Nuclear medicine market sees solid growth as PET shows signs of commercial viability

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Hybrid systems, expanded reimbursement take center stage at SNM meeting

For vendors at this year’s Society of Nuclear Medicine show in Los Angeles, the industry’s hard times of the mid-1990s were only a memory. While the meeting suffered from low physician attendance and a paucity of new technological introductions, the growing commercial promise of PET for the most part overshadowed other concerns.

Vendors sailed into the show buoyed by a strong market: Industry observers reported that the U.S. nuclear medicine market grew by 10% to 12% in 1998. Although indications are that the market had a disappointing fourth quarter last year, that weakness apparently didn’t carry through to 1999. Nuclear medicine revenues in the first quarter of 1999 were $105 million, up 15% from the first quarter of 1998, according to data from the National Electrical Manufacturers Association. In a report published just before the meeting, market research firm Frost & Sullivan of Mountain View, CA, predicted that total nuclear medicine equipment revenues in 1999 will exceed $750 million. The Health Care Financing Administration’s expanded PET coverage fueled excitement about PET. On July 1, the agency began to reimburse for three additional oncology applications: colorectal cancer, Hodgkin’s and non-Hodgkin’s lymphoma, and melanoma. Advocates such as the Institute for Clinical PET are working with HCFA to determine adequate payment levels for the new indications, as well as to expand the list further to include other applications.

With PET reimbursement and a stable radiopharmaceutical production network more firmly in place, many vendors expressed confidence that the PET market is poised to break through to commercial viability. Forty-two percent of the SNM meeting’s clinical papers were on PET, according to SNM officials, and U.S. centers offering PET have increased from 50 to 300 in the last two years, with most of the growth in gamma camera coincidence detection imaging. The Frost & Sullivan report estimates that there are 270 PET scanners and 22,000 gamma cameras installed worldwide. PET’s arrival as a commercially viable technology was highlighted by the debut of two companies formed to offer mobile PET services. Both are based in southern California: Acclaim Medical in Newport Beach and Mobile PET Systems in San Diego. Both companies plan to begin offering mobile service in southern California this summer.

With respect to new gamma camera technologies, the exhibit floor was relatively quiet. GE Medical Systems of Milwaukee probably garnered the most attention with its unveiling of Functional Anatomic Mapping (SCAN 6/23/99).

Another high point came from the nuclear medicine division of Siemens Medical Systems in Hoffman Estates, IL, which sparked interest with images collected on the hybrid CT/PET scanner it is developing with partner CTI of Knoxville, TN. Despite the enthusiasm, this year’s SNM meeting did sustain lower than usual attendance numbers. Roughly 3500 people attended the show, almost half the attendance at the 1998 SNM conference in Toronto. Industry observers attributed the decrease to the Los Angeles location and associated costs, rather than lack of interest in nuclear medicine.

Acclaim Medical

- Making its SNM debut was Acclaim Medical, which is setting up a mobile PET imaging services business. The Newport Beach, CA, company was started in January by Robert Waley-Cohen, one of the co-founders of mobile giant Alliance Imaging.

AccSys Technology
• Linear accelerator developer AccSys of Pleasanton, CA, is working on completing the installation of a dedicated FDG accelerator by the end of the year, the company reported. One of the first such systems was supposed to be delivered to Imatron Japan, but that agreement broke down and AccSys is now talking to two other potential customers.

ADAC Laboratories

• Cardio 60 is a new version of ADAC’s Cardio dual-head 90° gamma camera (SCAN 5/26/99). ADAC began shipping the system at the SNM meeting, according to Mohamed Elmandjra, vice president of marketing.
• As a work in progress, the Milpitas, CA, company introduced the next generation of its nonuniform attenuation correction technique, Vantage ExSPECT II. The package is designed to guide users through the process of conducting attenuation correction.
• InStill is a new automated motion correction algorithm useful for cardiac imaging, Elmandjra said. The technique is currently a work in progress.
• ADAC has begun shipping its new Forte variable-angle gamma camera with the company’s Molecular Coincidence Detection/Attenuation Correction package.
• ADAC has been pleased with the progress of its CPET dedicated PET camera program, Elmandjra said. Sales are ahead of expectations, and the company anticipates having 50 CPET cameras installed by June 2000.

