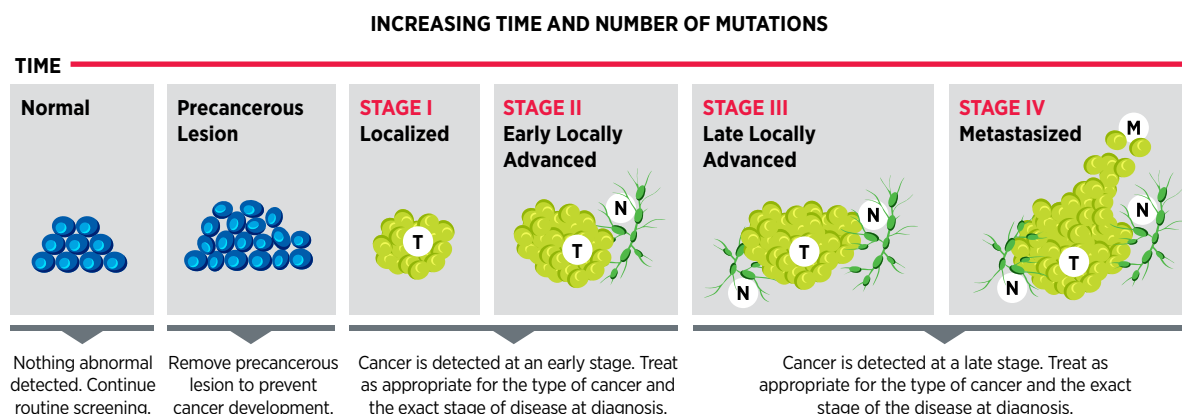


FIGURE 12

Cancer Screening: What Can Be Found? What Can Be Done?



In general, cancers are progressive in nature. In the example depicted here, a normal cell contains an inherited genetic mutation or an acquired one. At this juncture in cancer progression, cancer screening tests are not able to detect the alterations even though the cell is predisposed to becoming cancerous. As the cell multiplies and acquires more genetic mutations, it gains precancerous characteristics (such as uncontrollable cell growth), and an increasingly abnormal precancerous lesion becomes detectable. Without treatment, additional mutations accumulate over time, and the precancerous lesion evolves into a cancerous lesion (tumor; T) that spreads to nearby lymph nodes (N) and ultimately metastasizes (M) to other organs in the body. Solid tumors are usually staged using the TNM staging system. Because blood cells circulate throughout the body, cancers originating from different types of blood cells are staged differently from those that originate from solid tissues.

When a person is screened for a given cancer, different outcomes can be predicted based on the finding. For example, the screening test may show that there is no

abnormality present; if this is the case, the person should continue routine screening. If the test detects a precancerous lesion, the lesion can be removed or treated, thus preventing its progression into cancer. If the test finds a cancer at an early stage of development, for example stage I or stage II for a solid tumor, the patient can be treated successfully with prevention medication or risk-reducing surgery and has a higher likelihood of survival. If the test identifies a genetic mutation that increases the risk of developing cancer, the individual may receive preventive medication and/or genetic counseling. If the test detects cancer at an intermediate stage, there is still a chance of cure, albeit lower than if the cancer was detected at stage I or II. Treatment is less likely to be curative if the test detects cancer at a later stage of development, i.e., stage III or stage IV. Treating or surgically removing a precancerous lesion or cancer at the earliest stage of development is called cancer interception, which is an area of active research for its potential to minimize the burden of cancer for all populations.