HIGH TECHNOLOGY IN HEALTH CARE

Isabelle Durand-Zaleski* and Dominique Jolly†

*Direction de la Stratégie
Assistance Publique-Hôpitaux de Paris
3, Avenue Victoria
75100 Paris
France
†Director, Direction des Affaires Internationales
Assistance Publique-Hôpitaux de Paris
Paris, France

(First submitted 21 June 1990; accepted 25 June 1990)

The structure of the Assistance Publique-Hôpitaux de Paris renders necessary an in-house centralized technology assessment unit. This unit, named CEDIT (Committee for the Evaluation and the Diffusion of Innovative Technologies), has been functioning since 1982 and has advised the Director General on 70 new technologies, including the lithotriptor and plasma-exchange therapy. A particular feature of the CEDIT is that it is in charge of both the assessment and the implementation of the recommendations following this assessment. We attempt to describe the consequences of the CEDIT's functioning compared to other countries' technology assessment organizations.

Keywords: Technology assessment, France, CEDIT, lithotriptor, plasma-exchange therapy.

INTRODUCTION

The Assistance Publique-Hôpitaux de Paris (AP-HP) is the largest hospital group in Europe. Its 50 hospitals include all the teaching hospitals of Paris and employ 17,000 physicians involved in research and medical practice.

As a non-profit organization, the AP-HP is subsidized by the Social Security, and operates under the control of the Ministry of Health and the Ministry of Finance. Innovation was always a major feature of the AP-HP which possesses the manpower and the equipment to generate high-level applied research. Industry has traditionally supported this movement, by lending material for evaluation, expecting in return the assurance of the large AP-HP market.

Besides its mission of being at the forefront of innovation, the AP-HP also has the mission of being a public service and therefore must take care of the indigent and the
elderly. Operating within a fixed budget renders trade-offs between these two missions—excellence and public service—necessary.

Financial and administrative constraints of the early eighties put an end to an era of unlimited spending on innovation. Constraints included, on the financial side, the ceilings imposed on all public hospitals and, on the administrative side, a list of restricted equipment, the purchase and operation of which are subject to authorization.

These conditions led the Director General to create, in 1982, an assessment committee, the CEDIT (Committee for the Evaluation of the Diffusion of Innovative Technologies), whose task is to channel (not curtail) innovation by submitting it to a strict assessment process.

THE CEDIT

The CEDIT is a committee made up of 14 senior members of the AP-HP. Eight of them are physicians; the others are from the administration. Given the nature of technologies studied, it was thought appropriate to include the Director of Building & Equipment, the Director of Medical Affairs and the Director of Strategic Planning. The absence from the Committee of the Director of Finance was a deliberate attempt to free innovations found cost-effective and worthy of diffusion from yet another scrutiny by the Financial department. However, this department was always kept informed of the meetings and invited to attend.

Operation of the CEDIT

At the beginning of its operation, the CEDIT was meant to assess new technologies and to advise the Director General on the attitude to adopt vis-à-vis these technologies. It soon became necessary for the CEDIT to take on other roles, complementary to its principal role and for which no other structure existed. It is now also responsible for identifying technologies at their onset, promoting clinical trials when deemed necessary, ensuring proper implementation and follow up of its recommendations. To our knowledge, this is the only organization that is in charge of both the assessment and the implementation of new technologies.

Assessments are conducted by the Secretariat of the CEDIT. This Secretariat is composed of physicians and a hospital director. It submits a complete report on each new technology to the CEDIT. It is also responsible for the implementation and the follow-up of recommendations issued by the CEDIT. The decisions of the CEDIT (submitted to the Director General in the form of recommendations) concern the whole of the AP-HP hospitals.

The process is usually the following: a physician of one AP-HP hospitals requests the funding of an innovation for his department. The Secretariat of the CEDIT conducts an assessment of the new technology, gathering the relevant information.

Technology Assessment Process

A first group of questions concern the technology itself:

Does it work?
What are the indications?
What is the benefit for the patient or the medical team?
How many patients will be concerned?
Is it a complement or a substitute to existing technologies? Does it save money, lives, suffering? . . .

A second group of questions concerns the dissemination of the technology. The CEDIT decides which departments within the 50 AP-HP hospitals have the capacity, the qualifications, the minimum number of patients considered necessary to ensure proper use of the new technology.

Under the financing system in operation until September 1990, the CEDIT could finance half the innovation from a special budget; the other half had to be financed by hospitals. The new system will allow the CEDIT to purchase entirely the equipment given to departments. In exchange, the departments will have to feed back information on the results (patient outcomes for examples) obtained with the new technology. Departments who refuse to comply will have to find the funding themselves. Under the former system, the CEDIT often had difficulties in obtaining the follow-up information requested.

THREE STUDIES

The CEDIT has completed 70 studies in the past eight years. These three examples were selected to illustrate various advantages gained from the centralized assessment process.

Inflatable Eye Prosthesis

There are cases when a new technology concerns so few patients that only a centralized decision can ensure compliance from a hospital that may not want to invest in a technology of such limited use to its own patients: in that case, the strategy of the AP-HP as a whole is in conflict with the strategy of individual hospitals. The inflatable eye prosthesis provides an example. It is a very innovative treatment of a congenital skull malformation which results in the absence of one or both eyes: in that case, the skull does not grow normally, since the normal development of skull bones requires the presence of eyes. The invention consists of inflatable eye prosthesis, which mimic normal eye growth. Since such malformations are fortunately rare, no single hospital would have had the economic incentive to invest in a team capable of producing and using the device. The CEDIT considered the invention useful for patients and therefore recommended its funding.

Lithotriptor

In some cases, a central administration can organize the sharing of costly equipment between medical teams. The case of the lithotriptor offers a good illustration. This expensive equipment was purchased and operated by the AP-HP for its departments of urology as early as 1984. This new technology had been brought to the attention of the Director General
and of the CEDIT by the head of a department of urology. The CEDIT did an 
epidemiological study to estimate the number of patients, in terms both of preva-
lence and incidence; from this estimated number of patients, it was possible to derive 
the number of lithotriptors necessary to treat the patients in the Paris region. An 
economic study was performed to compare the cost of standard surgical treatment of 
kidney stones to destruction of stone by shock wave. This economic study took into 
account only financial costs to the hospital, not social costs to the patients. The 
comparison of medical and surgical treatments considered the fact that repeat shock 
wave therapy might be necessary to destroy one stone, whereas all stones are usually 
removed at one time by surgery. It did not compare the effectiveness of surgery and 
lithotripsy in terms of years of life saved, although the report insisted on the 
reduction of pain and risk to the patients. The estimated cost of treatment of kidney 
stones with lithotriptor was roughly 30% above the cost of surgical treatment. The 
members of the CEDIT and the Director General felt that this additional cost was 
clearly offset by the improved quality of life and reduction of risk to the patients.

The next step was to decide on where the lithotriptor acquired by the AP-HP was 
to be located and how it should be operated. Despite considerable pressure from a 
media-wise urologist, it was decided that this equipment be located in a neutral 
place, i.e. in a place that did not belong to any existing department and was created 
ex nihilo to house the lithotriptor. Together with this new building, a new organi-
zation was set up and charged with the task of ensuring that all urologists from the ten 
departments of urology in the AP-HP hospitals had equivalent time slots on the 
lithotriptor allocated to them. Operation began in late 1984. Evaluation and quality 
assurance was to be under the responsibility of this new organization, which proved, 
however, to be an unreliable source of information for this purpose. We expect to be 
able to organize a better feedback on utilization and patient outcomes in the future. 
The destruction of gallstones is a new indication for the lithotriptor. An economic 
study has been undertaken by the CEDIT to compare cost-effectiveness and cost-
utility ratios of surgery and shock wave therapy for gallstones. The organization of 
the lithotriptors' operation is being reviewed to make the equipment available to 
departments of gastro-enterology that are interested in using this new therapy.

Plasma-exchange Therapy

Plasma-exchange therapy offers another example of the advantages of a cen-
tralized structure of technology assessment. The object of this therapy is the extraction 
of a toxic substance, often endogenous such as autoantibodies, from the blood. Patients who can benefit from this treatment are found in departments of internal 
medicine, neurology, nephrology and other disciplines. Few patients in each discip-
line are concerned. At the time when the CEDIT began its assessment, the 
indications for plasma-exchange therapy were documented by only a few obser-
vations in each pathology. On the recommendation of the CEDIT an organization 
was created, whose task was to coordinate open trials in the various departments 
using this therapy, to review the results in the different indications and—also in light 
of results published in the medical literature—to advise pursuing or abandoning 
plasma exchange for the various indications. This organization made it possible for 
the AP-HP hospitals to gather enough patients to have meaningful results on the 
efficacy of plasma-exchange therapy: departments that were still planning to use this
for invalid indications could thus be prevented from making unnecessary investments.

DIFFICULTIES ENCOUNTERED

After describing various successes of CEDIT’s assessments, we would like to mention some difficulties it encountered. It must be clear that this committee is not almighty and can be bypassed in some instances: department heads who can independently finance their equipment, be it through donations, campaigns or political lobbying, can buy and operate almost anything they want without having it endorsed by the CEDIT.

In cases when the CEDIT has actually assessed and recommended the implementation of a new technology, its next task is to ensure that recommendations are followed. It has proven very difficult to obtain funding and manpower in a timely fashion: CEDIT’s members tend to consider that their role is to assess and that the material aspects of technological diffusion should be taken care of by another part of the administration. Implementation means obtaining active support from the Directorates involved: usually Building and Equipment, Personnel (medical and non-medical) and Finances. Although these Directorates are normally bound by the Director General’s acceptance of the CEDIT’s proposal, they have their own way of functioning and their own priorities.

Physicians whose request was approved by the CEDIT and the Director General may become impatient when delays due to slow responses from the Directorates involved add up. This problem will be solved at the end of 1990 when hospitals become solely responsible for implementing the CEDIT’s decisions.

Another difficulty arises after a technology has been implemented. The CEDIT’s role is to follow up on this technology, to check actual results against literature data, to compare efficiency and efficacy. However, physicians may be extremely reluctant to provide these results and view this follow-up as an undue control of their practice.

FUTURE DIRECTIONS

Part of the difficulty in obtaining feedback from departments using the new technologies assessed by the CEDIT might be due to the fact that evaluation is not yet an accepted practice in France. However, a short survey of other technology assessment institutions, revealed that all reported difficulty in having an actual impact on physicians or decision-makers use of a new technology once the assessment is released. Our experience confirms this fact: the actual influence of CEDIT’s recommendations of “proper” use of a technology tends to wear off over time. Obtaining that technology assessment becomes the determining factor in the application of a new technology can be set as a goal to our institution. This to us represents the new frontier: over the past ten years, methods of technology assessment have become more sophisticated and are now reliable tools. It is time to ensure that these tools are used to actually influence decisions that are made. We found that too often technology assessment remains a piece of scholarly work, while
decision-makers use their own subjective, often political, methods to decide on the diffusion of new technologies. The questions we are now asking are the following:

— What is the impact of technology on decisions?
— What should be the degree of involvement of professionals of technology assessment in the implementation of new technologies?
— Should technology-assessment professionals be involved in the follow-up of implemented new technologies?

Acknowledgements—The authors thank Y. Laugier-Werth for her collaboration in translating the manuscript.

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APPENDIX: TECHNOLOGIES STUDIED BY THE CEDIT

Interleukins (1989)
Ventilation by oscillation (1989)
Free radicals (1989)
Videoendoscopy (1988)
Frozen ligaments (1988)
Computerized image analysis (1988)
Methods of evaluation of bone mineralisation (1988)
Inflatable eye prosthesis (1988)
Percutaneous lumbar discectomy (1988)
Pulmonary transplant (1988)
Chronopharmacotherapy (1988)
Extra-corporeal pharmacotherapy (1988)
Treatment of familial hypercholesterolemia by LDL apheresis (1988)
Homologous cardiac valves (1988)
Destruction of urinary stones by laser (1988)
Lithotripsy for gallbladder stones (1988)
Teeth implants (1987)
Artificial skin graft (1987)
New arterio-venous shunt for hemodialysis patients (1987)
Exploration of respiratory pathology during sleep (1987)
Extracorporeal membrane oxygenation (ECMO) for newborns (1987)
Monoclonal antibodies (1987)
Pancreatic transplant (1987)
Irradiated bone graft (1986)
Laser in cardiovascular pathology (1986)
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Holter to screen children at risk for sudden infant death syndrome (1986)
Immunoscintigraphy (1986)
Valvuloplasty (1986)
Artificial heart (1986)
Artificial knee ligaments (1986)
Stimulators against pain (1986)
Cytogenetics of acquired diseases (1985)
Stereotaxy for neurologic biopsy (1985)
Autologous transfusion (1985)
Pump chemotherapy (1985)
Liver transplantation (1985)
Intraluminal angioplasty (1984)
Artificial sphincters (1984)
Hormonal receptors (1984)
Computerized rooms for disabled patients (1984)

Latest technologies studied by the CEDIT include:

- Test for Hepatitis C Virus;
- Intra venous polyvalent immunoglobulins;
- Cochlear implants;
- Plasma-exchange therapy;
- Lithotriptor for gall stones;
- Magnetic resonance spectroscopy;
- Percutaneous cholecystectomy;
- Hemopump;
- Dilatation balloon for prostatic disease;
- New stent for the treatment of urethral strictures;
- Transcatheter closure of patent ductus arteriosus.