Areeda Associates

• Appearing at its second SNM conference, this Los Angeles company displayed its SeeMor PC-based image viewing software for teleradiology and intradepartmental applications. Over 400 SeeMor packages have been installed since the software began shipping in 1995, according to the company.

Bicron

• StarBrite is a new scintillation crystal enhancement package that Newbury, OH-based Bicron introduced at the show. Bicron has carved photochannels across the surface of the crystal to better direct the light, according to Kenneth Smolko, business manager of scintillation products. This means that the company can manufacture crystals thicker than the 5/8-inch crystals now being used for high-energy imaging, without sacrificing performance at low energies.

Berlex Laboratories

• Berlex made its SNM debut in support of Quadramet, the bone pain palliation agent the company is selling for Cytogen. Sales of the radiopharmaceutical, which is Berlex’s first nuclear medicine agent, began in March, according to representatives for the company’s Richmond, CA, oncology unit.

Boston Life Sciences

• This Boston-based company presented papers on the clinical results of its Altropane radiopharmaceutical for diagnosing Parkinson’s disease.

Bracco Diagnostics

• Bracco showcased CardioGen, its rubidium-based agent for cardiac PET studies. The company also featured Choletec, for detection of hepatobiliary disease; Iodotope, for treatment of thyroid cancer; MDP Bracco, for detection of bone cancer; and Rubratope, for detection of pernicious anemia.
The company is evaluating a relaunch of Cardiotec, its myocardial perfusion agent, and is at work on another agent that binds to hypoxic tissue, helping clinicians evaluate myocardial viability.

CareWise Medical Products

- CareWise of Morgan Hill, CA, displayed its C-Trak gamma-detecting surgical probe. CareWise is working on a probe for laparoscopic surgeries, as well as a dedicated PET probe.

Cytogen

- Cytogen highlighted ProstaScint, its monoclonal antibody-based agent for detecting prostate cancer. To better educate ProstaScint users, Cytogen has added another dimension to its Partners in Excellence (PIE) training program with an Internet site, Prostasite.com, which presents information about prostate cancer and images from ProstaScint scans.
- Cytogen also featured OncoScint, its colorectal and ovarian cancer product. The firm plans to begin marketing efforts for OncoScint for the detection of recurrent ovarian cancer.
- Cytogen’s marketing partner, Berlex Laboratories, has relaunched Quadramet, Cytogen’s bone cancer pain relief agent.

CTI

- The Knoxville, TN, company received recognition for work done by CTI PET Systems, a joint venture between CTI and Siemens. CPS has developed a combination PET/CT scanner installed at the University of Pittsburgh, and an image collected with the hybrid unit won Dr. Henry Wagner’s prestigious “Image of the Year” honor.
- CTI also emphasized a new FDG chemistry module for its RDS 111 cyclotron.

Data Distributing

- Exhibiting at its first SNM meeting, this Santa Cruz, CA, company highlighted a new line of digital versatile disk (DVD) archives it is commercializing. The firm began shipping a DVD-R recordable disk jukebox in June. The storage capacity of the archives begins at 3.3 terabytes, and each jukebox will cost about $33,000.

Diatide

- Diatide’s booth featured the company’s peptide-based product line, including AcuTect, its P280 deep-vein thrombosis agent, and NeoTect, its lung cancer imaging agent that is under priority review at the Food and Drug Administration. The Londonderry, NJ, company expects NeoTect to be cleared in August.
- The company has begun to focus on developing therapeutic uses for its agents. At the SNM show, it presented a poster showing tumor regression in animals when NeoTect’s technetium is replaced with rhenium, a beta-emitting therapeutic isotope.

