SCIENCE

China's Killer Doctors

How the PRC's lucrative transplant industry kills donors by removing their organs

BY JACOB LAVEE AND MATTHEW P. ROBERTSON

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In November 2005, during morning rounds in the cardiac intensive care unit at the Sheba Medical Center in Tel Aviv, one of the authors, Jay Lavee, was stunned to have the following exchange with a patient suffering advanced heart failure:

"Doc, I'm fed up waiting here for nearly a year now while you guys find a heart donor. My insurance company told me to fly to China—they've already scheduled a heart transplant in two weeks."

After processing what he'd heard, Jay responded: "Do you hear yourself? How can anyone promise you a donor heart on a specific date ahead of time? You understand that somebody must die on the very same day that you will undergo this surgery, don't you?"

The patient: "I don't know, Doc. That's just what I was told."

Sure enough, the patient flew to China and got his heart on the date promised. As far as we are aware, he was the first Israeli patient to undergo heart transplantation in China—though he was preceded by numerous Israelis who traveled there for kidney transplants.

For Jay, the incident was the unexpected beginning of nearly two decades of research and advocacy. Within three years he'd spearheaded the Organ Transplantation Law in Israel, the first of its kind in the world, which prevented insurance companies from reimbursing expenses associated with illicitly obtained organs. Along with a range of reforms encouraging domestic donation, this stopped the China-to-Israel organ trafficking pipeline in its tracks.

Since the 1990s it has been well known that the People's Republic of China (PRC) traffics organs from executed prisoners. The pioneering human rights researcher Robin Munro was the first to find official approval for the practice while thumbing through an obscure volume of legal texts in a Hong Kong library. Those "temporary rules," signed by a bevy of PRC ministries, authorized police and health departments to use the organs from executed prisoners and instructed them to keep quiet about it.

Beginning in the year 2000, however, China's organ transplantation system began a period of rapid expansion: Thousands of new doctors were trained, hundreds of hospitals opened new transplant wings or constructed dedicated buildings, new patents for transplantation technologies were registered, and domestic immunosuppressant manufacturing began. A leading surgeon told Chinese media that "the year 2000 was a watershed for the organ transplant industry in China." Another said the number of hospitals doing liver transplants after 2000 "rose abruptly like spring bamboo after rain." The upward trajectory continued even after 2007, when major reforms to the death penalty system dramatically reduced the number of judicial executions.

Theories as to whose bodies made up the shortfall between the number of transplants and the number of officially recorded death penalty prisoners have confounded analysts since 2006. The leading hypothesis to date has been that political prisoners—mostly practitioners of Falun Gong, and more recently probably Uyghur Muslims, too—were killed extralegally, and their organs monetized.

But alongside the question of *from whom*, there is an almost equally compelling question of *how*? According to official claims, the act of judicial execution by public security authorities was hived off from the procurement of organs by medical professionals. This arrangement would still be highly unethical and is banned globally, because capital prisoners and their families cannot give informed consent to donate organs due to the inherently coercive nature of their circumstances.

The official narrative is comforting to the PRC medical establishment for two reasons. First, it exculpates medical workers from a campaign of secret surgical killings for profit. Second, it saves them from being identified as the executioners.

Our understanding of organ transplantation in China led us to doubt the official claims of hands-off surgeons. Recently, we conducted a detailed empirical study of the topic. We wanted to know whether the anecdotal accounts and claims of surgeons removing vital organs from living prisoners were accurate, or if the matter could be settled one way or another at all.

The obvious way to get an answer would be through detailed interviews with surgeons themselves—something the scholar of medicine and ideology Robert Jay Lifton managed with Nazi doctors after World War II. For obvious reasons, no such study is possible at present with PRC surgeons. But what if the evidence of surgeon involvement in executions by organ removal is hiding in plain sight?

Human rights researchers have highlighted cases of PRC doctors appearing to engage in execution by organ procurement for decades. Human Rights Watch uncovered procuratorial documents from the late 1980s stating that a small number of regions, "in order to be able to use particular organs from the criminals' bodies, even go so far as to deliberately avoid killing them completely when carrying out the death sentence, so as to preserve live tissue." The medical researcher Li Huige has co-authored a number of similar studies citing such documents. The most thorough Chinese-language study of the issue was conducted by the grassroots research collective The World Organization to Investigate the

Persecution of Falun Gong in September 2014. Former surgeons have given testimony to similar effect, including Wang Guoqi before the U.S. Congress in 2001 and Enver Tohti before the China Tribunal in 2018. The Chinese military doctor who blew the whistle on SARS, Jiang Yanyong, told Hong Kong media in 2015 that doctors "would shoot prisoners so they're not fully dead ... then quickly pull them into the truck and get the liver out."

