

hemoglobin/hematocrit for the age and sex of the patient (**Table 63-4**). This provides an estimate of the reticulocyte count corrected for anemia. To convert the corrected reticulocyte count to an index of marrow production, a further correction is required, depending on whether some of the reticulocytes in circulation have been released from the marrow prematurely. For this second correction, the peripheral blood smear is examined to see if there are polychromatophilic macrocytes present.

TABLE 63-4 Calculation of Reticulocyte Production Index

Correction #1 for Anemia:

This correction produces the corrected reticulocyte count.

In a person whose reticulocyte count is 9%, hemoglobin 7.5 g/dL, and hematocrit 23%, the absolute reticulocyte count = $9 \times (7.5/15)$ [or $\times (23/45)$] = 4.5%

Note. This correction is not done if the reticulocyte count is reported in absolute numbers (e.g., 50,000/ μ L of blood)

Correction #2 for Longer Life of Prematurely Released Reticulocytes in the Blood:

This correction produces the reticulocyte production index.

In a person whose reticulocyte count is 9%, hemoglobin 7.5 g/dL, and hematocrit 23%, the reticulocyte production index

$$= 9 \times \frac{(7.5/15)(\text{hemoglobin correction})}{2(\text{maturation time correction})} = 2.25$$

These cells, representing prematurely released reticulocytes, are referred to as “shift” cells, and the relationship between the degree of shift and the necessary shift correction factor is shown in **Fig. 63-13**. The correction is necessary because these prematurely released cells survive as reticulocytes in circulation for >1 day, thereby providing a falsely high estimate of daily red cell production. If polychromasia is increased, the reticulocyte count, already corrected for anemia, should be corrected again by 2 to account for the prolonged reticulocyte maturation time. The second correction factor varies from 1 to 3 depending on the