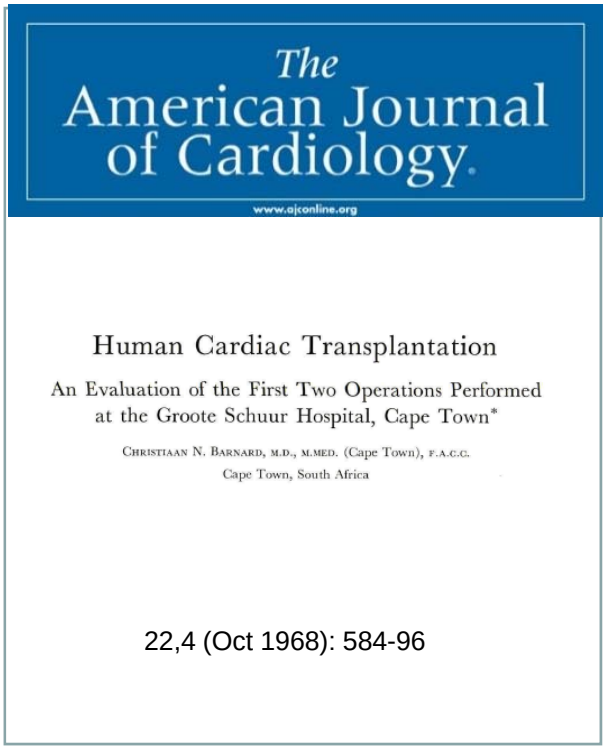
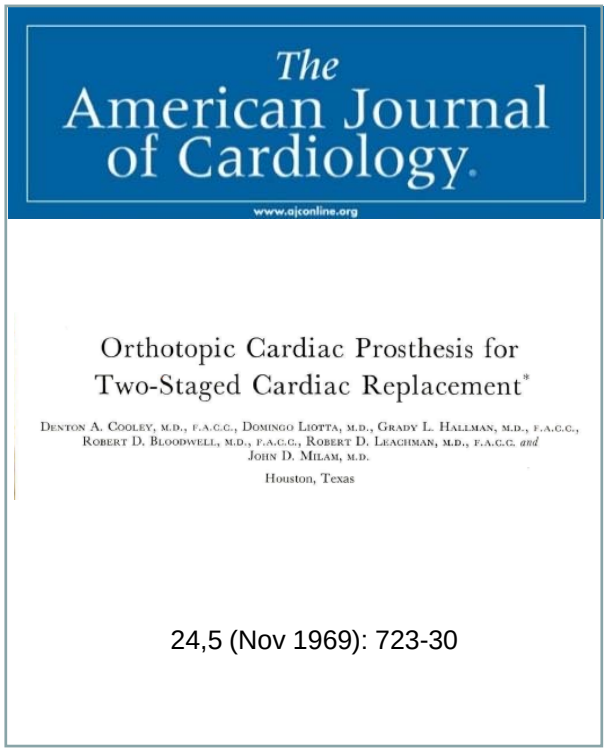
Cardiac Transplantation and Total Artificial Hearts: The First Clinical Cases

