Taking Account...

A new analysis of regional med-tech utilization

The U.S. health care system has been characterized by the rapid adoption and diffusion of medical technologies as well as high regional variation in utilization and spending.

In a recent working paper, Anne E. Hall, an economist at the Bureau of Economic Analysis (BEA), explores the relationship between the use of high-quality medical technologies and medical technologies of dubious value, asking: Do regions that adopt and more quickly use productive medical technologies also adopt and more quickly use wasteful technologies?

She conducted a factor analysis of the utilization rates of 16 outpatient health care technologies in U.S. metropolitan areas among nonelderly adult beneficiaries of employment-sponsored insurance in 2006–2010.

These technologies are delivered in various ways, are used on different subpopulations, and are typically characterized in the medical literature as having low or high effectiveness.

A key feature of these technologies is that they are either measured conditional on a particular diagnosis or are screenings performed on an identifiable population. Their observed aggregate rates of use do not depend on the health status of a population, so any observed correlation will reflect correlations in health care practices, not the underlying health of the population.

Hall noted that three factors seem to underlie the use of the other outpatient technologies:

- High utilization of diagnostic and screening services, several of which have been identified as being wasteful but one of which (colon cancer screening) is regarded as more valuable.
- High utilization of pharmaceuticals, high quality and low quality, and of mammograms.
- High utilization of two technologies to treat pain that have been identified as potentially wasteful: imaging for lower back pain and opioids for migraines.

Hall's analysis illustrates a dilemma of health care: The tendency to adopt and use similar technologies leads to correlations between appropriate use and overuse. However, there are correlations by quality as well; the second factor encompasses mammograms and two high-quality uses of pharmaceuticals, and the third factor encompasses two low-quality technologies of different types.

Hall explores the potential underpinnings of the three factors by looking at their relationships to some demographic characteristics of the local population and local supply.

She finds that the higher use of diagnostic and screening services is associated with higher education, higher income, higher population density, more physicians per capita, a higher ratio of specialist physicians to generalists, and a higher percentage of physicians engaged in being trained, teaching, or performing research. The use of diagnostic and screening services is also associated with lower levels of social capital.

The use of mammograms and three pharmaceutical technologies is correlated with higher education, higher income, and more physicians per capita but also with lower population density and higher levels of social capital.

The use of the two potentially wasteful technologies is associated with lower education, lower income, lower population density, lower social capital, and lower levels of provider supply.

In sum, education, income, and provider supply seem to raise health care utilization generally, with the exception of the two technologies in the third factor. Meanwhile, population density encourages services use and discourages pharmaceutical use, again with the exceptions of the two technologies in the third factor. Social capital seems to have the reverse effects on use of those technologies.

These results are consistent with four other papers on technology utilization in health care and medical productivity and quality.

(This summary was prepared by the Survey of Current Business *staff in conjunction with the paper's authors.)*