

What Does 'Reactive Change' in a Pap Smear Mean?

Development of Cervical Cancer



NORMAL



REACTIVE



MILD DYSPLASIA



MODERATE DYSPLASIA



SEVERE DYSPLASIA



CANCER

- *Nonspecific Reactive Changes*
- *Benign Reactive Changes*
- *Reactive*
- *Repair*

These terms are used to describe cell changes that are neither precancerous nor normal. On a scale of 1 (normal) to 5 (cancer), these changes were at one time termed *class 2*. Although these abnormalities are not considered cancerous or precancerous, it is important that patients with these findings have regular, ongoing medical follow-up.

The drawings at left illustrate what a reactive cell looks like in comparison to normal and dysplastic cells. 🍷

An abnormal Pap smear does not necessarily mean that a patient has cancer. Abnormal cells are the result of many different diseases ranging from infection to cancer. The type of follow-up necessary for these conditions varies, and will be determined by your doctor.

Some Terms Used in Pap and Biopsy Reports

Atypia or atypical cells: cells that are not normal; a sign of possible disease.

Biopsy: removal of a small sample of tissue for microscopic examination by a pathologist.

Carcinoma: cancer (does NOT = death).

Carcinoma in-situ: changes confined to the surface of the cervix; does not invade deeper tissues.

Cervical Intraepithelial Neoplasia (CIN): precancerous changes in the cervix. See *Dysplasia*.

Dysplasia: abnormal cells that are potentially precancerous (NOT cancer).

Endocervical curettage (ECC): a diagnostic procedure in which tissue is scraped from the cervical canal for evaluation.

Epithelium: a protective surface layer of cells; e.g., skin.

Genital warts: abnormal growths of epithelium resulting from infection by papillomavirus; also called *condyloma*.

HPV (human papilloma virus): a virus that sometimes causes wart-like growths in the genital area and increases risk of cervical precancer and cancer.

Invasive cancer: cancer that has spread from surface cells to deeper tissues.

Neoplasia: the growth of tumor cells (benign or malignant).

Nonspecific Reactive Changes: cellular changes that are not clearly precancerous or normal.

Squamous Intraepithelial Lesion (SIL): precancerous cells confined to the cervical surface layer, see *Dysplasia* and *Carcinoma in situ*.

What Is Cervical Dysplasia?

Development of Cervical Cancer



NORMAL



REACTIVE



MILD DYSPLASIA



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SEVERE DYSPLASIA



CANCER

A Pap smear is used to look for abnormal cells, and there are various terms used to describe abnormal cellular changes. The term *dysplasia* is used by many laboratories and doctors and literally means “disordered development.” Dysplasia and its synonyms (see back of card) are considered a precancerous condition that is very treatable. High-grade dysplasia (moderate and above) is considered more serious in its potential to progress and is treated by attempts to remove the dysplastic areas from the cervix. Low-grade (mild) dysplasia can sometimes resolve on its own, and your physician will discuss with you the type of treatment (if any) that is best for your condition. Dysplasia requires close follow-up, either by more frequent Pap testing or by specialized procedures performed in the doctor’s office. 🍷

Cervical Dysplasia Terminology

Graded Dysplasia	Cervical Intraepithelial Neoplasia (CIN)	The Bethesda System
Mild dysplasia	CIN I	Low-Grade Squamous intraepithelial lesion
Moderate dysplasia	CIN II	High-Grade Squamous Intraepithelial Lesion
Severe dysplasia Carcinoma in-situ	CIN III	

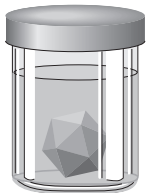
From the above chart, it is evident that there are different types of reporting terminology to describe a spectrum of abnormal findings.

It is important to understand that the presence of dysplastic cells does not mean that a woman has cancer.

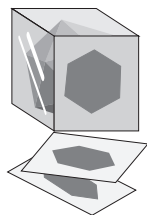
What Happens to Your Biopsy?



Your doctor recommends a biopsy to better understand the nature of your medical condition. A biopsy involves removing a small sample of your tissue for examination.

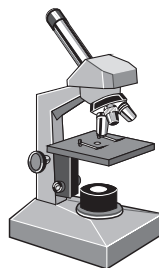


After your doctor takes the biopsy, the tissue sample is preserved in a special fluid and sent to the pathology laboratory.



Next, specialized technologists process the sample through a series of chemical solutions and embed the tissue in a wax mold. With a special knife, the mold is cut into very thin slices which are mounted on clear glass slides.

The thin slices are nearly transparent and must be stained with special dyes to make them visible for examination through a microscope.



EXAMINATION

Finally, the stained slides are examined microscopically by the pathologist. The tiny individual cells that make up your tissue are now visible when viewed through a microscope. The shape and arrangement of these cells allow the pathologist to make a diagnosis.



TURNAROUND TIME

In most cases this entire process takes only a couple of days. It may, however, take longer if additional studies or consultations are necessary to make the correct diagnosis. Please do not worry if this happens; each tissue sample is unique, and some take longer to examine than others.



FOLLOW-UP VISIT

After the pathologist has completed the consultation, a written report is sent to your doctor. At a follow-up visit, your doctor will discuss the report with you and recommend any further treatment that may be necessary. 🍷

continued on reverse

What Are Atypical Squamous Cells of Undetermined Significance (ASCUS)?



