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# *Hepatitis C Transmission during Surgery*

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<http://www.yomiuri.co.jp/newse/20050427wo71.htm>

## **Hepatitis C scare halts use of surgical adhesive**

The Yomiuri Shimbun

The Health, Labor and Welfare Ministry on Tuesday ordered a pharmaceutical company to stop the sale of an imported surgical tissue adhesive after an elderly man was found to have contracted the hepatitis C virus after his liver functions weakened following an operation.

The man, who is in his 70s, suffered decreased liver function following an operation in May last year, during which the tissue adhesive Takokonbu was used.

One of the basic ingredients in Takokonbu is fibrinogen, which is found in human blood, and is culled from blood supplies in the United States. The adhesive is used to prevent blood and other bodily fluids from leaking from internal organs during surgery. Takokonbu has been shipped to medical institutions throughout the country.

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# ***Transmission of Hepatitis C Virus by a Cardiac Surgeon***

Juan I. Esteban, M.D., Jordi Gómez, Ph.D., María Martell, Ph.D., Beatriz Cabot, Ph.D., Josep Quer, Ph.D., Joan Camps, M.D., Antonio González, M.D., Teresa Otero, M.T., Andrés Moya, Ph.D., Rafael Esteban, M.D., and Jaime Guardia, M.D.

## **ABSTRACT**

**Background** In the course of a study conducted from 1992 through 1994 of the efficacy of screening blood donors for antibodies to hepatitis C virus (HCV), we found that two patients had acquired hepatitis C after cardiac surgery, with the transmission apparently unrelated to blood transfusions. Because their surgeon had chronic hepatitis C, we sought to determine whether he was transmitting the virus to his patients.

**Methods** Of 222 of the surgeon's patients who participated in studies of post-transfusion hepatitis between 1988 and 1994, 6 contracted postoperative hepatitis C, despite the use of only seronegative blood for transfusions. All six patients had undergone valve-replacement surgery. Analyses were performed to compare nucleotide sequences encompassing the hypervariable region at the junction between the coding regions for envelope glycoproteins E1 and E2 in the surgeon, the patients, and 10 controls infected with the same HCV genotype.

**Results** The surgeon and five of the six patients with hepatitis C unrelated to transfusion were infected with HCV genotype 3; the sixth patient had genotype 1 and was considered to have been infected from another source. Thirteen other patients of the surgeon had transfusion-associated hepatitis C and were also infected with genotype 1. The average net genetic distance between the sequences from the five patients with HCV genotype 3 and those from the surgeon was 2.1 percent (range, 1.1 to 2.5 percent;  $P < 0.001$ ), as compared with an average distance of 7.6 percent (range, 6.1 to 8.3 percent) between the sequences from the patients and those from the controls. The results of a phylogenetic-tree analysis indicated a common epidemiologic origin of the viruses from the surgeon and the five patients.

**Conclusions** **Our findings provide evidence that a cardiac surgeon with chronic hepatitis C may have transmitted HCV to five of his patients during open-heart surgery.**

## **Source Information**

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[Full Text of this Article](#)

## **Related Letters:**

### ***Transmission of Hepatitis Viruses by Surgeons***

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January 2005

EL PASO, Tx - **A Beaumont Army Hospital staff member contracts Hepatitis "c" and now several patients are also infected.** Up to 5% of all the patients tested so far have tested positive for Hepatitis "c", it's a disease that can destroy the liver.

Just after 3 o'clock today the public received confirmation that a staff member at William Beaumont Army Medical Center had tested positive for Hepatitis "c". A hospital spokesperson said this person will no longer have contact with patients.

The hospital identified two cases of exposure to Hepatitis "c" two months ago, which prompted an extensive review of health records between July and October of this year. The investigation led to the testing of 155 surgical patients, 8 of which were found to be positive.