"Our core question was simple: Are prisoners who have their hearts removed for transplantation actually dead?"

Personal accounts and a sampling of clinical reports may have already convinced those who are predisposed to a skeptical view of the Chinese medical system. But until the system of mainstream medical research has put its imprimatur on the topic, the findings will not be legible to medical societies, policymakers, NGOs, or the prestige press. This is what led us to conduct a methodologically rigorous scientific study on the topic, run the gantlet of peer review, and place it in a respected medical journal, the *American Journal of Transplantation*, in April 2022.

Our core question in that article was simple: Are prisoners who have their hearts removed for transplantation actually dead? This question is based upon the dead donor rule, the most fundamental ethical rule in organ transplantation. The rule states that organ procurement must not commence until the donor is formally

pronounced dead and that the procurement of organs must not cause the donor's death.

For an organ donor to be medically and legally dead, brain or circulatory death must first be declared. Brain death is the permanent and irreversible cessation of all brain function, including breathing. As long as ventilation is artificially maintained in such patients, the heart continues to beat for a short while, thus keeping vital organs viable and suitable for transplantation.

This question is central, because if the prisoner donors in China were indeed brain dead at the time, then heart extraction would not have been the cause of death. But if the declaration of brain death was false—or indeed, medically impossible—then heart procurement would necessarily have been the cause of death. In other words, the prisoners would have been alive at the time of heart extraction and the surgeons would have been executioners.

It is worth pausing here to reflect on the logistical and clinical quandary faced by PRC judicial authorities and transplant surgeons. With few exceptions, the procurement of the heart for transplantation must take place when the heart is still beating. The heart is only stopped when the surgeon perfuses it with a cardioplegic solution, which stops it from beating while preserving its potential to reanimate after transplantation in a new host. It is extremely rare for successful heart transplantation to occur from a donor who has undergone circulatory death; this practice has only recently been established as viable. In particular, if a heart suffers uncontrolled cardiac arrest, the chances of graft failure increase dramatically.

So how did PRC security authorities inflict brain death—and *only* brain death—on humans in a repeatable and reliable way, while preserving the rest of the body for successful organ procurement? There are obviously no known published studies detailing experiments on this problem anywhere in the world. If the PRC medical establishment were to stay at arm's length from the actual executions, then this challenge would have to be overcome by the security apparatus.

The only other country we know of that even tried something like this and wrote about it was Taiwan. In 2011 Taiwanese researchers discussed a very similar process to the quotes above from China about partial execution: "The bullet penetrating the temporal bone of skull will not reach the brainstem, so a direct brainstem death could not occur." A bullet to the head will cause intracranial hemorrhage, they write, and this could *possibly* cause brainstem death. But "such a means is indirect, imprecise and unreliable." The danger, from a strict transplant outcome perspective, would be accidentally causing the donor to suffer cardiac death—and the heart would then be wasted.

The question then is how PRC security and medical authorities resolved this dilemma. We don't think they did. Our research presents a large amount of evidence for the alternative: Rather than execution-by-brain-death being mastered and refined by security authorities, the act of execution was joined with the act of heart removal, and was carried out by surgeons on the operating table.

There is a sense in which this choice might have been easily rationalized and even justified: The executed prisoner would now suffer only a prick to the arm before being anaesthetized rather than the trauma of a bullet to the head. (Of course, some prisoners may have suffered both.) Moreover, another life would have been saved in exchange. In this way, the image of killer doctors from some sort of horror film can be transmogrified into scenes of medical heroism. But this ethical gerrymandering sidesteps the fact that many of the victims in China were likely *not* capital prisoners who "would have been executed regardless," but instead prisoners of conscience who were extrajudicially euthanized, and then had their hearts removed. Our study design therefore meant we needed to search for evidence of false or impossible declarations of brain death.

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An essential requirement for establishing brain death is the apnea test. The intubated patient has the ventilator turned off and the blood carbon dioxide level measured; if the carbon dioxide increases past a designated level and the patient still has not begun breathing spontaneously, brain death is declared. The process can take up to 10 minutes, sometimes longer. The obvious key to the apnea test is that the patient is intubated first—that is, connected to a ventilator through a tube inserted into the wind pipe.

