

## Blood Banking: Tangled System Resists Swift Change

"Getting to the bottom of blood banking is about as easy as ferreting out the activities of the Mafia," says J. Garrott Allen, a surgeon at Stanford Medical School who has spent the better part of two decades conducting a strenuous and often lonely campaign for reform in blood practices.

The situation is not as sinister as Allen's remark implies, but it is true that the world of blood banking has evolved in patchwork fashion, its altruistic qualities dimmed by bizarre economics, territorial competition, and general complexity.

The system has not been greatly influenced by the federal government, where the only supervision emanates from the Division of Biologics Standards (DBS), an agency not known for aggressive or imaginative fulfillment of its mandate. Blood banks—hospital, community nonprofit, and commercial—are subject to overlapping systems of accreditation, licensing, and inspection carried out by the DBS, a few states, the American Red Cross, and the American Association of Blood Banks (AABB). The last two organizations are responsible for standards followed by virtually all of the country's non-commercial blood banks (*Science*, 24 March).

The absence of consistent, nationwide cost-accounting or blood-handling procedures makes it impossible to assess just where things are going wrong.

One reason for the confusion is that blood is a unique commodity and does not fall neatly into the category of a therapeutic measure or an article of commerce. Commercial blood bankers tend to see it as a commodity, like milk, to be bought and sold. But most others tend toward the opinion that, as a living tissue ("the first transplant," as it has been called), blood is part of the human body and therefore not subject to the rules of trade.

A number of bills have been introduced into Congress to encourage the concept of blood as a gift. But only

one, promoted by Representative Victor Veysey (D-Calif.), addresses itself to reordering the entire blood banking system. The measure would coordinate and regulate the nation's blood banking activities through a new office created within the Department of Health, Education, and Welfare (but outside the National Institutes of Health, wherein resides the DBS). The government would certify as "national blood bank systems" the multi-state organizations that collect over 2 million pints annually (total collection is about 7 million). Banks would be classified as A or B, depending on whether most of their donors are volunteer. Various programs would be developed to encourage volunteer giving, and, as the real "stick" in the package, all blood would be labeled as to its origin—either "paid" or "non-paid." A national donor registry is also suggested to screen out known carriers of hepatitis, the major peril in blood transfusions. Ten million dollars a year over the next 3 years is the suggested appropriation.

### Bill Imperfect

Most blood experts think the bill is at best inadequate and at worst the wrong approach, but it has been welcomed as a jumping-off point for discussion and as a vehicle to bring the subject to the public's notice.

Of Veysey's proposals, the labeling idea is probably the least controversial, inasmuch as almost every knowledgeable person in the business—except Allen, and Leo Perlis of the AFL-CIO—oppose it. "If you label it [paid], you might as well pour it down the drain," says one director of an all-volunteer bank. The AABB opposes labeling on the grounds that physicians, who have no control over their hospitals' blood sources, would be unfairly subjected to malpractice suits. Others say that adequate sources of volunteer blood should be developed before paid blood, over 95 percent of which is safe, is so unequivocally stigmatized.

The question of the structure of blood systems is more complicated. The Veysey bill, by its definition of "blood bank system," would put everything in the hands of either the Red Cross or the AABB. This idea sits well with the AABB, according to the organization's treasurer Bernice Hemphill. But hardly anyone else favors it. Officials of many community banks believe that putting the nation's blood collection, processing, and distribution under the control of one or two major organizations will stifle innovation and hinder the kind of diversity necessary if each bank is best to serve its own community. Aaron Kellner, director of the New York Blood Center (which deals only in volunteer blood), says that "a rigid, monolithic system would inevitably lead to mediocrity." Small organizations are quicker to respond to pressure for change, he says. His bank, for example, began using the hepatitis-detecting Au antigen test 2 years before it was instituted by the Red Cross. This would have been impossible if the bank had been part of the Red Cross network. Kellner supports a recent statement by the 11-member Council of Community Blood Centers (of which the New York center is a member), which endorses a pluralistic system of regional and community blood centers, all coordinated and regulated by the federal government, but all relatively autonomous.

Adamantly opposed to this set-up is the 14-million member AFL-CIO, which has long been interested in the development of a uniform, all-volunteer system. Perlis, head of the union's department of community services, believes that a monolithic system, preferably administered by the Red Cross, is the only way to wipe out competition, commercialism, and waste. The Red Cross, which recently made blood its priority area of concern, appears amenable to this role. In a February statement it announced its willingness to be the "national nonprofit blood service," with responsibility for overseeing a uniform technical, medical, and administrative system.

The chances of this happening are virtually nil. Blood bankers have strong feelings of attachment to their own ways of doing things. Furthermore, many regard the Red Cross as cumbersome, intolerant of approaches that differ from its own, and guilty of failure to reach out to communities—for example, by keeping "bankers hours," which are inconvenient for would-be donors who hold regular jobs.