There are several ways to transmit Hepatitis "c": by sharing needles or other drug injection equipment, through unsterile tattooing or body piercing equipment, any blood-to-blood contact through a tooth brush, razor blade, or other hygienic tools

The disease is rarely transmitted through sexual contact, but is possible when infected blood is present. Hepatitis "c" can also be passed from mother to child during pregnancy or childbirth.

However, there are some misconceptions about the disease. It can not be transmitted by kissing, coughing, sneezing, or other social contact. The only way to check for Hepatitis "c" is with a blood test.

If you were a patient at William Beaumont anytime this year, from July to October and think you may have been infected call, officials as that you call 915-569-4444.

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## *Surgeon Declines Safety Advice*

LI doctor with hepatitis C still opening, closing chests

By Roni Rabin  
STAFF WRITER

March 30, 2003 A prominent Manhasset heart surgeon who infected patients with blood-borne hepatitis C continues to open and close patients' chest cavities, hospital officials said, despite being advised the procedures place patients at risk.

Heart surgeons are most likely to sustain injuries or puncture their gloves at the very beginning of the operation, when they cut through the breastbone, or at the conclusion, when they use wire to sew the sternum back together. But a North Shore University Hospital-Manhasset spokesman said other surgeons are not available to step in and assist Dr. Michael Hall at the start and end of surgery, and that Hall, who has hepatitis C, prefers to complete the procedure himself.

State officials have said Hall almost certainly infected three and possibly more patients with the illness during previous surgeries. Hospital spokesman Terry Lynam emphasized that no new infections are known to have occurred since Hall implemented new precautions - including wearing double layers of latex gloves - to prevent needle sticks and cuts that could transmit the virus.

"Dr. Hall's patients, all of whom consent in writing to have him as their surgeon with full knowledge of his health status, insist, or at least prefer, that he be present and perform as much of the procedure as possible," Lynam said. "The hospital does not have a large enough surgical staff to have someone step in and do the closing. It's not Mass. General."

Hall did not return phone calls.

Hall, one of the top-ranked cardiac surgeons in the state, has continued to operate since state officials disclosed the cluster of infections last year, but he is required to inform patients of his condition and to warn them of a slight risk of hepatitis C infection during surgery. The virus can cause long-term liver damage, cirrhosis and cancer.

State health investigators were never able to figure out exactly how the virus was transmitted to patients from the surgeon, but the infections presumably occurred when Hall stuck or nicked himself and bled into an open surgical wound.

Several published studies of other heart surgeons who transmitted hepatitis C to patients said the transmissions most probably occurred during the sternal closure. And a 1988 study in the medical journal *The Lancet* said 40 percent of cardiac surgeons punctured their gloves during the sternal closure, compared to 12 percent during the actual procedure.

Closing the sternum after surgery typically involves threading wires through holes in the breastbone and then tying them. The wires can apparently slice through latex gloves.

The state health department initially advised the surgeon to modify his technique and either defer the closure to a colleague or assistant or adopt an alternative method of closing the chest, using clamps, which are less likely to injure the surgeon.

But the state reversed its recommendation after a nationally respected cardiac surgeon hired by North Shore evaluated his surgical technique, saying it was "exemplary," and that it carried "a very low risk" of viral transmission.

"The operative conduct . . . reflects efficient and appropriate technical maneuvers" that "minimize the likelihood of sharp object penetration of the surgeon" that could lead to transmission, said the Aug. 15, 2002, report by Duke University Medical Center professor of surgery Dr. Robert H. Jones. Jones serves on the

New York State Cardiac Advisory Committee, which has ranked Hall as one of the state's top heart surgeons in recent years.

Jones' report, however, includes a recommendation that Hall consider deferring the opening and closing of the chest to a colleague.

"This would remove the risk of blood-borne infection from [Hall] to the patient during the sternal opening and closing . . . when needle punctures of personnel are most common," Jones wrote.