Digirad

- San Diego-based Digirad displayed its SPECT rotating chair, which was cleared by the FDA last November. The chair allows the company’s solid-state digital gamma camera, Digirad 2020 TC Imager, to conduct SPECT studies.

Du Pont Pharmaceuticals

- Du Pont Pharmaceuticals showcased its cardiac imaging agent, Cardiolite, as well
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as Miraluma, its breast imaging agent. After two years of slow market acceptance of Miraluma, Du Pont plans to readjust its strategy for the agent. Although it will continue to sell Miraluma, it will emphasize further clinical studies for the product, investing more than $2 million over the next two years to better define the product's patient population, when to use it, and how to read results.

- The company continues its work on DMP-444, a thrombus imaging agent. The product is in various stages of clinical trials for use in three possible areas: diagnosis of deep vein thrombosis, pulmonary embolism, and cardiac imaging. Du Pont also has a cancer imaging and treatment agent, DPC 697, in its development pipeline.

**Ebco Technologies**

- Cyclotron developer Ebco of Richmond, British Columbia, highlighted its TR series of cyclotrons. These include the TR19/9 PET cyclotron and the TR30/15 industrial cyclotron.

**Focus Imaging**

- This San Francisco company highlighted its CardioMatch software for computer-aided diagnosis. The software is designed to improve the accuracy of myocardial perfusion nuclear medicine studies by providing automatic alignment and quantification of image data and 3-D representation of perfusion defects.

**Gamma Medica Instruments**

- Making its conference debut, this Northridge, CA, company displayed LumaGem, a small gamma camera dedicated to imaging small organs, such as the breast (SCAN 6/23/99).

**GE Medical Systems**

- GE's acquisition of Elscint's nuclear medicine business has helped the company gain 12 percentage points of market share in the first quarter of 1999, according to Beth Klein, general manager of GE's nuclear medicine/PET business. GE believes it has a market share in the 22% to 23% range, and hopes to hit 25% by the end of the year, she said.
- GE displayed panels on its work with Bicron's new StarBrite scintillation crystals. The crystals should be able to conduct high-energy PET studies without sacrificing image quality at low energies.

**Hitachi Medical Corporation of America**

- This year's SNM meeting might be the last for Hitachi of Twinsburg, OH. The Japanese company confirmed at the meeting that it is calling off its effort to commercialize its own gamma camera technology (SCAN 6/23/99).

**Immunomedics**

- Radiopharmaceutical developer Immunomedics highlighted its colorectal cancer agent, CEA-Scan, especially as a preoperative and intraoperative agent. The Morris Plains, NJ, firm continues its clinical exploration of other applications for the product, such as breast cancer imaging.
- The company has launched the first of a planned network of colorectal cancer centers of excellence at Atlanta Medical Center in Atlanta, GA.
- Immunomedics also featured LeukoScan, its infectious disease imaging agent that is pending U.S. approval from the Food and Drug Administration. The company
highlighted two therapeutic products: CEA-Cide for solid tumors, and Lympho-Cide for non-Hodgkins lymphoma. CEA-Cide is in phase II trials, and Lympho-Cide is in phase I/II.

Institute for Clinical PET

- The Institute for Clinical PET of Foothill Ranch, CA, came to the SNM show bolstered by the March news that HCFA will expand its PET coverage (SCAN 3/17/99). The ICP is working with HCFA and other PET advocates to help the agency define coverage parameters for the new applications, according to Jennifer Keppler, ICP’s executive director.

International Isotopes

- International Isotopes highlighted the radioisotopes it plans to begin producing this fall, including fluorine-18, indium-111, and iodine-123. In April, the Denton, TX-based firm established a joint venture with GammaPlus, which will manufacture and distribute PET radiopharmaceuticals such as FDG in the Dallas/Ft. Worth area (SCAN 4/14/99).
- In the pipeline is a prototype PET/SPECT/CT camera the company is developing with the University of Texas Southwestern Medical Center at Dallas. The system will have resolution in the 1-mm range, according to the company.