Related to organization is the question of donor motivation, one of the most controversial aspects of the business. The Veysey bill takes a stand against paying of donors with cash or through reductions of prison sentences. But it makes no mention of replacement fees or donor credits, both of which are used to induce patients to pay for blood with blood. Donor credits enable a person in one part of the country to give a unit of blood, thereby crediting a patient somewhere else with a "free" unit (that is, free but for costs of processing and transfusion).

These credits are the basis for a great variety of group plans that enable members to get unlimited supplies of "free" blood when needed.

#### Credits, Fees Questioned

Replacement fees, ranging from \$25 to as high as \$50 per unit, are levied by hospitals and non-Red Cross blood banks to induce patients to round up blood to replace what they used.

Both the Red Cross and the Council of Community Blood Centers, a group of AABB members who 10 years ago formed their own organization, have recently called for the elimination of both credits and donor fees. Blood credits, they say, create monstrous amounts of paperwork and relieve communities of pressure to cultivate their own sources of blood. And replacement fees, they say, not only reinforce the concept that money and blood are interchangeable, but are of dubious effectiveness when most patients' insurance coverage removes the spur to replacing blood. The AABB, whose National Clearinghouse Program runs on a constant flow of individual and group credits, is adamantly opposed to their elimination. Hemphill, who started the clearinghouse and defends it like a mother tigress, says, "We will always have to borrow and lend blood."

This is true, but the degree and manner in which it must be done depends on whether one subscribes to the philosophy of the Red Cross or of the AABB. The Red Cross operates on the belief that eventually every community should be able to fill its own blood needs and that supplying blood is a community rather than an individual responsibility. This philosophy is carried to its logical conclusion by the independent King County Blood Center in Seattle, which collects, processes, and cross-matches all of its blood, delivering it to hospitals only when specific needs for blood arise. Director Dennis

Donohue believes that every individual is entitled to all the blood he needs, regardless of his ability to replace it. "It's the community's blood until it's in someone's vein."

On the other hand, the AABB, according to Hemphill, operates on the assumption that certain communities, particularly metropolitan centers where surgery requiring vast amounts of blood is performed, will never be able to be hematologically self-supporting, and that constant flows of blood and credits are the only way to minimize waste and shortages. Hemphill also believes that the twin goads of penalty fees and an individual's sense of moral responsibility are necessary. "The hardest thing in blood banking is getting the donor—the deposit fee produces donors at our doors." Hemphill also argues, somewhat paradoxically, that replacement fees which are not redeemed by blood furnish the financial backbone for participating institutions and that their elimination would force processing charges to be jacked up. This, incidentally, is the sort of issue anyone can make pronouncements about because at present there is no way of determining just what the minimum cost should be for each stage of blood handling. (The Red Cross is the only body that produces an annual extended breakdown of blood collections, uses, and attendant costs.)

As for inspection, both the Council of Community Blood Centers and the Red Cross seem to agree that the federal government can and should spruce up its standards, expand its inspection force, and apply its standards to all blood banks, whether or not they are engaged in interstate transactions. Again, the AABB looks at things differently. A concerted program of public education, not legislation, is needed, says Hemphill—"You can't legislate good or bad practices." Hemphill further points out that AABB standards are more extensive than those imposed by the government and that the galaxy of blood experts who perform AABB inspections gratis could not be bought by the government. The touch of arrogance implicit in this attitude is echoed by the remark of one director of a large community center: "We're the experts. How could anyone inspect us?" Needless to say, Allen and Perlis, who come as close as any two blood critics on agreeing with each other, are flatly opposed to self-regulation. "Peer review doesn't work very well on any level," says Allen.

Despite the multitude of differences

that need to be ironed out, many professional blood bankers feel that real changes for the better are in the works. The only ones who remain uncommitted to an entirely voluntary blood-giving system (it is now about 70 percent nonpaid) are the commercial blood banks. Morris Moss, director of the Interstate Blood Bank in Memphis, believes that payment of donors will always have a place—"We only exist because we're needed." An all-volunteer system would lead to surpluses of some types of blood and shortages of others. Commercial banks can guarantee the kind and amount of blood, when and where it's needed, says Moss.

#### Government Studies

But Moss's argument overlooks the moral contention that the human life fluid should not be equated with money, an argument that has recently filtered up to the executive branch of the federal government. Spurred by publicity, including a recent NBC documentary on the ills of blood banking, as well as murmurings of discontent about the inadequacy of DBS performance in the blood arena, two separate investigations have been started by HEW. The first is a \$472,000 study contracted out by the National Heart and Lung Institute's National Blood Resource Program. The study, conducted by the management consulting firm of Booz, Allen and Hamilton, is an in-depth look at the nation's blood banking complex and is aimed at creating a comprehensive body of information on supply and projected demands, costs, regulatory activity, and research. A separate survey is being done on the treatment and needs of hemophiliacs, whose plasma fraction needs far outstrip the coverage of most insurance policies. Don Cook, director of the study, says it is unlikely that any new law will pass until more information is in hand. "There is very little agreement among major blood bankers on anything except the need for a comprehensive data base."

