Hampton University Proton Therapy Institute

Functional and Safety Aspects of an Efficient Proton Therapy Facility Design

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We have come a long way…
Accelerator vault

235 MeV Cyclotron
Gantry Treatment Rooms

- Treatment rooms use gantries to deliver the proton beam. The 90-ton, three-story gantries can be rotated 360 degrees to deliver the beam at the precise angle prescribed by the physician.
$11,000,000 in concrete.

What will the Hampton center look like?
Inside.....
• HUPTI is a genuine national resource: a $225M state-of-the-art cancer treatment facility and the nation’s largest stand-alone proton beam treatment facility.
  - Five treatment rooms
  - Dedicated Research line
  - PET/CT imaging suite
  - Most advanced proton therapy technology available

Timeline:

- **2005**
  - Inspired by an HU alumnus, Dr. William R. Harvey puts project planning into motion.

- **2006**
  - The planning progress is well under way with vendor selection and this architectural rendering.

- **2007**
  - Ground breaks on July 23 and official construction begins.

- **2009**
  - State-of-the-art equipment is brought to the facility for installation.

- **2010**
  - HUPTI opens its doors to patients.

- **2011**
  - All five treatment rooms are operational, the facility reaches completion.

- **Today**
  - With an eye toward the future, HUPTI remains focused on cancer care.
HUPTI'S Technology
Operations
Increased Integration

Technology – Clinic - Business

- **Increase Usage**
  - Make effective use technologies and information infrastructures

- **Optimize Workflow**
  - Put best processes into use to optimize work & patient flow

- **Enhance Financial Performance**
  - Re-think and modify processes to be more productive and maximize system use

- **Transformation/Implementation**
  - Assist in implementing the change through organizations
Workflow may be complex
Process Engineering

Existing Departments

- Systematically review and analyze of sites’ current processes and Oncology Information System (OIS) usage, to
- Identify opportunities for process improvement, deep usage of OIS → Oncology Management System
- get as “paperless/chartless” or “paper light” as possible

New Hospitals/Departments:

- Best practice process mapping
- Prepare for implementation of the designed processes
Process Engineering – Value

- Clinician / staff adoption of technology
- Eliminate redundancy and improve patient flow, care quality, financial and operational effectiveness
- Create of documented, understandable, visual and maintainable operating model
- Feeds into customized vs. generic training that is tailored to your needs based on the designed processes

Results
Gets you ready for your business,
Common Departments

- Finance/Billing
- Intake and Records
- Physics/Dosimetry
- Imaging
- Nursing
- Therapy Delivery
Critical Success Factors

- Effective Implementation Management Team
- Constant Communication
- Collaborative Decision Making
- Staff Buy In/Adoption
- Full Site Commitment
- Education
- Leadership
At HUPTI – Process Engineering

- **Register Patient**
  - Triage referral phone call
    - Determine phone call is a referral
    - Is PAR available?
      - Yes: Transfer phone call
      - No: Create 'New Patient Referral' QCL (message flag to PAR)
  - Receive referral phone call/Referral QCL (PAR)
    - Determine phone call need
    - Does patient request information only?
      - Yes: Send pt information packet if requested
      - No: Register patient (PAR)
    - Search for patient in MOSAIQ
      - Is patient registered?
        - Yes: Confirm demographics/modify if required
        - No: Open new patient registration
  - Enter Name, referring physician (HUPTI to determine required fields)
  - Enter diagnosis category for preliminary diagnosis

- Self Pay / Uninsured?
  - Yes: [Flowchart continues]
  - No: [Flowchart continues]
Scheduling:

User Defined Schedules

- Reception view (daily appointments for entire dept)
- PAR (view for scheduling PAR, nurse and MD appts for consult)
- PAR (view for PAR, nurse, and MD appts for follow-up)
- PAR (view for checkout scheduling include CT and PET CT on one view)
- PAR (view to schedule planning review time on MD and education visit on nursing on same day)
- Nursing view (consults, fu, OT)
- Physician specific views
- CT Sim view
- PET/CT view
- Anesthesia room view
- Gantry views (all on one view and individual views)
- Clinical Trials/Research nurse view
- On Treatment Visit view
- Support staff views (dietary, social, etc.)
- Professional billing views (view all appointment in a day for entire department)

Custom Status examples

- Start
- Final
- Break
- No show
- Cancelled

**Add additional User Defined Schedules as required**
At HUPTI – Quality Checklist Templates

- New Patient (All assigned to PAR)
  - New Patient Package – 8 days-example
  - Patient Reminder Call – 2 days-example
  - Records – Diagnostic Imaging – 8 days-example
  - New Patient Records Review (to ensure all required records are in MOSAIQ) – 8 days

- New Patient chart readiness (PAR to append to CCC and MD)
  - CCC-chart review required
  - MD-chart review required

- CT Sim complete (Sim therapist to MD and dosimetry)
  - MD-CT Sim complete
  - Dosimetry-CT Sim complete

- PET/CT Sim complete (Sim therapist to MD and dosimetry)
  - MD-PET/CT Sim complete
  - Dosimetry-PET/CT Sim complete

- Plan completed
  - Gantry location-complete pre-tx checks
  - PAR-Call/schedule patient for MD planning review and education visit

- Final Treatment
  - Nursing * PAR * Dosimetry * Physics * MD * Billing

- Records review required
  - CCC-records review required
  - MD-records review required

- Physics weekly chart check (the number of weekly chart check items should match the number of weeks the patient will require treatment)
At HUPTI – Single Item Quality Checklist

- New patient referral (flag to PAR location-exclude patient’s name)
- Ancillary referral (any staff to ancillary support: dietician, social worker, etc.)
- Referral or patient declined (CCC or PAR to MD)
- Missing reports (CCC or MD to PAR)
- Call patient for financial discussion (any staff to billing staff)
- Track tests results (PAR to PAR location)
- Clinical trials candidate (MD or CCC to clinical trials staff)
- Ancillary testing required (MD to clinical staff)
- Pre-auth required (PAR to PAR location)
- Normal structure contours complete (dosimetry to MD)
- Tumor volume contours complete (MD to dosimetry)
- Plan ready for review in Eclipse (dosimetry to physicist)
- Plan approval in Eclipse required (physicist to MD)
- Plan approved in Eclipse (MD to dosimetry)
- Plan double check required (dosimetry to physics)
- Plan approval in MOSAIQ required (physicist to MD)
- New scan completed (sim therapist to MD)
- Replanning contours required (MD to dosimetrist)
- New normal structure contours completed (dosimetry to MD)
- New tumor volume contours complete (MD to dosimetry)
- New plan (replan) ready for review in Eclipse (dosimetry to physicist)
- New plan approval in Eclipse required (physicist to MD)
- New plan approved in Eclipse (MD to dosimetrist)
- Replan double check required (dosimetry to physicist)
- New plan approval in MOSAIQ required (physicist to MD)
- Pre-tx checks required for new plan (MD to gantry location)
There is no Standard…

- Typically, highly custom centers
- Optimized functionality is important for ensuring safety
- Streamline workflows
  - Efficiency is critical for viability

- Maximize EFFICIENCY
Thank You!

Questions?