

Spotlight on...

EIO: A truly European Centre to rival the best

→ Anna Wagstaff

It seemed like a gamble when the European Institute of Oncology opened in Milan ten years ago. But this centre of excellence reversed the brain drain and set some of the highest standards for patient-centred treatment and research anywhere in the world.

When the European Institute of Oncology in Milan celebrated its 10th anniversary this summer, it did so in characteristic fashion. For the month of June it played host to back-to-back meetings, gatherings and exhibitions aimed at furthering knowledge of cancer and promoting collaboration to overcome it.

A meeting of oncologists from the ten countries that had just joined the European Union; another on collaboration with Gulf Region countries. A series of meetings of patient organisations, for patients with breast cancer, prostate cancer, chronic myeloid leukaemia or gastrointestinal stromal tumour (GIST), and patients involved in an EIO trial into preventive use of tamoxifen. The European Cancer Patient Coalition held its first masterclass. There was a summit of national cancer organisations on pain in terminally ill patients. A seminar for general practitioners. A course in sentinel node mapping in breast cancer. Seminars and workshops on immunology and vaccines, on molecular targets, melanoma research, thyroid cancer, leukaemia and lymphoma. Even local children joined in, coming on school trips to see

an exhibition explaining the amazing discoveries behind genomics.

After only 10 years EIO has become an international centre of excellence that can compete with any cancer institute in the world in terms of discoveries, trials, publications and the calibre of its clinical and research staff. What makes it different is the fervour with which it seeks to collaborate, educate, enthuse, and involve everyone from patients and support groups to students, graduates, general practitioners, and the general public.

STARTING FROM SCRATCH

The EIO is unusual among European cancer institutes in that it started with no government backing. In Italy, this was unheard of. New legislation had to be passed to lay a legal basis for a private, non-profit organisation. Independent backers had to be found to donate large sums to support a vision that would never provide a financial return, since all profits are ploughed back into research.

Top researchers, clinicians and administrators had to be attracted to work in a country that had lost many of its own best people to the US and elsewhere, where they felt able to make better



One floor above the wards, clinical and basic scientists carry out ground-breaking work in molecular oncology and genomics

use of their skills. Someone remarkable was needed to inspire the confidence to achieve this. That someone was Umberto Veronesi, the charismatic director of Italy's National Cancer Institute in Milan, who had made his name on the international stage through his development of quadrantectomy – the first major breast conserving treatment for breast cancer.

He persuaded Giuliano Amato, then Minister of the Economy, to push through the legislation, and convinced Enrico Cuccia, president of Mediobanca, one of Italy's largest merchant banks, to back the project, which opened the way to a wave of financial backers. He, too, was instrumental in convincing leading Italian émigrés and top European oncologists to sign up. Among them was Pier Paolo di Fiore, who left his job as head of laboratories at the US National Cancer Institute (NCI) to become Director of the Experimental Oncology Laboratory. With him came his colleague and renowned Italian cancer researcher, Giuseppe Pelicci, to head the Department of Experimental Oncology.

THE CREAM OF EUROPE

Six of the 15 original heads of departments came from outside Italy. Jean Yves Petit, the internationally renowned plastic surgeon, came from the Institut Gustave-Roussy to head the Division of Plastic and Reconstructive Surgery. The head of the Department of Surgery, Niall O'Higgins, came from University College, Dublin. Aron Goldhirsch reduced his commitments in Switzerland to head the Division of Medical Oncology, Peter Boyle came from the International Agency for Research on Cancer to head Epidemiology and Biostatistics, and Kristian Helin from Denmark to head one of the basic research labs. Finally, Luc Vanuytsel, who developed the prototype of conformal radiotherapy for prostate cancer, came from the University of Leuven in Belgium to lead the Division of Radiotherapy – the EIO became the second institute in Europe to own and operate a conformal radiotherapy machine.

Internal collaboration between all aspects of the Institute's work – patient care, basic and clinical

The Institute transformed patient attitudes
towards participating in clinical trials

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Open spaces and plenty of light are cornerstones of the EIO design. Architects Impregilo are now in discussions over plans for a major new cancer center in Oxford, UK

research and management reflected Veronesi's vision for European collaboration. Under the motto "Si cura meglio dove si fa ricerca" [Treatment is better where they do research], the Institute transformed patient attitudes towards participating in clinical trials.

The EIO insists that managers understand the priorities of the clinical and research side, and that clinicians and researchers understand and support the management process. This ensures that financial and administrative decisions are in line with the priorities of the Institute as a whole, and has allowed the interdivisional collaboration necessary for significant clinical studies.

The Institute is managed around the needs of cancer patients, aware that they often suffer high levels of stress, trauma and depression. Disruption to the patients' lives is minimised by keeping average admissions down to three or four days. The EIO provides the high-end diagnostics and treatment, with top clinicians and state of the art equipment, while routine follow-up is provided

closer to home. With only 200 beds, EIO admitted more than 16,500 patients last year. The introduction of intraoperative radiotherapy has allowed admission times to be further cut in many cases.

Each patient is assigned a nurse and, whenever possible, nurses introduce themselves by phone before admission.