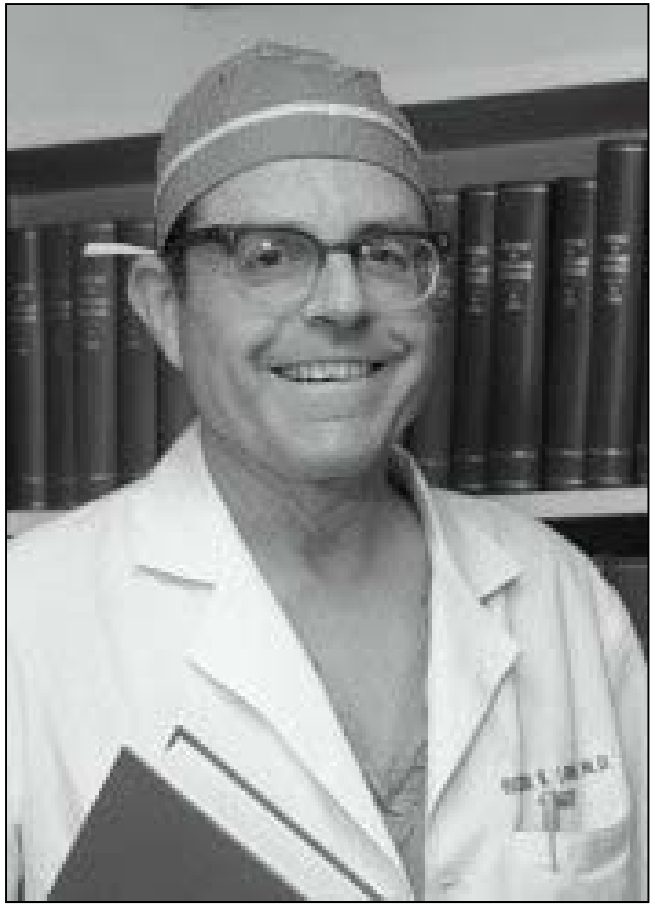
Highlighting Medical and Ethical Complexities of Spare Parts Surgery





ACS module in the history of surgery

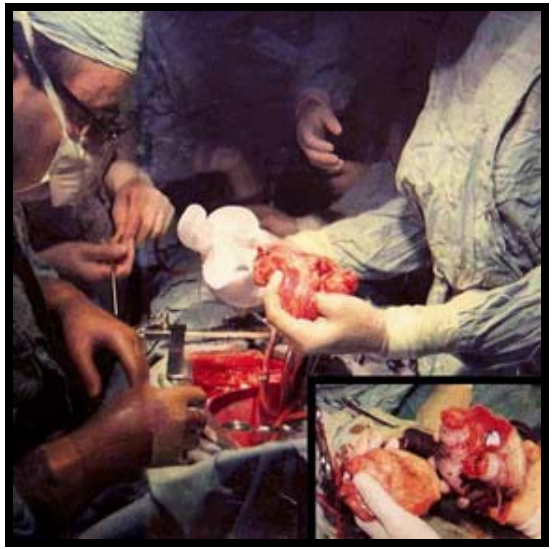
Dr Norman Shumway



Dr Richard Lower

Dr Christiaan Barnard performs first human heart transplant on patient Louis Washkansky, South Africa, 3 Dec 1967

