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A Transplant That Is Raising Many Questions

By [DENISE GRADY](#) and [BARRY MEIER](#)

Reports that Apple's chief executive, [Steven P. Jobs](#), traveled to Tennessee for a [liver transplant](#) about two months ago raise many questions — not just about his prognosis, but also about the system for allocating scarce organs to the many people who need them.

Whenever someone rich and famous receives a transplant, suspicions inevitably arise about whether that person managed to jump to the head of the waiting list and take an organ that might have saved the life of somebody just as desperate but less glamorous. The dark theories are a holdover from the case of [Mickey Mantle](#), who waited all of one day for a liver in 1995, and then died from [liver cancer](#) anyway, just two months later.

In Mr. Jobs's case, doctors say there was no need, and little opportunity, to cheat the system. Under current procedures, any transplant center ranks potential liver recipients on its waiting list, with the highest rankings based on how sick the patients are and how long they have been that sick. Jumping ahead of a sicker patient is not allowed.

And yet, there are ways to work the system to one's advantage. Waiting times for a liver vary in different parts of the country, and people who can afford to travel are free to go to a city or state with the shortest wait and bide their time until they have reached the top of the list, a donor dies and an organ becomes available. Indeed, some patients rent apartments or stay in hotels near a hospital and wait for the phone to ring. It may not seem fair, but it is not illegal.

It is even conceivable that someone could go to the time and expense of registering for the waiting lists of several transplant centers around the country.

"If you had access to a jet and had six hours to get anywhere in the country, you'd have a wide choice of programs," said Dr. Michael Porayko, the medical director of liver transplants at [Vanderbilt University](#), one of the Tennessee centers that has said it did not treat Mr. Jobs.

Mr. Jobs's transplant, but not the location of the hospital or the details of his treatment, has been confirmed by people briefed on the matter by current and former Apple board members. Mr. Jobs has declined to comment.

Some doctors say that for Mr. Jobs, a transplant may have been a wise move medically — though others say the evidence is inconclusive.

Experts said that the most likely reason for Mr. Jobs to need a transplant would be that [pancreatic cancer](#), for which he has disclosed having surgery in 2004, had spread, or metastasized, to his liver.

“If you were to postulate why he did it, I think the most likely reason would be that he had liver metastasis,” said Dr. Richard M. Goldberg, an expert on pancreatic cancer at the [University of North Carolina](#), Chapel Hill, who is not involved in Mr. Jobs’s treatment.

Though other, noncancerous types of [liver disease](#) could also have led to a transplant, experts say [cancer](#) is the most likely explanation.

The liver is the most common site for the spread of pancreatic cancer, especially the rare kind that Mr. Jobs had, known as a neuroendocrine [tumor](#), Dr. Goldberg said. That type of tumor tends to be slow-growing and far more treatable than the more common type of pancreatic cancer, which can be fatal within months.

When [neuroendocrine tumors](#) do metastasize, Dr. Goldberg said, they often spread only to the liver, rather than all over the body, and a transplant may be recommended.

Often, though, when [tumors](#) spread to the liver, surgeons can treat them by removing just part of the liver. The fact that Mr. Jobs needed a transplant suggests that he might have had diffuse disease throughout his liver, something that does not bode well, Dr. Goldberg said.

“The prognosis for somebody with metastatic liver disease is not nearly as good as for somebody who has disease confined to the pancreas,” Dr. Goldberg said.

“I think this confirms the speculation that there was more going on than had been previously acknowledged,” he said, “but it still doesn’t really tell us where things are likely to go from here.”

Dr. Goldberg said no large-scale, controlled studies had been done on the benefits of transplants for this type of cancer.

“It’s controversial whether transplant is a helpful approach,” he said.

Dr. Lewis Teperman, the director of transplant surgery and vice chairman of surgery at the Langone Medical Center of [New York University](#), says that transplants are frequently done for people with certain types of liver cancer. About half the center’s liver transplants involve cancerous organs, he said, though not usually metastatic cancers.

According to one national study, more than half the patients receiving transplants for cancerous livers were still alive after five years.

A transplant would be reasonable for treating metastases of the kind of pancreatic cancer Mr. Jobs had, Dr. Teperman said, adding that if Mr. Jobs’s liver had had been “full of the tumor,” the transplant would prolong his life.

“But I can’t tell you how much, because I don’t know the extent of the tumor,” Dr. Teperman said. Like Dr. Goldberg, he was not involved in Mr. Jobs’s care.

Unfortunately, Dr. Teperman said, the medicines needed to prevent rejection of the transplant could allow the tumor to regrow.

“There may be some cancer cells scattered around, and they tend to come back to the new liver,” he said.

Some people can avoid the transplant waiting list entirely by receiving a transplant from a live donor, usually a friend or relative who volunteers to give up part of a liver. But Dr. Teperman said he would not recommend that kind of surgery for people with extensive liver tumors, because they might also need a vein that could not be removed from a live donor. They are better off waiting for a liver from a cadaver, he said.

The nation's organ donor system is managed by the United Network for Organ Sharing, or UNOS, a nonprofit group in Richmond, Va., that operates under contract with the federal government.

When an organ like a liver becomes available, the UNOS database is searched for patients who need it most and have registered at the transplant center where the organ is available, said Anne Paschke, a spokeswoman for the group.

To qualify for an organ, a patient must have first been examined and approved for a transplant by a doctor at that center. Patients often register with a transplant center close to where they live or are directed to register with a specific center by their insurance company, Ms. Paschke said.

But there is nothing, apart from cost, to prevent a patient from registering with multiple centers throughout the country, Ms. Paschke said. A person with generous insurance coverage, or who themselves can afford to pay for the medical work-ups and the transplant, would have an advantage.

There is a trove of publicly available data that [can help patients calculate waiting times](#) and get other information about transplant centers nationwide.

For example, in Tennessee, the state in which Mr. Jobs reportedly had his transplant, the median waiting time varies from 3.8 months at Methodist Hospital in Memphis to 17.2 months at Vanderbilt University Medical Center in Nashville, according to a transplant registry operated by Arbor Research Collaborative for Health and the [University of Michigan](#). The median waiting time nationally is 12.3 months, according to that registry.

Ms. Paschke said that the only way a patient could acquire a donated organ outside the system would be if a donor directed that an organ be given to a specific person.

A scoring system used by UNOS, known as a MELD score, determines where a patient ranks on a transplant waiting list. The higher the score, which runs from 6 to 40, the sicker a patient is and the higher the ranking. Any ties are broken by who has had that score the longest.

But patients with high MELD scores on the East or the West Coast will wait longer than those with the same scores in the Midwest or elsewhere, because high demand means fewer organs are available on the coasts, Dr. Porayko said.

Brad Stone contributed reporting.

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