Intramedical Imaging

- Intramedical exhibited handheld probes and miniature gamma cameras it is developing for intrasurgical applications.

Ion Beam Applications

- IBA touted its Cyclone line of cyclotrons for producing PET radioisotopes like FDG. The rapidly growing Belgian company signed a deal just after the SNM meeting to acquire SteriGenics International, a Fremont, CA, provider of gamma sterilization and radiation processing services.

IS2 Research

- At its second SNM show, Nepean, Ontario-based IS2 Research presented upgrades to its NuCamma line of digital single-head gamma cameras. Since the RSNA meeting in December, the company has developed a workstation arm attached to its cameras that can perform simultaneous acquisition and processing as well as tomographic reconstruction and gated SPECT.
- The company highlighted iStation, its workstation with gated SPECT capability developed by partner Segami of Ellicott City, MD.

Mallinckrodt

- Mallinckrodt of St. Louis showcased its imaging agent product line, including OctreoScan and Myoview. The company continues its development of a new generation of peptide-based agents for breast and prostate cancer diagnosis and therapy.

MDS Nordion

- Canadian radioisotope manufacturer MDS Nordion featured panels describing its timeline for the construction of a new processing facility and two nuclear reactors to produce medical isotopes at the Atomic Energy of Canada’s (AECL) Chalk River Laboratories site. Reactors Maple 1 and Maple 2 should both be online next year, with Maple 1, the main isotope producer, in full power by May, and Maple 2 in
service by November.

**MedImage**

- MedImage of Ann Arbor, MI, showcased its Delta Manager workstation, as well as its Delta Viewer display and MedView software. The company also featured its teleradiology software option, Galen.

**Mobile PET Systems**

- Making its SNM debut, Mobile PET Systems heralded its arrival by displaying a Siemens PET camera in a mobile coach on the floor of the meeting. The company has already begun offering mobile PET services in southern California.

**Neoprobe**

- Neoprobe featured its latest gamma-ray detecting probe offering, neo2000. The probe detects lesions that have spread to sentinel lymph nodes, the first nodes that drain from malignant lesions.
- The Dublin, OH, firm terminated its marketing agreement with Johnson & Johnson's Ethicon Endo-Surgery division in March, signing with new marketing and distribution partner KOL Bio-Medical Instruments of Chantilly, VA.

**Nycomed Amersham**

- Nycomed Amersham exhibited marketing partner Diatide's deep-vein thrombosis agent, AcuTect. The company also touted agents it developed on its own, such as Myoview, its technetium-based cardiac imaging agent, and Ceretec for brain and infection imaging.
- In Nycomed's pipeline is another product co-developed with Diatide, a peptide imaging agent for the diagnosis of lung cancer.

**P.E.T. Net Pharmaceutical Services**

- P.E.T. Net Pharmaceutical Services arrived at the meeting bolstered by HCFA's expanded PET coverage, which begins July 1. The Norcross, GA, company expects to have about four more cyclotron sites online by early 2000. P.E.T. Net has established three sites since 1998's SNM show, and now operates 14 sites across the U.S.

**Picker International**

- Cleveland-based Picker launched a new Integrated Oncology concept at the meeting to bring together the company's various activities in cancer diagnosis and therapy into a single package that can be offered to customers.
- Picker's nuclear medicine division has been working with the vendor's CT and oncology divisions to more closely integrate their product lines, such as through CT/PET image registration. Cancer therapy is being added to the Integrated Oncology program through a scientific collaboration with radiation therapy firm Varian Medical Systems of Palo Alto, CA.
- Picker has divided its Beacon nonuniform attenuation correction protocol into two versions, depending on application. Beacon S is designed for SPECT imaging and is in beta testing, while Beacon P is for PET imaging and will ship about four months after Beacon S. Both use a barium-133 source.