A year earlier, in August 2001, Dr. Barbara Wallace, who heads the state's bureau of communicable disease control, had made the same recommendation in a letter to North Shore's infection control director, Dr. Bruce Farber. In it, she wrote that Hall should modify his surgery by "deferring the closure . . . to another member of the surgical team" or "using clamps rather than wire to close the chest cavity."

That same August, Stan F. Kondracki, the state's regional epidemiology program manager, wrote an e-mail to Miriam Alter, at the U.S. Centers for Disease Control and Prevention, and said that in light of the recent discovery of the surgeon's infection, "We are developing interim control measures such as . . . having someone else open and close the chest cavity." In parentheses, it added "surgeon feels most likely time for puncture through the glove is when surgical wires are used for closure."

State epidemiologists who observed Hall operate on the same day as Jones' visit, last Aug. 14, also raised the subject, under the heading of "areas for improvement." Dr. Stephanie Noviello and Rachel Stricof said Hall occasionally left suture needles dangling and tied sutures with needles attached, and noted that he placed his fingers near the exit point of the needle when wiring the sternum.

"He forced the sternal wire needles off and then tied the wires off himself, which may pose an increased risk of exposure," according to their reports, obtained under the Freedom of Information Act.

In a recent telephone interview, Jones said his suggestions were mere recommendations and that it would be inappropriate for him to tell another surgeon how to "run his team."

He said it was common practice for cardiac surgeons at academic medical centers to ask an assistant surgeon or surgeon in training to open and close the patient, and that he rarely opens and closes his own patients, usually deferring to a doctor in training.

But, Jones said, Hall did not want to do so.

"He likes to stay with the patient until the very end, and that's fine," Jones said. "He thinks the disadvantage of letting someone else do it outweighs the advantage of eliminating any very, very remote chance that he's going to injure himself.

"Everything in medicine is a risk-benefit ratio," Jones said. "That's the surgeon's call."

Several months after Jones' visit, North Shore's senior vice president for quality management, Yosef D. Dlugacz, appealed to the state to condone Hall's closing of his patients, citing Jones' report and Hall's low rate of post-operative complications with the closure.

State officials agreed.

"Our epidemiologists made recommendations with the caveat that a cardiac surgeon would review them," state health spokeswoman Kristine Smith said. "We believe the patient is at less risk if [Hall] does the closure . . . due to his low sternal wound complication rate."

Smith said state officials believe Hall is taking appropriate precautions, including using blunt needles to penetrate through the sternum during the closing, and announcing sharp instruments in the operating room.

"We feel they are following the necessary procedures," Smith said. She added, "The informed consent is obviously the most essential change."

[Read More](#) about Dr. Hall on the message boards [338.1](#)

[PDF\] Surgeon Declines Safety Advice LI doctor with hepatitis C still ...](#)

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... condition and to warn them of a slight risk of hepatitis C infection during ... were never able to figure out exactly how the virus was transmitted to patients

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## *Women contract hepatitis C in surgery*

By BRETT FOLEY  
MEDICAL REPORTER  
Monday 7 May 2001

National infection control guidelines are to be toughened after two women contracted hepatitis C during routine surgery in Victorian hospitals.

The two incidents - one in 1996 and another in 1999 - are the first documented cases of person-to-person transmission of hepatitis C through surgery in the state.

They happened during arthroscopy and colonoscopy operations at separate hospitals, one in regional Victoria, and infection control experts blame cost-saving for the breaches.

"Cost has inspired this breach in protocol, nothing else," said Greg Knoblanche, the infection control spokesman for the Australian and New Zealand College of Anaesthetists.

Health officials believe the infections were caused by contamination of anaesthetic fluid with infected blood after multiple patients were treated from one anaesthetic vial, against the recommendations of the guidelines.

After lengthy investigations into the infection control breaches, the Department of Human Services believes they occurred in similar circumstances and were caused by the same lapse in procedure.

