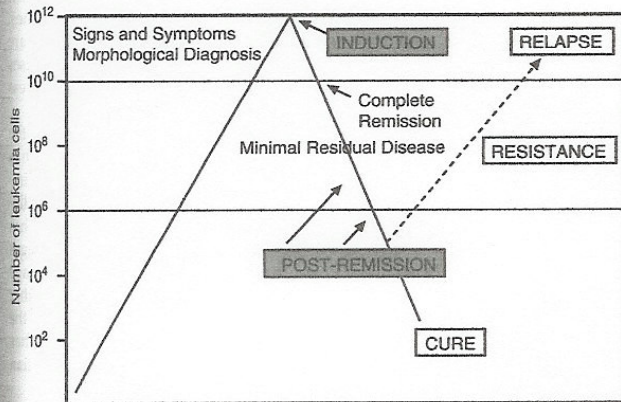


**Figure 79.10.** Determination of chemosensitivity to daunorubicin using the microculture kinetic (MiCK) assay of apoptosis. Myeloblasts from a patient with responsive acute myeloid leukemia (AML) (A) and a patient with resistant AML (B) are shown. The MiCK assay monitors the optical density (OD) of cell cultures exposed to antitumor drugs. Plotting OD against time provides a kinetic representation of responses to drugs. Serial OD readings are shown from untreated control cultures (thin lines) and cultures with 5  $\mu\text{M}$  daunorubicin (thick lines). Autonomous cell growth causes the slow OD increase in control cultures. The steep increases in the OD in (A) induced by daunorubicin are caused by increased side scattering of light from cells undergoing apoptosis. The slope [dotted line in (A)] of this steep increase, expressed as kinetic units, correlates directly with the percentage of apoptotic cells. The absence of any steep increase above controls in (B) indicates negligible apoptosis in response to 5  $\mu\text{M}$  daunorubicin. C: The dose-response relationship for the two leukemias is shown over a range of daunorubicin concentrations that can be achieved *in vivo*. (Courtesy of Drs. Vladimir Kravtsov and Mark Koury, Vanderbilt University, Division of Hematology/Oncology, Nashville, TN.)

Postremission therapy may consist of maintenance, consolidation, or intensification therapy. Maintenance therapy is less intensive and less myelosuppressive than induction; consolidation involves regimens similar to those used in induction; and intensification involves the use of drugs at higher dosages than in induction (483,490). Maintenance therapy is not as important in AML as it is in ALL. Randomized trials show that maintenance therapy may prolong initial remissions (491,492), but they also show no benefit of maintenance in improving the cure rate of AML (493,494). Maintenance therapy is probably not warranted in AML if the postremission therapy is of adequate

intensity (493–495). There does appear to be a role for maintenance in APL (Chapter 82), and maintenance therapy could be considered in the elderly due to difficulty in delivering intensive consolidation chemotherapy. Additionally, randomized trials evaluating the role of intensive consolidation therapy have not shown an improvement in survival of the elderly. The cure rate of adult AML by chemotherapy is usually reported as 10 to 50% and depends on a number of factors, including age, prior MDS, rapidity of obtaining a CR, and cytogenetics. Recent studies with the use of high-dose cytarabine (HiDAC) in intensification or ATRA and anthracyclines in APL



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**Figure 79.11.** Phases of therapy. The diagnosis of acute myeloid leukemia can be made when the leukemia cell number is greater than  $10^{10}$ . Induction therapy achieves a clinical complete remission and is followed by postremission therapy with a goal of cure. If cells develop mechanisms of resistance, relapse occurs.