cytologic features that aid in this differential.
      1. Cohesive nature of reparative processes
      2. Presence of associated infection/inflammation in repair/regeneration
      3. Absence of tumor diathesis in reparative changes
   vi. Understand the significance of atypia of atrophy and maturation as mimics of neoplastic disease, recognizing clinical intervention as an aid in the evaluation of these cases.
      1. Repeat Pap smear post estrogen stimulation
   vii. Understand the follow-up care for patients with atypical repair or atrophy if dysplasia or cancer cannot be entirely ruled out.

7. Epithelial Cell Abnormalities
   a. Medical Knowledge
      i. Recognize atypical squamous cells of undetermined significance (ASCUS).
      ii. Recognize atypical parakeratosis.
      iii. Recognize low-grade squamous intraepithelial lesion (LSIL).
      iv. Recognize high-grade squamous intraepithelial lesion (HSIL).
      v. Recognize atypical squamous cells, cannot rule out high-grade (ASC-H).
      vi. Recognize squamous intraepithelial lesion with gland involvement.
vii. Recognize squamous cell carcinoma and associated tumor diathesis, and recognize the keratinizing and nonkeratinizing variants.

viii. Recognize small cell carcinoma.

ix. Recognize patterns of HSIL that can easily be missed.
   1. Rare small HSIL cells
   2. Stream of HSIL cells, usually within mucus

b. Practice Based Learning
   i. Know how to distinguish the various categories of epithelial cell abnormalities from each other and from benign mimics.
   ii. Understand the role of HPV infection in the development of squamous lesions.
   iii. Understand that morphologic changes compatible with HPV infection (koilocytes) are considered low-grade intraepithelial lesion.
   iv. Understand criteria used to differentiate squamous intraepithelial lesion with gland involvement from a glandular neoplasm.
   v. Understand the correlation between cytologic diagnosis and the surgical pathology counterpart.
   vi. Understand the rate of progression of the various epithelial lesions and the implications of the diagnosis for the patient.
   vii. Understand the utility of reflex HPV testing after certain diagnosis and know when it is appropriate to perform this test.

8. Glandular Cell Abnormalities
   a. Medical Knowledge
      i. Recognize atypical endocervical cells.
         1. Not otherwise specified
         2. Favor neoplastic
      ii. Recognize atypical endometrial cells
         1. Not otherwise specified
         2. Favor neoplastic
      iii. Recognize atypical glandular cells
         1. Not otherwise specified
         2. Favor neoplastic
      iv. Recognize endocervical adenocarcinoma in situ
      v. Recognize adenocarcinoma.
         1. Endocervical
         2. Endometrial
         3. Extrauterine
         4. Not otherwise specified
   b. Practice Based Learning
      i. Know how to distinguish the various categories of glandular cell abnormalities from each other and from benign mimics.
      ii. Understand the role of HPV infection in the development of glandular lesions.
      iii. Understand the correlation between cytologic diagnosis and the surgical pathology counterpart.
iv. Understand the implications for the patients of a diagnosis of a glandular lesion.

v. Utilize the background findings as an aid in the classification of adenocarcinoma according to the site of origin.

9. Human Papillomavirus (HPV)
   a. Medical Knowledge
      i. Understand the pathophysiology of human papillomavirus (HPV) infection.
      ii. Recognize low-risk and high-risk HPV serotypes.
      iii. Recognize morphologic features of HPV infection (i.e. koilocytes).
      iv. Describe the methods of detection of HPV infection.
         1. In situ hybridization
         2. Southern blot technique
         3. Polymerase chain reaction
      v. Recognize atypical immature metaplasia.
   b. Practice Based Learning
      i. Understand the effect of HPV infection according to the epithelium involved.
         1. Keratinized epithelium vs. mature metaplastic epithelium
      ii. Understand that the nuclear features are the key in differentiating true koilocytes from changes seen in certain reactive processes.
      iii. Understand the type of epithelial cell abnormality and its prognosis according to the HPV serotype present.
      iv. Understand the sensitivity of the various methods of detection of HPV infection.
      v. Understand the most appropriate method of detection of HPV infection to be used according to the clinical scenario.
      vi. Understand that HPV related changes can coexist with high-grade dysplasia.