In both cases, the women had surgery immediately after intravenous drug users, who were later found to be carrying hepatitis C.

The incidents, which have not previously been publicised, have ignited debate within the medical community about the use of so-called "multi-dose vials", with some experts calling for them to be banned.

The cases have led the National Health and Medical Research Council to tackle the issue as they rewrite their infection control guidelines to further restrict the use of the vials.

Department of Human Services manager of communicable diseases John Carnie said the cases had thankfully been picked up soon after the women contracted the disease.

One woman began to show symptoms of hepatitis C three months after a colonoscopy. The other was picked up in screening tests when she went to donate blood six months after an arthroscopy.

Dr Carnie said health officials began to investigate when the women showed no significant risk factors for hepatitis C, leaving their surgery as the only chance they had to contract the disease. After checking patient records investigators discovered that intravenous drug users carrying hepatitis C had surgery immediately before the women.

Investigators audited all aspects of the operating procedure. They found no common instruments were used in either operation, but vials of intravenous anaesthetic had been used on multiple patients. Further genetic profiling tests in both cases revealed the type of hepatitis C the women had contracted was almost identical to the carriers.

Dr Carnie said current NHMRC guidelines recommend that one single-dose anaesthetic vial be used per patient. But some hospitals still use anaesthetic from the same vial on more than one patient.

The potential for cross-infection occurs when the surgical team changes the needles but not the vial holding the anaesthetic.

The Age Melbourne Australia  
<http://www.theage.com.au/news/2001/05/07/FFXIAGKODMC.html>

## *Hepatitis C may be transmitted during surgery*

An infected cardiac surgeon transmitted the virus to five patients during open heart surgery.  
[Transfused blood negative] [Related Article: Surgeon transmits hepatitis B during surgery]

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April 1996

BARCELONA, Spain — For surgical patients, blood transfusions may not be the only risk factor for hepatitis C virus (HCV) infection: The surgeon may also be a source.

Six patients became infected with HCV after cardiac surgery. All procedures were performed by the same surgeon.

The study began as an analysis of the effectiveness of immunoassays in preventing post-transfusion HCV infection. Two patients were found who had developed HCV infection after cardiac surgery, but evidence of HCV infection could not be identified in the blood donors. Both cases were linked to the surgeon, who was known to have chronic hepatitis C.

The researchers then launched into a retrospective, six-year study of the surgeon's patients. Of 222 patients, 19 were identified as having HCV infection; 13 of those had received blood from a donor known to have HCV antibodies. <http://www.infectiousdiseaseneews.com/>

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## *OSHA Preambles - Bloodborne Pathogens*

(29 CFR 1910.1030) Revision Date: Jul 30 1999

Most healthcare workers who have transmitted to patients have several factors in common (Exs. 6-476; 6-471):

- (1) The dentists and surgeons were chronic HBV carriers, had high titers of virus in their blood (HBeAg positive), and were unaware that they were infected.
- (2) Transmission occurred most frequently during the most traumatic procedures.
- (3) The dental personnel who transmitted did not routinely wear gloves. However, some infected HCWs continued to transmit HBV to patients in spite of the use of gloves and additional precautions.
- (4) The dentists and surgeons often had a personal medical problem (such as exudative dermatitis on the hands), or used techniques that made transmission more likely. Several of the gynecologists used their index fingers to feel for the tip of the suture needle when they were performing deep abdominal surgery. [http://www.osha-slc.gov/Preamble/Blood\\_data/BLOOD4.html](http://www.osha-slc.gov/Preamble/Blood_data/BLOOD4.html)

CDR Weekly Communicable Disease Report

## Transmission of hepatitis C virus from surgeon to patient prompts lookback

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A woman recently diagnosed with hepatitis C virus (HCV) infection was found to have no other risk factor than gynaecological surgery at the Pilgrim Hospital in Boston, Lincolnshire in 1997. Investigations have shown that the surgeon who operated was unknowingly positive for antibody to HCV (anti-HCV), and both serotyping and genotyping have shown that surgeon and patient carry HCV genotype 4 infection, which is rare in the United Kingdom (UK). Four health authorities in which the surgeon has worked have written to over 1500 women on whom he performed exposure prone procedures. These women are being offered advice and testing for HCV infection. Helplines for former patients have been set up (Boston 01205; Torbay 01803 655655; Southampton and Exeter 0845 4647 (NHS Direct switchboard)).