**Segami**

- Segami of Ellicott City, MD, presented its nuclear medicine workstation, Mirage. Based on the Windows NT operating system with Pentium II processors,
DICOM-compatible Mirage is a nuclear medicine computer with full SPECT capability.

Sensor Systems

- Sensor Systems of Sterling, VA, highlighted its MEDx visualization and analysis software. The package includes methods for processing functional neuroimaging data and functional-analysis tools for motion correction and 3-D rendering of fused images.

Siemens Medical Systems

- Siemens Medical Systems' nuclear medicine group won attention at the show when it presented two work-in-progress hybrid units, a PET/SPECT device and a PET/CT device.
- The Hoffman Estates, IL, company has installed a prototype of its PET/SPECT unit, which uses detectors made from lutetium oxyortho-silicate (LSO). The company presented its first images from this unit, and plans to ship its first alpha unit later this year to another German site.
- Siemens has also installed a prototype of its PET/CT unit, developed with CTI of Knoxville, TN, at the University of Pittsburgh Medical Center.
- The company featured its latest addition to the E.Cam line, E.Cam Standard, a single-head SPECT unit intended for the low-cost niche (SCAN 5/26/99).
- Siemens highlighted work-in-progress technologies such as cadmium zinc telluride solid-state digital detectors, and presented clinical results from its Profile attenuation correction technique for SPECT and coincidence detection imaging.

SMV America

- SMV America featured three crystal options for its gamma cameras. The Twinsburg, OH, firm emphasized DST-XLi's long-access capabilities for SPECT and PET imaging, which it calls LA and SuperLA respectively (SCAN 5/26/99).
- SMV highlighted results from a multicenter trial for its Transmission Attenuation Correction (TAC) technology, a package that includes Stasis motion correction algorithm and Restore scatter correction.
- The company is also working on a hybrid PET/CT device called Positrace, a ring-style PET scanner with integrated CT.

Softmedical

- St. Laurent, Quebec-based Softmedical presented its archiving and visualization software, PcPax. PcPax is a Java-based, DICOM-compatible package that can display full-resolution images. The package is platform independent and can be upgraded to include Softmedical's Paxplorer.

Syncor International

- Syncor International emphasized its tungsten shielding products for radiopharmaceutical products. The Chatsworth, CA, company has developed SafeTview and Secure syringe shields, as well as dose shields Piglet and Piglet2.

Toshiba America Medical Systems

- Toshiba highlighted productivity-related upgrades to its E.Cam in its SNM booth. The Tustin, CA, company has increased the speed of the UltraSPARC workstation used with the camera to 330 MHz.
- Toshiba showcased its work-in-progress image fusion program that combines nuclear medicine, CT, and MRI images, as well as Transview, its nonuniform attenuation correction program for its GCA-7200 dual-head cameras.
U.S. Department of Energy

- Although the DOE expects to complete installation of molybdenum-99 processing equipment at Sandia Laboratories by the end of this year, it will not submit sample product or its production process protocol to the FDA for approval. The agency instead will seek a private company to take on molybdenum production, according to Owen Lowe, director of isotope production and distribution. The DOE plans to function as a backup supplier of the radioisotope, rather than a primary manufacturer, Lowe said.

U.S. Surgical

- U.S. Surgical of Norwalk, CT, featured Navigator, its gamma-detection probe for lymphatic mapping. Navigator uses cadmium telluride in its detector and high-energy tungsten shielding.

Web Link

- This Toronto-based firm in February acquired sister company Link Medical of the U.K., and has also hired several executives from ISG Technologies.
- Web Link has been shipping its Java-based software in Europe for the past three years, and has 100 installations. The company is filing a 510(k) application to receive U.S. regulatory clearance, which it hopes to have in hand by this year’s RSNA meeting.
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