BETTER BY DESIGN

The building minimises the gap between hospital and normal life. Gone are the traditional hospital lifts and white gloss narrow corridors that make patients feel they are being shunted helplessly around a closed building. Here, escalators travel up and down the spacious atrium, leading to wide pastel-shaded corridors which overlook a large courtyard garden. The emphasis is openness, accessibility, and normality.

Patients do not eat to a hospital timetable. Meals are available from the canteen at any time. The rooms feel more like a hotel than a hospital – no

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and white gloss narrow corridors

Six of the first departmental heads were Italians returning from the US

more than two beds, and a TV in every room. However, this is no holiday break. Patients are encouraged to find out about their treatment and their condition, and to participate in clinical trials. TVs can show information videos, some filmed in collaboration with patients, to explain what happens during a bone scan, a CT scan or when the patient is anaesthetised.

In an effort to demystify the medical process, analytical labs have glass walls facing the escalators, so that patients can see the technicians processing blood and tissue samples.

At the time the EIO was set up, there were 92 Italian oncologists working at the NCI in Bethesda outside Washington DC.

The new Institute reversed the brain drain as it set up a department of experimental oncology, devoted purely to research. Six of the first departmental heads were Italians returning from the US. In 1995 it opened the first unit in Italy dedicated to Nuclear Medicine, and soon started hitting the scientific headlines with innovations like the avidin-biotin technique in radioimmunotherapy, which makes it possible to radioactivate only the antibodies that bind to the tumour. This work was later to yield further important progress with the discovery of receptor molecules found on the surface of some cancer cells that can be used to convey the radioactive dose exactly to the target.

In 1998, the discovery that a natural substance, retinoic acid, can block the mechanisms of action of leukaemia cells, restoring their normal function, marked the creation of the first 'molecular drug' – and earned the EIO its first publication in *Nature*. In 2001, a nanotechnology laboratory was opened which is now building 'gene chips' that will allow the expression profiles of thousands of genes to be determined simultaneously.

The Institute also rapidly built a name for clinical innovations. It perfected the ROLL technique – Radioguided Occult Lesion Localisation – a surgical technique to remove non-palpable breast lesions, and played a leading role in developing

and perfecting the sentinel lymph node biopsy, which saves women from having healthy lymph glands in their breasts removed. It introduced intraoperative radiotherapy, removing the need for repeated trips to a specialist radiotherapy centre following surgery. It demonstrated that conformal radiotherapy – targeted precisely at the tumour outline – yields as good results as surgery in men with prostate cancer.

CLINICAL TRIALS

The Institute led the way in chemoprevention, with a study of the use of low-dose tamoxifen in women undergoing hormone replacement therapy. Another clinical trial, published in the *Lancet* last year, revealed an important step in the early detection of lung cancer. A combination of spiral CT and positron emission tomography [PET] was able to detect even the smallest lung tumours and even allowed investigators to determine whether they are benign or malignant.

Italy, specifically Milan, has long been at the forefront of important cancer innovations – notably the quadrantectomy (radical lumpectomy), CMF and adriamycin – but cutting-edge basic science research has traditionally been the preserve of the American NCI and a handful of other major US



Professor Veronesi outside the EIO

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Escalators make it easy to move around, giving the building the feel of a shopping centre or airport as much as a hospital

and European research institutes. The EIO has now claimed its place among this elite.

The Institute promotes debate on how and what scientists and physicians should communicate to the public to improve cancer prevention and to encourage a positive attitude among patients.

EIO runs seminars for journalists and its Press Office looks for ways to encourage more and better media coverage of cancer. It used the opportunity of 10th anniversary to secure feature pieces in two of Italy's top dailies.

The EIO also runs a variety of medical education programmes and specialist courses. There are regular courses for general practitioners – key to ensuring early diagnosis – and an oncology hotline offering a 24-hour free consultation service. As Paolo Spriano, General Practitioner, said: “After ten years of training and educational activities with the EIO, I am all the more convinced that the alliance between oncologist and GP is of vital importance.”

A Masters Degree in breast pathologies in collaboration with Milan University attracts students from all over Europe. The EIO also offers placements to students from the University.

Though Italian patients and the Italian health and education system directly benefit, the EIO is European in its staffing and outlook. “We knew Europe could never hope to compete with the US

if our efforts were conducted country by country,” said Veronesi.

The EIO has links with the Gustave-Roussy in Paris, the University of Vienna, University College Dublin, the Catalan Institute of Oncology in Barcelona, and the Swiss Italian Oncological Institute in Bellinzona. The scientific directors of each partner sit on the EIO scientific committee, ensuring a truly European outlook and facilitating cross-European collaboration. The EIO is helping to ensure that, as cancer enters the era of genomics and proteomics, Europe will be in a strong position to play its part. Characteristically, Veronesi, who describes the EIO as one of his children, used its 10th anniversary as an opportunity to look forward rather than back. “The research and treatment of cancer requires specialist centres in order to develop clinically and scientifically, and cancer patients need an environment that supports them through a deeply stressful and traumatic experience. My hope is that the outstanding success of the EIO in its first 10 years will help provide the vision and confidence to establish here in Italy similar centres of European excellence in the fields of neurology and cardiology.”

It's a nice dream. And with Veronesi's track record, there's always a chance it might yet become reality.