This is the third published report of transmission of HCV from a surgeon to a patient<sup>1,2</sup>. The previous incidents occurred in Spain<sup>1</sup> and the UK<sup>2,3</sup>. The previous incident in the UK concerned a patient who developed acute HCV infection after cardiothoracic surgery<sup>2,3</sup>. None of the 277 patients who underwent testing at least six months after exposure had evidence of infection, making the transmission rate 0.36% (1/278)<sup>3</sup>. Two studies have shown the prevalence of anti-HCV among health care workers in the UK to be 0.21%<sup>4</sup> and 0.28%<sup>5</sup>. HCV infected surgeons in the UK associated with proven transmission are recommended not to perform exposure prone procedures<sup>2</sup>.

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  5. Zuckerman J, Clewley G, Griffiths P, Cockcroft A. Prevalence of hepatitis C antibodies in clinical health care workers. *Lancet* 1994; 343: 1618-20.
-

## ***Hepatitis alert as doctors infect surgery patients***

By Celia Hall, Medical Editor

ABOUT 4,500 patients who have undergone surgery in hospitals across England and Wales were told yesterday that they may have been infected with hepatitis C.

Two doctors carrying the liver disease unknowingly infected six of their adult patients during operations, the Department of Health said. Two had been treated successfully but four were still receiving treatment. The patients had surgery at 16 hospitals going back to 1978 when the first of two doctors began working in the NHS.

He is a senior consultant obstetrician and gynaecologist from the Pilgrim Hospital, Boston, Lincolnshire. His hepatitis C was discovered after a patient caught the disease. As a result, 1,400 women were contacted in October and tested. Three more were found to be infected. Another 2,500 of his patients were being contacted spanning the full length of time he had worked for the NHS.

In the second more recent case, another "health care worker" was identified as having hepatitis C after two surgery patients were diagnosed with it last year. As result, 2,000 patients who had operations at three London hospitals between 1994 and 1999 - including two private hospitals - were being contacted.

The health department would only confirm that the health worker was "involved in surgical procedures". Prof Howard Thomas, chairman of the advisory group on hepatitis C, said they were now discussing the screening of front-line NHS staff for hepatitis C.

Dr Pat Troop, deputy chief medical officer, said: "About 4,500 patients in England, Wales and London may have been infected and at risk of hepatitis C as a result of hospital treatment. Following two recent incidents, hospital trusts have checked thousands of records and identified any patient at risk. They have written to those patients to offer support and blood tests.

"Anyone found to have been infected will be referred to a specialist." Dr Troop said some children were among those being notified but the proportion was very small. He said that it was more usual for doctors and nurses to be at risk of catching hepatitis C from their patients.

Hepatitis C is a "silent" virus carried in the blood and usually transmitted by blood-to-blood exposure, which can happen in an operation if surgeons cut themselves. Other transmission routes are needle sharing among drug addicts and possibly sexual intercourse.

Antonia Craig, from Southampton, a patient recalled in October, demanded that all health workers be screened for hepatitis C. In Mrs Craig's case, a blood test showed she had not been infected. She said: "It was a very worrying time as I had had a son since I saw this surgeon and I was worried that I might have passed it on to him."

"I would like to see all medical staff tested twice a year for any transmissible disease. It's not just for patients but for doctors too." The Haemophilia Society, which is seeking compensation for NHS patients infected with hepatitis C, said it was concerned about the latest cases.

