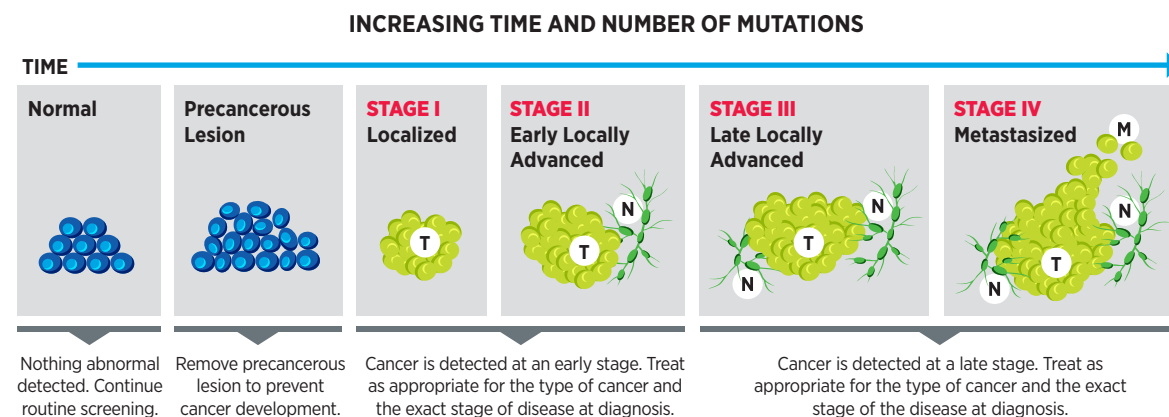


**FIGURE 6**

## What Can Cancer Screening Find and What Can Be Done?



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 dysregulated cell proliferation and differentiation), and an increasingly abnormal precancerous lesion becomes detectable. Without any 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 can ultimately metastasize (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, several different things can be found depending on the stage at which cancer is diagnosed, and 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 in close consultation with his or her provider to ensure that the benefits of routine cancer screening for the individual continue to outweigh any potential harms associated with cancer screening.

If the test detects a precancerous lesion, the lesion can be treated with preventive medication or risk-reducing surgery, thus minimizing the likelihood of 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 curative surgery or other type(s) of cancer treatment (e.g., radiation) and has a higher likelihood of survival. 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 of cancer with surgery, chemotherapy, radiotherapy, molecularly targeted therapy, and/or immunotherapy 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 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.