NORMAL



REACTIVE



ASCUS



DYSPLASIA

A Pap smear looks for abnormal cells, and there are various terms to describe these abnormalities. Most detected abnormalities are due to either reactive change or a treatable, premalignant condition known as *dysplasia*. Rarely, however, abnormal cells are encountered in screening which are not easily classified as either reactive or premalignant, and their significance is therefore uncertain. These cells are not of typical appearance (and are, therefore, *atypical*) and are called *Atypical Squamous Cells of Undetermined Significance* (ASCUS). Most of the time, ASCUS turn out to be caused by reactive changes, but follow-

up studies are necessary to be certain they are not premalignant. HPV testing is sometimes used to help determine the type of follow-up. Your doctor will determine the appropriate treatment.

More information on ASCUS and special testing used following the diagnosis is available at www.cancer.gov/cancerinfo/pdq/prevention and www.digene.com/hpv resource/patient_answers. 📌

What Happens to my Pap Smear?

Many people believe that the Pap smear is an automated test, similar to a blood test. In fact, evaluation of a Pap test is a very labor-intensive, manual process. Although automated machines have been developed to aid in the review of normal-appearing Pap smears, routine screening of every Pap test must also be performed by a human.

After your doctor collects your Pap smear, it is sent to a laboratory where it is processed and reviewed by a cytotechnologist. Cytotechnologists are highly trained professionals who have a bachelor's degree followed by one year of special training in cytology. The cytotechnologist looks at the individual cells on your Pap test using a microscope. If any abnormalities are detected, the Pap test is also reviewed by a pathologist, a physician specially trained to evaluate tissues and cells under a microscope. After review, a report of the results is sent to your doctor.

What are the Limitations of the Pap Smear?

The Pap smear is an imperfect test. Despite its many successes, the test occasionally fails to detect disease. This can happen in two ways. First – and most common – the disease may not be present in the smeared collection – known as *sampling variability*. Second, it can occur as a result of not detecting abnormal cells on a slide. Such “false-negative” smears occur in every laboratory. It is estimated that a skilled cytotechnologist will misinterpret one out of every 100 to 400 smears. This is the equivalent of one “miss” for every one to two weeks screening. The limitations are best overcome by *regular interval testing*. The College of American Pathologists recommends yearly Pap smears.

Why Do I Need a Pap Smear Every Year?

A yearly Pap smear is believed to be the best way to counter the drawbacks of the Pap test (see “Limitations” above). Since cervical cancer – in most instances – takes several years to develop, regular testing provides more than one opportunity to catch the disease in an early, treatable state. Most women with abnormal Pap smears have subsequent therapy which completely removes the areas of abnormality. The most important step in early treatment, however, is early detection. This is best provided by annual testing. 📌

FNA Reference Card

Points to Remember

- ▶ The biopsy is obtained by rapid in-and-out (“sewing-machine”) movement of the needle.
- ▶ Stop aspiration when blood is visible in the needle hub.
- ▶ Release vacuum in syringe before removing needle from target.
- ▶ Air must be present in syringe to express material onto slide.
- ▶ Gently express a *small* drop of aspirate onto a frosted-end glass slide.
- ▶ “Side-to-side” pull will result in two smears.
- ▶ Air-dry one slide (label “AIR”) for Romanowsky stain. Do not fix.
- ▶ Fix one slide immediately after smearing (label “FIX”).
- ▶ Rinse needle with CytoLyt™ after smear drop expressed.
- ▶ Send smears and CytoLyt™ container labeled with patient’s name along with properly completed cytology requisition slip. Please include pertinent clinical history, anatomic site sampled, nature of mass, quantity and gross appearance of the aspirate, and the number of passes completed.

Helpful Hints

- ▶ Label slides IN PENCIL before procedure begins.
- ▶ Try using needle alone (no syringe) for vascular (e.g., thyroid) targets.
- ▶ Have 10-cc syringe of CytoLyt™ available to expel needle contents into vial and rinse needle at same time.
- ▶ If a cyst is encountered, evacuate, and expel into equal parts CytoLyt™ (make no smears), palpate for a residual nodule for subsequent needle passes.

- ▶ Release suction before removing the needle from the patient. Withdrawing the needle while maintaining suction will pull material back into the syringe, making the material virtually impossible to recover.
- ▶ Generally, fifteen to twenty strokes are considered adequate to obtain material within the needle. The needle should be removed sooner if blood or tissue is visible in the needle hub.
- ▶ Multiple passes (3-6 needle sticks) are recommended. Direct needle in one directional plane at a time. Repeat sticks require a new needle and redirection to a different area of the target lesion.
- ▶ If a cyst is encountered, it should be completely drained and the area re-examined for a residual lesion/mass. If a lesion/mass is still palpable, the aspiration should be repeated.

Antiseptic Preparation

For most superficial FNABs, little preparation beyond hand washing, donning suitably flexible gloves, and cleaning the skin over the aspiration site with an alcohol swab is necessary. For the usual FNAB, the preparation is comparable to that performed before inserting an intravenous line, drawing blood, or giving a parenteral injection.

Anesthesia

Most superficial FNABs are performed without local anesthesia for the following reasons:

- ▶ Injection of local anesthetic agents into the region can cause more pain than the FNAB itself.
- ▶ Infusion of the anesthetic agent can obscure anatomic detail and make the target lesion/mass difficult to palpate.
- ▶ Infusion of an anesthetic agent into the region of the target lesion/mass can cause degeneration and loss of cellular morphology.

Continued on reverse