Artificial Heart Implant, 4 April 1969



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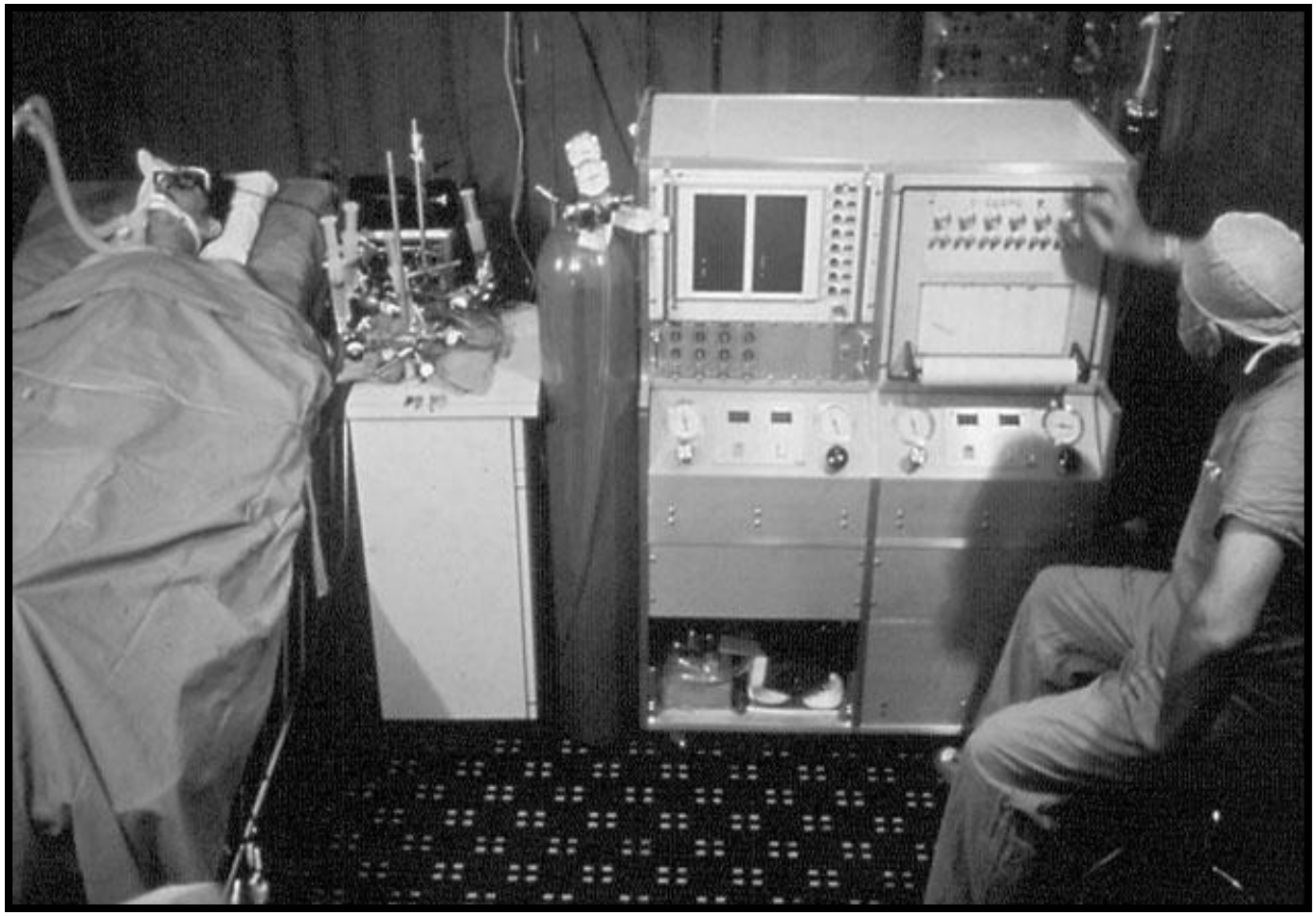
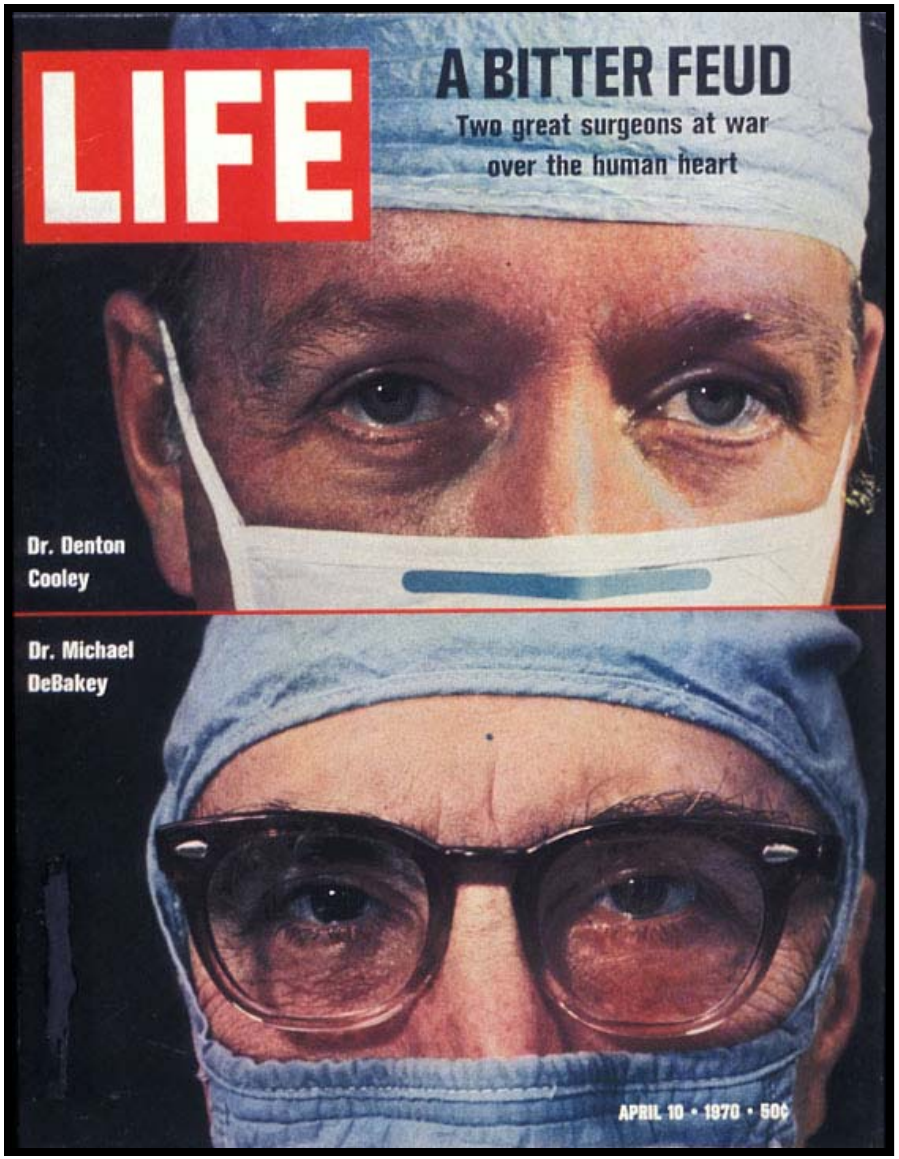