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## *Nurse anesthetist has license revoked for five years, has to pay \$99,000 fine*

Hill receives maximum penalty

01/31/03

By Tom Blakey

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OKLAHOMA CITY — The Oklahoma Board of Nursing unanimously approved a consent order at Thursday's board hearing, revoking nurse anesthetist Jim Hill's license for five years and ordering him to pay a \$99,000 fine within 30 days.

The order represented the maximum penalties under Oklahoma statutes. Nursing Board members, in light of the Hill case, requested that legislation be enacted to remove the five-year limit.

"Unfortunately, that won't be done in time to affect this case," said Kim Glazier, executive director of the Nursing Board. However, the board "can reject his reinstatement every five years," Glazier said.

Hill, 55, was charged by the Nursing Board with failure to use proper infection control techniques and adequately care for patients while practicing at the Norman Regional Hospital Pain Management Clinic, leading to the contraction of hepatitis C by 38 patients, and hepatitis B by 10 patients, at Norman Regional Hospital between May 1999 and June 2002.

The board had first considered the matter at its Nov. 21 board hearing, and rejected a consent order at the time that called for Hill to surrender his license and pay a \$61,000 fine.

The consent order agreed to Thursday called for Hill's license to be revoked, rather than surrendered. At the Nov. 21 hearing, Nursing Board President Karen Fletcher said the board was "uncomfortable taking the action as the consent order states." The issue is one of surrender versus revocation, Fletcher said.

"The difference is the language," said Betty Smelser, Nursing Board nurse investigator. "Mr. Hill was willing to surrender his license, but the board rejected that and made a decision to revoke it."

The \$99,000 fine was based on recent figures released by the state Health Department, and calculated by multiplying the known number of patients tested for hepatitis C (750) by the \$100 maximum fine, or \$75,000, added to the number of patients at Norman Regional diagnosed with hepatitis C (38), multiplied by \$500 (the maximum five-day, maximum \$100 fine), or \$19,000; added to the number of patients at Norman Regional diagnosed with hepatitis B (10), multiplied by \$500 (the maximum five-day, maximum \$100 fine), or \$5,000.

Hill and his attorneys did not appear at the board's public hearing, conducted Thursday at the Airport Holiday Inn Conference Center in Oklahoma City.

Fletcher read the complaint at the outset of the proceedings, saying Hill "regularly engaged in the practice of reusing the same needle and syringe to inject anesthetic medications such as Versed, Fentanyl and Propofol, to patients through their existing heparin locks ..."

A heparin lock is a device used to keep an IV catheter from clotting between infusions.

Board attorney Charles Green read Hill's written response to the amended complaint, saying, in part, that Hill "never intentionally exposed any patients to a risk of harm and never thought he was placing any patient at risk by his anesthesia techniques. (Hill) did not believe that there was any potential for the upstream back

flow of blood to contaminate the needles or syringes he was using.”

The board voted unanimously to accept the consent order, which had been reached among Hill’s attorneys Michael McMillin and Stephen Peterson, Nurse Investigator Smelser and Nursing Board staff.

“There’s no way to describe the anger I felt when I heard (Hill’s statement),” Barbara Burlingame said after the hearing. “How can he be a nurse and not know you’re not supposed to re-use a needle?”

Burlingame became sick last April, and, because of tests showing her liver enzymes were “off the wall,” had her gall bladder removed. “We weren’t worried about hepatitis — there was no way I could’ve been exposed,” Burlingame said.

Meanwhile, Burlingame’s gastroenterologist at Norman Regional Hospital, Dr. Phillip Bird, noticed six of his patients, including Burlingame, were exhibiting signs of hepatitis C. Bird plotted the hospital’s Pain Center as the common denominator among the patients, and hospital and health department officials launched an investigation leading to the discovery of the hepatitis C outbreak.

“Five years is not enough — I hope he never gets his license back,” Burlingame said.

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