This background knowledge shaped our research design and allowed us to tightly focus our search. At this point we knew we only had to look for Chinese-language clinical case reports in which the donor was intubated only *after* they were allegedly declared brain dead. (As we began reading the reports, we added a criterion: where intubation took place *immediately prior* to organ procurement. This follows the same logic as the first criterion: Brain death could not have been established if the same medical team that is about to remove the heart intubates the patient only moments before it makes the first incision.)

Previous researchers had already identified a number of papers revealing this unethical activity. Key sentences looked something like this: '脑死亡后立即气管内插管给氧' ("after brain death, immediately perform endotracheal intubation"), '供

体大脑死亡后,首先分秒必争地建立呼吸与静脉通道' (“after donor brain death, race against the clock to establish respiratory and venous access”), and so on. We collected and crafted a few dozen phrases like this. Now we simply needed, first, a comprehensive dataset of Chinese-language clinical reports, and second, some way to search through them at scale.

The first problem had been solved in the course of one author’s (Matt’s) doctoral research, which examines the political economy of organ trafficking in China. From academic and medical databases he had downloaded over 120,000 Chinese-language medical publications from the 1950s until late 2020. Every reasonable search combination involving organ transplantation was entered, and over 60 gigabytes of PDFs and metadata were gathered.

But even with all that data, the problem remained of how potentially incriminating papers could be found. To begin with, we filtered for only heart and lung procurement surgeries. This left us with just over 2,800 papers that we thought *might* contain admissions of these abuses. This reduced the problem space, but didn’t solve the problem. Matt tried first opening and reading each PDF, but this quickly became too inefficient. Computers are good at repetitive tasks, and so we programmed one to do the work for us.

After nearly six months and numerous code rewrites, the task went from taking hours in over 200 lines of code to just minutes in about 20 lines. It was written in R, a programming language widely used in the social sciences. The algorithm found potentially problematic excerpts in 310 papers. We then began reviewing this much smaller corpus the old-fashioned way: opening each PDF, reading the contents, translating the potentially incriminating sentences for Jay’s medical evaluation, and putting each article in “accept” or “reject” folders.

In the end we found incriminating revelations in 71 studies published between 1980 and 2015 and sourced to 56 hospitals (12 military) in 33 cities across 15 provinces. A total of 348 surgeons, nurses, anesthesiologists, and other medical workers or researchers were listed as authors on the papers. In these papers we found that brain death could not have properly been declared, and therefore, the

removal of the heart during organ procurement must have been the proximate cause of the donor's death.

Here's a choice example from paper 0191 in our appendix: "The donor was intravenously injected with heparin 3mg/kg 1h before the operation … The heartbeat was weak and the myocardium was purple. After assisted ventilation through tracheal intubation, the myocardium turned red and the heartbeat turned strong … The donor heart was extracted with an incision from the 4th intercostal sternum … This incision is a good choice for field operation where the sternum cannot be sawed open without power." In this admission, the surgeons are explicit that they opened the chest and observed the beating heart of the victim before intubation. In other words, this donor could not have been brain dead.

In other cases, the surgeons inadvertently admit that the victims were not intubated at all, and therefore must have still been breathing at the time. Authors of paper 0173 write: "Before the chest is opened, 100mg of heparin is injected and the mask is pressurized to give oxygen to assist breathing." Another, paper 0463: "After the donor is confirmed brain dead, 4 cases of tracheal intubation, 3 cases of mask oxygenation, quickly establish artificial respiration, rapid median thoracic dissection …"

Why is this detail so key? Brain death requires that the donor is unable to breathe by themselves. An oxygen mask—as the papers unambiguously attest, using the Chinese term 面罩—means that they must have been able to breathe. In other words, they were alive and breathing as the surgeons cut their hearts out.

China's crime against humanity—of massive executions by organ-procuring physicians—has been accomplished secretly under the headlights of operating rooms, and so for decades has been hard to detect. The global silence with which these crimes have been met is unconscionable—crimes similar to those of the Nazi doctors are repeating themselves in front of our eyes, and yet the world remains quiet. It is high time for Western scientists, doctors, and the rest of humanity to reaffirm the sanctity of the Hippocratic oath and give meaning to the Jewish slogan after the Holocaust: Never again.

Dr. Jacob Lavee is the founder and former director of the Heart Transplantation Unit at the Sheba Medical Center in Israel and a Professor Emeritus of Surgery at Tel Aviv University Faculty of Medicine.

Matthew P. Robertson is a Ph.D. Candidate in political science at the Australian National University and a data scientist with the Victims of Communism Memorial Foundation.

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