LIFE
A BITTER FEUD
Two great surgeons at war
over the human heart
Dr. Denton
Cooley
Dr. Michael
DeBakey
APRIL 10 • 1970 • 50¢


LIFE

Medicine

An Artificial Heart Scores a Breakthrough and Starts a Squabble

WASHINGTON — For more than 2½ days a human being lived without a heart.

Inside his chest was a pump made of plastics and other synthetic materials. The power to operate it came from outside the body in pulses of carbon dioxide gas. This gas drove the pump. The pump kept blood circulating through all the arteries and veins of the patient's body and for 65 hours last weekend it maintained his life.

Dr. Denton Cooley, of Baylor College of Medicine and St. Luke's Episcopal Hospital in Houston, implanted the artificial heart pump to buy time. His patient, Haskell Karp, 47, was on the operating table while the surgical team tried to repair his disease-ruined heart. The repair proved impossible. The conventional heart-lung machine used during surgery could have maintained his life only a few hours more because such machines produce some damage to the blood. In a few hours beyond that, this would have caused enough cumulative damage to be fatal. It was hoped the artificial heart would be less damaging.

Dr. Cooley said later that he had two alternatives: To run off the heart-lung machine and let the man die; or to implant the new artificial heart, developed only during the last four months, and then try to find a human heart for transplantation.

The surgeon and his colleagues thought they could get a donor heart within 12 hours. There was never any intention of using the artificial device permanently, nor any hope that it could be used for any length of time.

But the first donor heart proved unsuitable and more than two days passed before a second became available. When the transplant was finally done, the patient appeared to be in as good condition as he had been 2½ days before. He died a day later, primarily of pneumonia and kidney failure.

These complications were not at all surprising in a person who was near death from heart disease, who had undergone major surgery and also the unprecedented experi[ence] of having his blood pum[ped] for 65 hours. [It] nor indeed an[y] survived that [long] ficial pump [in] heart.

The pump [was] ed for a limit[ed] served that [the] was turned o[ff] important mil[e]stones — and some squabble arou[nd] Milestones [in] both become [a] in the field [of] transplantatio[n]. this case was [the] artificial hear[t] placing the [artificial] actually give [hope] lief from the [pain] involved in fi[nding] who has died

Cooley who actually used the device?

The National Heart Institute proven value before they are made available to doctors.

Thus, the Institute was obliged

Cooley was receiving Federal support in related work being done under another program.

Associated Press

ANOTHER 'FIRST': Dr. Denton Cooley of Houston, Tex., left, holds a mechanical heart designed by Dr. Domingo Liotta, right—a device Dr. Cooley, for the first time in surgical history, implanted in the chest of a patient April 4. The patient was kept alive for two and a half days until the pumping device was replaced by a human heart, but died of complications a day later.

Dr. Cooley Defends His Use of Artificial Heart to Save Patient

By HAROLD M. SCHMECK Jr.
Special to The New York Times

BALTIMORE, April 10—Dr. Denton A. Cooley defended today his use of an artificial heart in an attempt to save a patient's life. He said he would try the same method again when the circumstances are right.

The heart surgeon from Baylor University and St. Luke's Episcopal Hospital in Houston, addressed Maryland's state medical society. Earlier he spoke at a news conference here.

"It's not time for a witch hunt," he said in answer to a question at the news conference. "It's time to proceed with what we have learned."

The use of the artificial heart was successful in keeping Haskell Karp, 47 years old, alive for 65 hours until a heart donor could be found for him. He received a transplanted heart on Monday and died a day later,

Today, Dr. Cooley said the work on the artificial heart that he used had received no Federal support at all.

He said he had obtained written permission from his patient before implanting the artificial heart and the donor's heart.

He had not sought prior approval from any review panel nor had he considered it appropriate to do so, he said.

"I believe I am qualified to judge what is right and proper for my patient," he declared at the news conference.

The surgeon said that the final decision to use the recently developed artificial heart device came Friady during heart surgery in which he was trying to save the dying man. Effective surgical repair proved impossible.

The patient would have died within minutes had some artificial support not been maintained, Dr. Cooley said.

An ordinary heart-lung machine could not have preserved the patient's life more than a few hours.

At that time the surgeon and his colleagues thought they would have a donor heart for transplantation within 12 hours but the first heart to become available proved unsuitable.

The artificial heart was designed by Dr. Domingo Liotta of Baylor. Dr. Cooley said it had performed well and had no detectable adverse effects on the patient.

It was developed during the last four months and has been tested in experiments with nine calves. Dr. Cooley said that it proved far better than any comparable device with which he has had experience.

He said he would use it again if circumstances required it.

A spokesman for the National Heart Institute said today that Dr. DeBakey had informally asked the institute to inquire whether Federal funds had been involved in the development of the artificial heart and whether the work had been done in Dr. DeBakey's laboratory.

The letter of inquiry was sent to Dr. DeBakey in his capacity as president of the medical school.

At the news conference today, Dr. Cooley emphasized that no Federal funds were involved. He indicated that the development of the artificial heart was a collaboration between Dr. Liotta and himself, and was completely separate from Dr. DeBakey's research.

pg. 00

Dr. Cooley Will Continue to Use the Artificial Heart; Baylor Seeks Limitations

HOUSTON, May 17 (UPI)—Dr. Denton A. Cooley said today that he would continue to use artificial hearts in transplant operations when he believes it is necessary, despite attempts by the Baylor College of Medicine to limit the use of the synthetic device.

"I still consider it my heart," Dr. Cooley said. "I will use it again if the occasion arises. I have a heart available to use."

The medical college's executive committee earlier today recommended that its faculty, including Dr. Cooley, sign a statement restricting the use of artificial hearts.

The heart surgeon indicate[d] he might not sign the stat[e]ment, but he had not seen [it]. In fact, he said, he had n[ot] known about it until a new[s]man told him about the co[m]mittee's announcement.

"Before agreeing to do so, [I] must study the guidelines [to] determine whether they perm[it] me to continue to serve m[y] patients in their best interest[s]," he said.

Dr. Cooley and Dr. Doming[o] Liotta, 44 years old, a native of Corboda, Argentina, who is a [co]developer of the artificial heart[,] he would use institute funds, not Federal funds, to pay his salary. Dr. Liotta's salary at

tired and also let the doubting ones know we will try again, Dr. Cooley said.

McCollum, chairman of [the] d of trustees at Baylor, a statement that the e committee had sug[gested] hat every faculty mem[ber] ust sign a statement to abide by regula[tions] the college including e to the guidelines for experimentation formu[lated] the National Institutes th."

cCollum said he thought the board of trustees would approve the recommendation.

The guidelines say that artificial organs can not be used in human experimentation without the approval of the senior investigator who is accountable for the program's Federal money. At Baylor, Dr. DeBakey is the senior investigator.

Cooley Denies Wrongdoing In Use of Artificial Heart

HOUSTON, April 26 (AP)—Dr. Denton A. Cooley, the heart surgeon, filed today an answer to a $4.5-million suit instituted by the widow of the world's first artificial heart recipient, Haskel Karp.

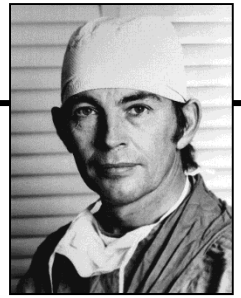
In the answer, Dr. Cooley denied any wrongdoing.

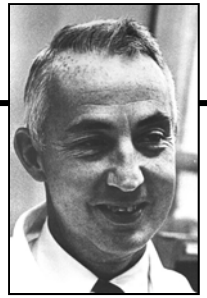
Mrs. Shirley Karp, 46 years old, of Skokie, Ill., filed the suit against Dr. Cooley; Dr. Domingo S. Liotta, who assisted Dr. Cooley; San Calvin, an engineer who worked on the artificial heart implanted in Mr. Karp, and St. Luke's Episcopal Hospital, where the operation was performed in 1969.

Source:
New York Times (1969)

Early Heart Transplant Operations

Dec 1967	Jan 1968	Feb 1968	Mar 1968	Apr 1968	May 1968
Barnard (Capetown) **Kantrowitz** (NY)	**Barnard** (Capetown) **Shumway** (Palo Alto) **Kantrowitz** (NY)	**Sen** (Bombay)		**Cabrol** (Paris)	**Shumway** (San Francisco) **Cooley** (Houston) **Ross** (London) **Cooley** (Houston) **Cooley** (Houston) **Negre** (Paris) **Debost** (Paris) **Cooley** (Houston) … **and others** ….



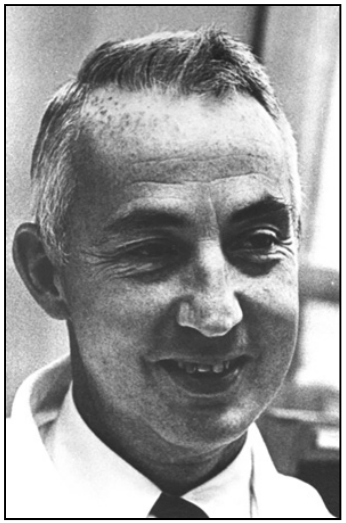


Barnard - Kantrowitz - Shumway ---------- Cooley

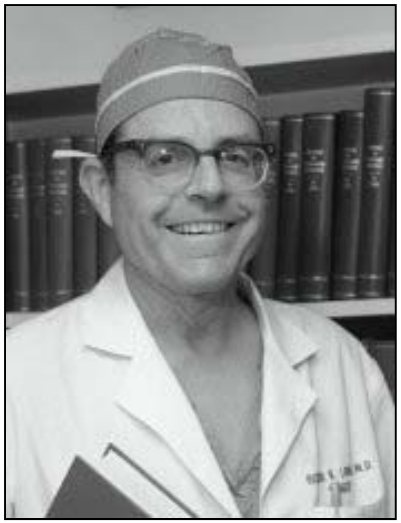
Table I. *Human heart transplant information—March, 1970*

	World totals (20 countries)	*United States*	*Other*
Transplant teams	59	24	35
Transplants	156	95	61
Recipients	153	92	61
Survivors	23	17	6
Surviving more than 1 year	13	8	5

Source: E.B. Stinson, C.A. Clark and N.E. Shumway, "Cardiac transplantation in man. VIII. Survival and function," *Journal of Thoracic and Cardiovascular Surgery* 60,3 (Sept 1970): 319.



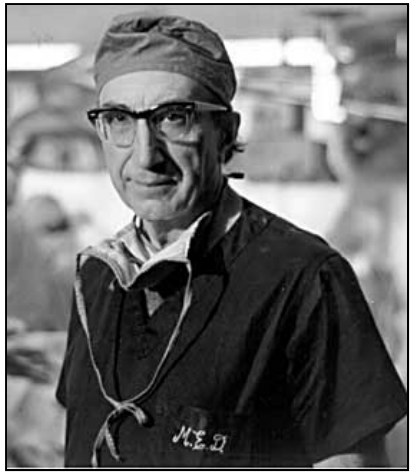
N.Shumway

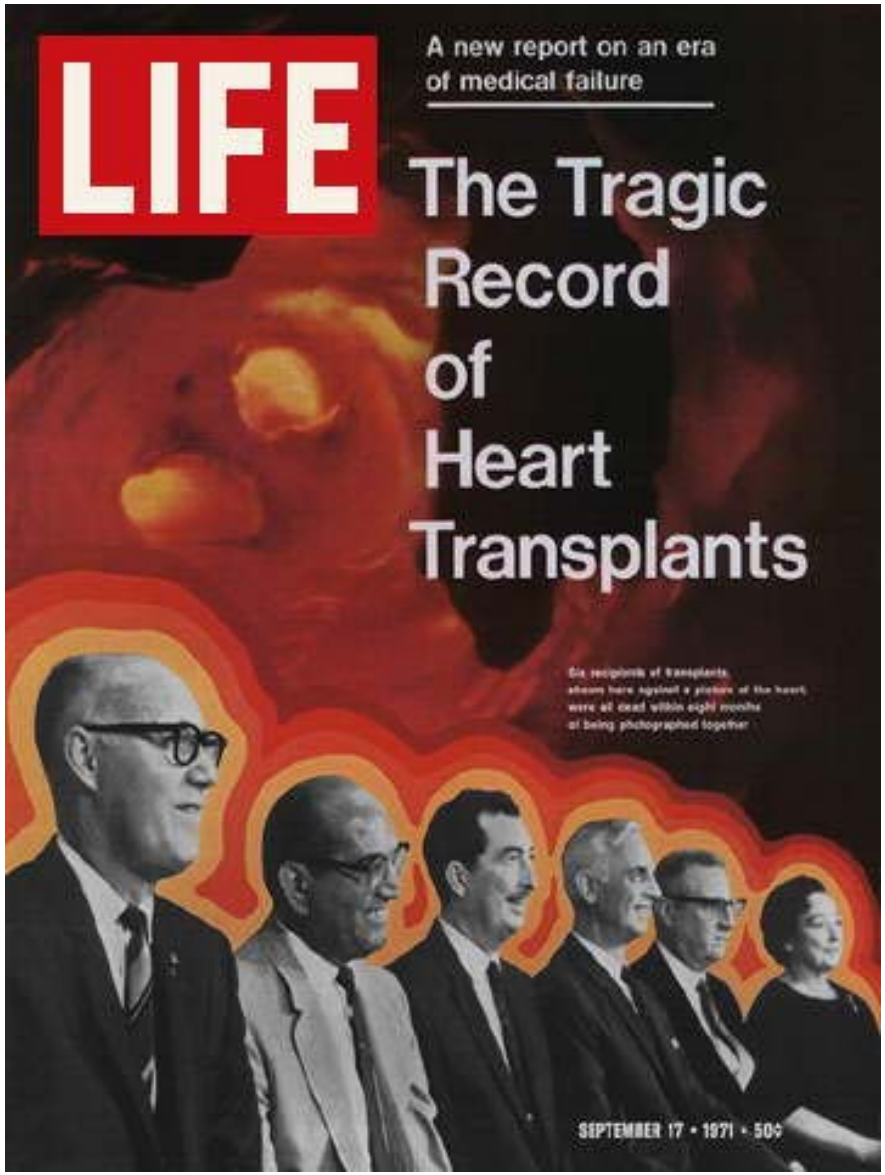


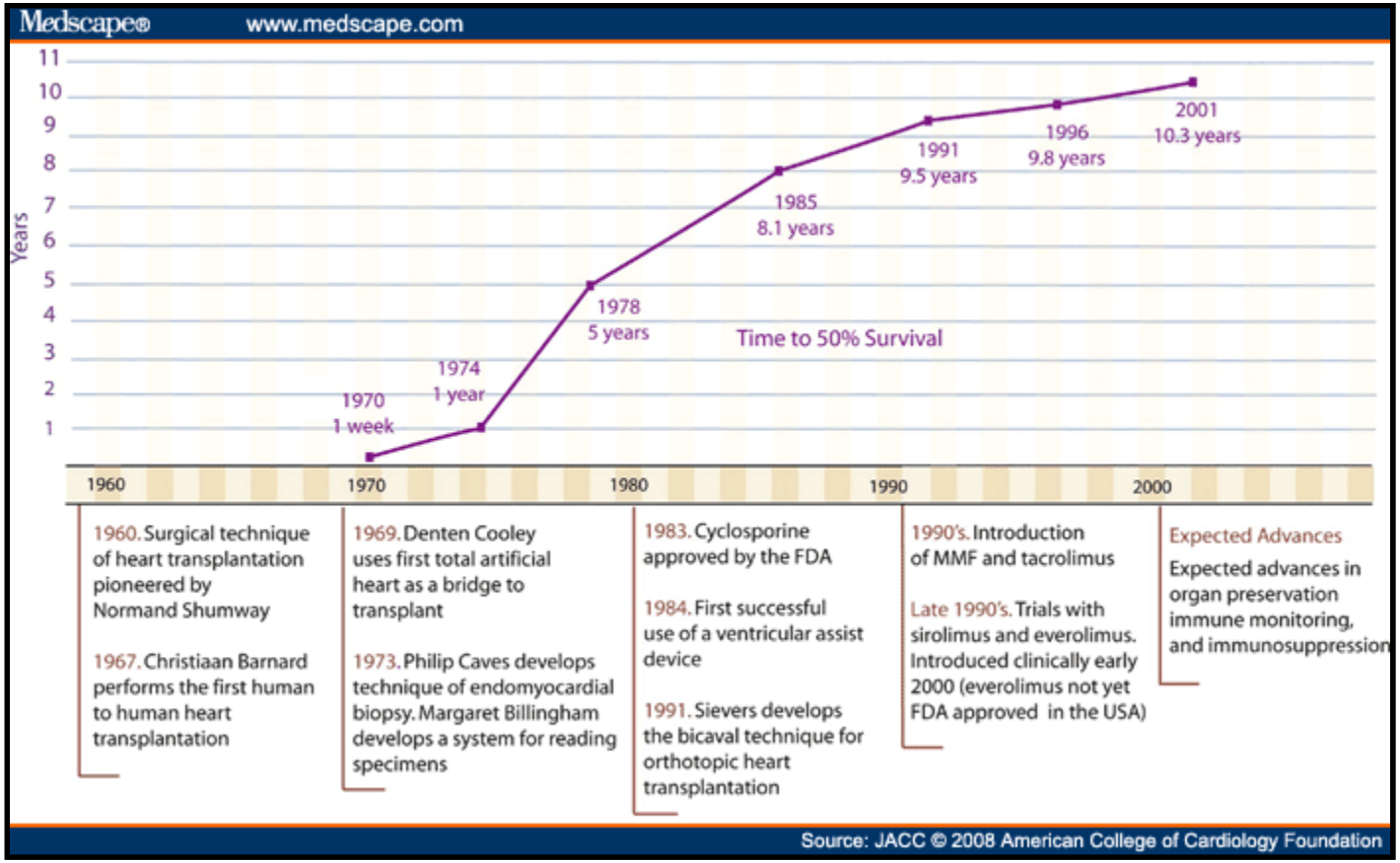
R.Lower

D.Cooley

M.DeBakey







**** Note spelling errors: Dr Norman Shumway; Dr Denton Cooley***