10. Pap Test Screening Guidelines
   a. Medical Knowledge
      i. Recognize the recommended age or situation for initiating cervical cytology screening.
      ii. Recognize the frequency with which screening should be performed.
      iii. Recognize the age or situation for discontinuing cervical cytology screening.
      iv. Recognize the utility of HPV DNA testing as an adjunct to cytology for cervical cancer screening.
   b. Practice Based Learning
      i. Understand how the general screening guidelines vary according to the testing method employed.
      ii. Understand special situation under which the screening guidelines for a patient would differ from those of the general population.
iii. De able to recognize situation in which reflex ancillary testing would be required as part of the screening process, and how these situations vary according to the patient’s age.

11. Pap Test Management Guidelines
   a. Medical Knowledge
      i. Know the basic management algorithms set forward by the American Society for Colposcopy and Cervical Pathology.
         1. Management of women with ASCUS
         2. Management of women with ASC-H
         3. Management of women with LSIL
         4. Management of women with HSIL
         5. Management of adolescent women with ASCUS or LSIL
         6. Management of adolescent women with HSIL
         7. Management of pregnant women with LSIL
         8. Initial and subsequent management of women with AGC
   b. Practice Based Learning
      i. Understand the practical consequences of a certain diagnosis with regards to follow-up and/or additional test required.
      ii. Understand that management of ASCUS and LSIL in adolescent women is similar, as opposed to the management of these categories in women over 20 years.
      iii. Understand the variations to the management guidelines according to special situations.
         1. Adolescents
         2. Pregnant patients
         3. Postmenopausal

12. Liquid-based Pap Testing
   a. Medical Knowledge
      i. Recognize the increased quality of liquid-based Pap testing over conventional smears.
      ii. Recognize the various commercially available liquid-based preparations.
      iii. Recognize de guidelines for estimating cellularity of liquid-based preparations.
      iv. Understand the main differences among the commercially available liquid-based preparations.
         1. Preservation fluid utilized
         2. Requirements for adequacy
         3. Differences in surface area of field to evaluate
      v. Recognize the value of liquid-based testing for performing additional ancillary tests.
   b. Practice Based Learning
      i. Understand the significant advantages of liquid-based testing over conventional methods related to sensitivity and potential for ancillary testing.
ii. Understand the practical methods of determining adequacy according to the commercial liquid-based preparation utilized.

13. An Overview of Bethesda System

   a. Medical Knowledge
      i. Know the basic outline for reporting cervical cytology according the 2001 Bethesda System.
      ii. Recognize the adequacy or inadequacy criteria for interpretation of a Pap test.
      iii. Recognize the differences of adequacy and interpretation when dealing with a conventional smear as opposed to a liquid based pap test.
      iv. Understand the general diagnostic categories.
      v. Recognize when reporting additional information is of value to the clinician and patient.
         1. Ancillary testing
         2. Automated review
         3. Educational notes and suggestions

   b. Practice Based Learning
      i. Understand the minimum quality and quantity of material present to evaluate in order to consider a specimen as adequate.
      ii. Understand the various situations, other than quantity of cells present to evaluate, that would render a specimen unsatisfactory or inadequate for evaluation.
         1. Obscuring factors
         2. Specimen not labeled
         3. Broken slides
      iii. Understand the use of explanatory notes to convey important information that might not be explicit in the standard layout of a report.

14. System Based Practice Monitors. The Practitioner Should:
   i. Develop an understanding of the organization and function of the different technical sections of the laboratory processing and diagnosing gynecologic cytology specimens, and to practice cost-effective laboratory utilization and resource allocation that does not compromise quality care.
   ii. Develop an understanding of how gynecological cytopathology services and other professional practices affect other health care professionals and organizations managing patients based on results of gynecologic cytopathology reports.
   iii. Develop clear understanding of the government regulations for State, CLIA, CAP, JCAHO, HIPPA/patient data security requirements for practice management.
   iv. Demonstrate a clear understanding of basic billing requirements (ICD-9 & CPT-codes) and re-imbursement policies in compliance with Medicare and Medicaid.
   v. Develop full knowledge of regional and national proficiency standards for cytopathologists and cytotechnologists interpreting gynecologic cytopathology specimens.
   vi. Develop an understanding of quality assurance and quality control issues relative to gynecological pathology. This includes but not limited to:
      1. Maintenance of ASCUS to SIL ratio
      2. Histopathologic correlation of HSIL and malignant cases
3. Five-year retrospective review of normal gynecologic specimens in patients with a new diagnosis of HSIL
4. Using appropriate controls for each test performed; molecular, IHC, in-situ hybridization, etc.
References: