INAHTA Briefs

Issue 2001/33

Title: Low-end Scanners

Agency: CEDIT, Comité d'Evaluation et de Diffusion des Innovations Technologiques

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Reference: CEDIT Report 97.03/Re-2/01

Aim:

CEDIT was called upon in 1997 by three chiefs of the Department of Radiology at Hospital Saint-Antoine, Saint-Vincent-de-Paul, and Tenon in Paris to evaluate the role of low-end scanners[1]. These devices have a lower investment cost, but their technical characteristics are inferior to high-end scanners[2]. During its plenary session of October 28, 1997, following an examination of the first report, CEDIT did not recommend the widespread use of low-end scanners at the AP-HP. It recommended conducting a study to evaluate the medical and economic impact of these scanners in the AP-HP, particularly since an evaluation process was underway at the time within various official bodies to dissociate authorization of low-end scanners from specific needs as defined for the healthcare coverage map. The potential use of these scanners was either to replace high-end scanners at a lower price in medium-sized hospitals, or to supplement high-end scanners in larger hospitals.

Results and Conclusions:

• Numerous technical problems were encountered during this study. Tube capacity and its cooling speed, lower on the low-end scanners, limited use of these machines to tests not requiring quick consecutive use of several spirals (a problem encountered particularly when contrast agents were injected). Reconstruction times and the absence of a second control panel further limited their use.

• Due to differences between individual low-end scanners and technical improvements in newer machines, it is therefore impossible to generalize results over all machines in this category. Most importantly, however, the technological leap represented by multi-slice scanners raises the question of whether a second low-end machine in addition to a first is of any benefit.

• According to classifications of the expert group, many patients might benefit from a test conducted on a low-end machine. However, frequent breakdowns on the Philips and Toshiba scanners discouraged radiologists and operators in the departments, and for the sake of caution, contributed toward eliminating a large number of patients.

• When low-end scans were conducted, responses to clinical questions were obtained in 99.4 % of cases at SVP and 91.7% of cases at Tenon.

• We might also note that major discrepancies appeared in the technical performance of the machines as specified by manufacturers and what was actually obtained.

• The number of patients concerned by the indications on list B were also measured in an exhaustive manner over 1 month in two General Radiology departments with high activity levels (Cochin and Beaujon). The rates of use for low-end scanners varied between 31% and 78% depending on the department. It is therefore not possible to draw general conclusions regarding the potential impact of these machines at the AP-HP in terms of number of patients. Departmental evaluation would be necessary before any future installation.

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[1] = class 1 according to CNAM price classifications.

[2] = class 3 according to CNAM price classifications.

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(continued from page 1)

• Concerning the economic aspects for a site with low activity (4500 procedures per year), substituting a high-end with a low-end scanner offers moderate financial advantages: a savings of 5% in total operating costs. In a hospital with high activity levels, (14 000 procedures per year), supplementing a low-end with a high-end scanner does not seem economically well founded since multi-slice scans have made their appearance on the market. In the AP-HP, it seems more financially advantageous to renew the high-end, single-slice scanners with multi-slice scanners (or upgrade the machine depending on its age) rather than to buy a low-end machine in addition to a main scanner.

Recommendations:

The restricting factor of the healthcare card, the lack of any economic justification, and differences between class 1 machines are all arguments against the widespread use of these scanners in the AP-HP, either to replace or to supplement main scanners.

Methods:

Systematic review using the following databases: Medline, Current Contents, Embase, and Cochrane Library.

A call for participation was launched with manufacturers to make three scanners available, and given the authorization of official bodies, the following machines were installed: an Elscint (Select) in Saint-Vincent-de-Paul (SVP), a Philips (Tomoscan M) in Tenon, and a Toshiba (Auklet) in Saint-Antoine. The evaluation was performed in two stages:

- First, an expert group, using CERF[3] classifications, selected indications that would be impossible to assess on small scanners (list A) for technical reasons, while they retained other indications for phase 2 of the protocol involving patients (list B).
- In the second stage, investigators conducted a prospective study with patients at the three sites to measure for which indications from list B, tests on the low-end scanners would enable responses to the clinical questions posed. This study also aimed to evaluate the number of patients concerned by these indications and to assess the potential impact of these scanners at the AP-HP, including financial aspects.

[3] CERF : *College of French Radiology Professors*, who wrote a list for acknowledged indications for scanner use.

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