The other HEW study is a more limited investigation being run by a small task force out of the office of Secretary Elliot Richardson, who ordered it after reading *The Gift Relationship*, a book that extolls all-volunteer systems.

Cook expects his study to give authoritative backing to some widely held theories—for example, that a vast proportion of single-unit transfusions are unnecessary and that there should be far wider use of component therapy

instead of whole-blood transfusions (about 70 percent of all transfusions are with whole blood). Implementation of these practices would reduce hepatitis risks and cut down on the waste of outdated whole blood.

It is beginning to look as though an all-volunteer blood donation system, like the metric system, is an idea whose time has come. Many countries are moving to emulate the example of Great Britain, which has always operated successfully with volunteer blood. Japan,

for example, where tainted commercial blood was rampant, began a concerted drive to stamp out paid blood after American ambassador Edwin Reischauer came down with a widely publicized case of posttransfusion hepatitis.

Vigorous donor recruitment and public education programs appear to be the only answer to commercialism. Only 3 percent of the nation's eligible adult population of 100 million now gives blood, and a mere doubling of that number would solve the problem.

The matter of developing a coordinated system operating under uniform standards and handling blood at the lowest possible costs to recipients is more difficult. Change must come on top of a legacy of diffused responsibility, spotty information, and imperfect communications. The Administration is finally showing signs of reacting to the problem, but hasty reform is unlikely. Meanwhile, several thousand needless deaths continue to occur each year.—CONSTANCE HOLDEN

## French Science Policy: Problems of "Leveling Off"

*Paris.* Four or five years ago a book by Jean-Jacques Servan-Schreiber, *Le Défi Américain*, helped convince the French that a technological gap yawned between the United States and the industrial countries of Western Europe. Now the French tend to yawn about the gap, although they still suspect the Americans of technological chauvinism, as a current furor over a navigation satellite demonstrates. But what seriously worries the French these days are the problems of "leveling off" in the science sector—the leveling off of research funds and of the demand for scientific manpower.

Leveling-off problems are familiar, of course, in the United States and Britain, for example, but they are more acute, or perhaps simply seem more sharply defined, in France because the general economy has been reasonably strong and because structural factors—notably the very direct reliance of the scientific community on government policy and funds—tend to accentuate the negative.

The ingredients, however, are international. A rapid buildup of research budgets took place during the de Gaulle decade, particularly during the middle 1960's. In the same period, the very rapid expansion of the university system provided more places for science students and jobs for those with graduate degrees in science. In France, the disturbances of May 1968 and the en-

suing pressure on the franc and resignation of President de Gaulle brought changes in science policies and priorities. De Gaulle's mistrust of the Anglo-Saxons had caused him to follow a policy of independence, expressed in part through strong national programs in defense, atomic energy, space, and computers. Since 1969, expenditures in these areas have leveled off and in some sectors have been cut back. At the same time, the postwar demographic wave crested and the demand for teachers receded. French industry, which planners had looked to as an expanding market for R & D manpower in the 1970's, has shown a notable lack of passion for increasing its research establishment and in fact seems to have begun tightening its research budgets before the government did. The result of all this is that the proportion of R & D funds in the French gross national product has fallen from slightly over 2.4 percent in 1968 to slightly under 2.1 percent now. France's 6th Plan calls for a level of 2.45 percent to be achieved by 1975, but informed observers are not very sanguine about this happening under present circumstances. Add to all this the effects of inflation, and the similarities with the situation in the United States are obvious.

Under President Georges Pompidou, generally regarded as much more of a pragmatist than his predecessor, the

French have been making some significant changes. In his statements on military matters, Pompidou now stresses the defense of French soil. With respect to basic research, the French are showing an increasing tendency to seek international arrangements, both within the European community and further East and West. And France's 6th Plan, covering 1970 to 1975, includes a variety of encouragements for industry-oriented research. Perhaps more significant, the government is demonstrating a tendency to cut its technological losses. The costly and, until now, uneconomic French program to develop natural uranium power reactors seems to have been shunted onto a side track, and the French national power company has contracted for two plants powered by American-type boiling water reactors and being built by a Westinghouse licensee. In addition, Westinghouse was reported in mid-March to have made a new proposal to set up a joint nuclear company in France on terms that presumably would meet past French objections. The French atomic energy agency (CEA) budget has flattened, and some of its activities have been cut back, resulting in some lost jobs and rising protests from scientists, engineers, and technicians caught in the squeeze. A proposal to detach CEA's computer division and, in effect, move it into the private sector is being discussed and sharply opposed by the unions. (Tensions arising in government laboratories and university science faculties over manpower problems will be discussed in a second article, which will deal with developments since the disruptions and reforms in the universities in 1968.)

The French are far from oblivious to the implications of research for their trade position in the enlarging Euro-