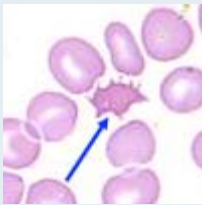
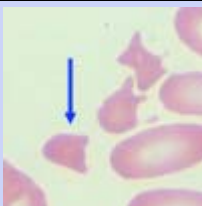
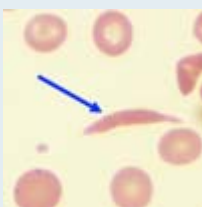
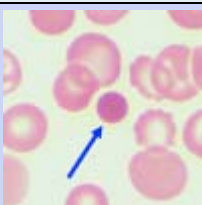



## Red Cell Shape Variation

Normal red blood cells appear round on a stained smear preparation and have very little shape variation.

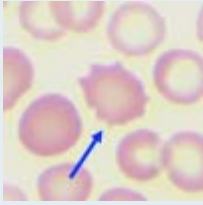
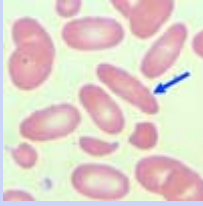
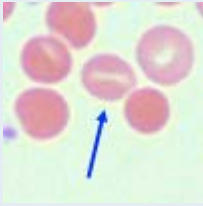
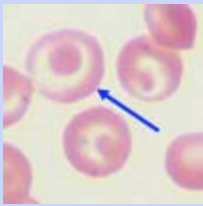
Therefore, recognition and accurate identification of morphologic shape changes in red cells can be invaluable in diagnosis of specific pathologic conditions and differentiating anemias. Although many of the red blood cell shape variations have multiple nomenclatures in use (e.g., dacryocytes and teardrop), the more commonly reported names will be used in this discourse.

Certain morphological variations in red blood cell shape can have critical clinical significance and should be identified and reported even when they are seen in low numbers. These variations in shape include:

Cell Name	Image	Description
Acanthocytes		Small, densely stained and irregular shaped red blood cells with unevenly spaced thorn-like or club shaped projections over the surface of the cells.
Schistocytes		Fragments of red blood cells that may be triangular, helmet, or irregular in shape. They are evidence of mechanical damage to the red blood cells.
Sickle Cells		Thin, elongated red cells with pointed ends and dense staining. They may be straight or crescent shaped, or appear to be folded and exhibit S, V, or L shapes. Sickle cells lack the normal deformability of red cells and have increased mechanical fragility.
Spherocytes		Round, densely stained red cells lacking any central pallor. Spherocytes are red cells that have lost the normal biconcave disc shape. Even though they appear round on a smear, as do normal red cells, they are in fact a variation in shape.
Teardrops		Elongated red cells, but at one end only, and resembling a teardrop. Teardrop cells can be formed by the 'pitting' action of the spleen removing cellular inclusions, and in pathologic diseases of the bone marrow.

## Red Cell Shape Variation

Other morphological variations in red blood cell shape have little significance when seen in very low numbers and are clinically relevant when their presence is more obvious. These variations in shape include:

Cell Name	Image	Description
Burr cells		Red cells with evenly distributed, irregular sized blunt projections on the surface of the cell membrane.  Burr cells are not easily distinguished from crenated red cells which are artifacts. Crenated cells have more uniform projections on the cell membrane, and are generally seen in great numbers, or in specific areas on a smear. Burr cells have a more random distribution.
Ovalocytes / Elliptocytes		Oval or elliptical red blood cells that range in shape from slightly egg-shaped to rod or pencil forms. Ovalocytes have normal central pallor with the hemoglobin concentrated at the ends of the elongated cells.
Stomatocytes		Red cell with an elongated, slit-like area of central pallor. The central pallor resembles a mouth; the descriptive name of the cells originates from the Greek word, stoma, meaning mouth.
Target cells		Red cells with a central dense area of hemoglobin surrounded by a ring of nearly colorless pallor and a peripheral ring of hemoglobin. Target cells are often described as 'Mexican hat' cells because of their appearance.

Poikilocytosis is a general term used to describe variation in shape among a population of red blood cells, but it is a non-specific description with little clinical relevance since it does not indicate the types of the shape variations. It is best to denote the specific morphologies that are present.