CATHRYN BANG + PARTNERS
Architecture Planning Interiors

LONDON CLINIC CANCER CENTER

1. Which and where are the leading Cancer Care Centres in the States?

http://www.usnews.com/usnews/health/hosptl/rankings/specihqcanc.htm

2. What are the attributes of current cancer care and treatment in the States?

I. Facts about the Industry

- Of all US cancer care, 80% is delivered in a outpatient based facility
- Genetic Revolution approaching
- In the next 25 years, US population over 85 nearly double
- Technology has dramatically improved a patients odds; however five year cancer survival is 50%
- Cancer will be the major disease in the next decades.
- The average patient makes over 100 trips to obtain care in the first year of diagnosis and treatment.

II. According to NCI (National Cancer Institute),

➢ Improvement in External Radiation Therapy

A number of refinement and techniques are in use or under study to improve the effectiveness of external radiation therapy:

- Three-Dimensional (3-D) Conformal Radiation Therapy.

  Traditionally, the planning of radiation treatments has been done in two dimensions, width and height. 3-D Conformal Radiation Therapy uses computer technology to allow doctors to more precisely target a tumor with radiation beams (using width, height, and depth). Many radiation oncologists use this technique. A 3-D image of a tumor can be obtained using computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET), or single photon emission computed tomography (SPECT). Using information from the image, special computer grams design radiation beams that conform to the shape of the tumor. Because the healthy tissue surrounding the tumor is largely spared by this technique, higher doses of radiation can be used to treat the cancer. Improved outcomes with 3-D conformal radiation therapy have been report for nasopharyngeal, prostate, lung, liver, and brain cancers.

- Intensive-Modulated Radiation Therapy (IMRT)

  IMRT is a new type of 3-D conformal radiation therapy that uses radiation beams of varying intensities to deliver different doses of radiation to small areas of tissue at the same time. The technology allows for the delivery of higher doses of radiation within the tumor and lower doses to nearby healthy tissue. Some techniques deliver a higher dose of radiation to the patient each day, potentially shorting the overall treatment time and improving the success of the treatment. IMRT also lead to fewer side effects during treatment.

  The radiation is delivered by a linear accelerator that is equipped with a multi-leaf collimator (a collimator helps to shape or sculpt the beams of radiation). The equipment can be rotated around the patient so that radiation beams can be sent from the best angles. The beams conform as closely as possible to the shape of the tumor. Because IMRT equipment is highly specialized, not every radiation oncology center uses IMRT.

  This new technology has been used to treat tumors in the brain, head and neck, nasopharynx, breast, liver, lung, prostrate, and uterus. However, IMRT is not appropriate or necessary for every patient or tumor type. Long-term results following treatment with IMRT are becoming available.

➢ New Approaches:

- Hyperthermia

  Hyperthermia, the use of heat, is being studied in conjunction with radiation therapy. Researchers have found that the combination of heat and radiation can increase the response rate of some tumors.

- Radioimmunotherapy

  Researchers are also studying the use of radiolabeled antibodies to deliver doses of radiation directly to the cancer site (radioimmunotherapy). Antibodies are highly specific proteins that are made by the body in response to the presence of antigens (substances recognized as foreign by the immune system). Some tumor cells contain specific antigens that trigger the production of tumor-specific antibodies. Large quantities of these antibodies can be made in the laboratory and attached to radioactive substances (a process known as radiolabeling). Once injected into the body, the antibodies seek out cancer cells, which are destroyed by the radiation. This approach can minimize the risk of radiation damage to healthy cells.

  The success of this technique depends on identifying appropriate radioactive substances and determining the safe and effective dose of radiation that can be delivered in this way. Two radioimmunotherapy

treatments, ibritumomab tiuxetan and tositumomab and iodine tositumomab have been approved for advanced adult non-Hodgkin's lymphoma. Clinical trials of radioimmunotherapy are under way with a number of cancers, including leukemia, non-Hodgkin's lymphoma, colorectal cancer and cancers of the liver, lung, brain, prostate, thyroid, breast, ovary, and pancreas.

Scientific advances have led to the discovery of new targets that are being investigated to attract radioactive materials directly to cancer cells. Laboratory and clinical research is in progress using the new molecular therapeutic agents, such as gefitinib and imatinib mesylate, with radiation therapy.

III. Development of Diagnostic Imaging:

- Unique hybrid imaging provides clinicians with image clarity
  - SPECT/CT

    Debut in June 2004. With a single scan, this imaging technology quickly captures comprehensive, accurate diagnostic information both on the molecular and anatomical levels, and will enable physicians to detect changes in molecular activity even before structural changes become visible. With earlier and more accurate diagnosis, physicians will be able to plan treatment even more effectively and provide feedback on treatment efficacy, as well as avoid unnecessary invasive surgery and reduce the risks of necessary surgery.

3. What is the present thinking about future cancer care treatment?
e.g. Alternative treatments; Changes in Radiotherapy; Developing Clinical Technologies

I. **Leading Edge of Cancer Care & Respond to Healthcare Challenges:**

- Computerization that Enhances the Finite Details of Tumor Elimination
- Treatment that is Minimally Invasive for Cancer Care
- Planning that is Holistic and Comprehensive
- Cost Containment
- Regulatory Collaboration and Cooperation

II. **Best Practices & Service Innovations:**

- Meeting Needs of Patient
  - Privacy Needs of Patients
  - Complementary & Alternative Medicine
  - "Quality of Life" Plan of Care (pain, activity, family/social interactions) done along the medical plan of care
- Multi-disciplinary Team Care Approach
  - Patients now requiring it, not accepting sequential care
  - Include Radiation Oncology-Primary Surgeon-Plastic Surgeon-Patient Advocates
  - Include Cancer Registry – use data to focus resources and program planning
- Continuum of Care
- Outreach
  - Create awareness especially in high risk populations
  - "First Ladies Club"- promote awareness of incidence and importance of early identification in target populations
  - "Partnership for Prostate Health" – Prostate prevention
  - Grant dollars available to fund education-prevention-quality of life-health education support services
- Partnerships
  - Clinical research applications
  - American Cancer Society; Leukemia-Lymphoma Society
  - Artist Groups
  - Colleges
- Information Systems
  - Oncology-specific clinical information systems (i.e. OpTx)
  - Electronic Medical Records
  - Interfaces x-rays with other clinical diagnostics
  - Increase quality of documentations

- Patient Satisfaction
  - Patients will go elsewhere if not satisfied with staff interactions and communications
  - Customer Service Recovery Tool Box (i.e. Lunch Coupons) can use to recover from service lapses
- Transportation
- Short Term Housing
- Staff Satisfaction
  - Staff Recruitment and Retention challenges

4. How will these impact upon the design of centers?

I. Planning Challenges

- Accommodate Growth and New Technologies
- Accommodate multi-disciplinary space
- Dedicated Breast Health and Breast Cancer Services
- Clinical research space to achieve better coordination and data collection
- Education Resource Centers
- Virtual Cancer Centers
- Pharmacy in the Chemotherapy
- Increased diagnostic capability
- Flexibility and Convertibility to Accommodate Advanced Procedures
- Innovative Shielding for Radiation Therapy which is Flexible