Procurement - Donated vs Purchased Equipment

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Health Technology Task Group
Planning of diagnostic imaging services

- According to the levels of health care
- Categorized based upon their complexity
- Analysis of morbidity and mortality in the community
- Review of utilization patterns of the various radiological procedures
- Technological harmonization regarding complexity
- Coordination between health services
Medical imaging equipment is expensive

COSTS

▲ Capital
▲ Installation
▲ Siting
▲ Operational
▲ Humanpower

In developing countries these costs are higher than in industrialized ones because of the need to import expertise
Equipment Selection
(Number, type, specifications)

▲ Population to be Served
▲ Availability of Resources
▲ Volume of Procedures
NOT Needed in a Health Station
Ultrasound – Portable?

Features

- **Unbelievable Portability**
  The ProSound C3CV system’s compact size and light weight make it easy to image in crowded patient rooms or at remote sites. Weighing in at just 8.0 pounds, the system can operate on batteries for over 2 hours. The ProSound C3CV also easily converts to a cart-based system.

- **Unbelievable Usability**
  Because the ProSound C3CV system runs as a Windows application on a standard laptop computer, you already understand how to use it. Further, it offers PC-related productivity benefits that are second nature. Images, loops and reports can be transferred to standard word processing and presentation software applications with cut-and-paste simplicity. Data file management is intuitive. Wireless and Ethernet connectivity are built in. DICOM export is a snap, and integration with voice command and other applications is seamless. OneButton™ optimization simplifies the beginning of each exam by adjusting TGCs and a wide variety of other imaging controls, so you can immediately focus on the patient — not the hardware. During the exam, most common tasks are accomplished with a single keystroke.

- The ProSound C3CV supports a wide variety of transducers and exam types, delivers powerful vascular and cardiac reporting, and is designed to augment larger systems for imaging at remote locations or to serve as the primary imaging solution in smaller or office-based practice settings.
Chest X-Ray – Which one?

Conventional
World Health Imaging System Radiography (WHIS-RAD)
Film Processing

Manual or Automatic?
Computed (digital) chest radiography
# Integrated Digital X-Ray System for the WHIS-RAD

Mike Hoaglin et al., 2006

<table>
<thead>
<tr>
<th>Factors</th>
<th>Importance</th>
<th>CR</th>
<th>Double Sided CR</th>
<th>DR</th>
<th>Film</th>
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<tr>
<td>Initial Cost</td>
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<td>-1</td>
<td>-5</td>
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<td>Ease of Capturing High Quality Image</td>
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</table>
Procurement Considerations (1)

Development / Review
Technical Specifications

- General Requirements
- Functional Parameters

and, where applicable:
- Image Quality Factors
- Radiation Dose Constraints
Procurement Considerations (1)

Development / Review
Technical Specifications

HARDWARE / SOFTWARE
Comparison Charts

Select the chart you wish to view and then click the Submit button.

- Advanced Visualization
- Archive/Storage Systems
- Brachytherapy - LDR: Web Exclusive
- Breast Biopsy Systems
- Breast MRI
- Business Continuity/Disaster Recovery: Web Exclusive
- CAD - CT Lung
- CAD - Mammography
- Cardiovascular Imaging Systems
- Computed Radiography Systems
- Contrast Media Injectors
- CT Dose Reduction
- CT Systems
- DR Systems
- Flat Panel Displays
- Gamma Cameras: Web Exclusive
- IGRT
- Image Fusion
- IMRT
- Laser Imagers
- Linear Accelerators
- Mammography Systems - Analog
- Mammography Systems - Digital
- MRI - High-Field
- MRI - Low-Field
- Oncology Information Management Systems (OIMS)
- PACS
- Patient Positioning - Web Exclusive
- PET/CT Systems
- Professional Services
- Radiology Information Systems (RIS)
- SPECT/CT
- Speech Recognition Software
- Stereotactic Radiosurgery/Stereotactic Radiation Therapy
- Storage Service Providers
- Teleradiology Services
- Treatment Planning Systems
- Ultrasound Systems
- Ultrasound Systems - Hand Carried: Web Exclusive
- Virtual Simulation: Web Exclusive
- Workstations - Multimodality Breast Imaging - Web Exclusive

In most instances, the chart outline is an excerpt from the Healthcare Product Scranton Gillette Communications from the manufacturers. ECRI Institute publishes can contact ECRI Institute at (610) 825-6000, ext. 5265; hpcs@ecri.org or www., and published data were obtained from participating manufacturers.

Scranton Gillette Communications assumes no responsibility or liability for
Procurement Considerations (2)

▲ Costs

- New or used – Refurbished?
- Donation or purchase
- Payment facilities

GUIDELINES
FOR
HEALTH CARE EQUIPMENT DONATIONS

World Health Organization
African Federation for Technology in Health Care
American College of Clinical Engineering
Association for Appropriate Technology (FAKT), Germany
Centre for Health Technology, Cameroon
Churches’ Action for Health, World Council of Churches
International Medical Device Group
Medical Research Council, South Africa
Technical Cooperation Agency (GTZ), Germany

1997
Procurement Considerations (3)

▲ Warranties / Maintenance

• Spare Parts
• Down Time
Facility Conditions

- Space
- Shielding
Calculating

Shielding for Primary & Secondary Barriers
Procurement Considerations (5)

▲ Permits / Regulations

• Import? - Customs
• Building Codes
• Ministry of Health
• Ministry of Labor
• Radiation
• Regulatory Authority
• Local Ordinances
Procurement Considerations (3)

▲ Time Line

• Building Modifications?

• Equipment Access?

• Temporary Storage?

Radiology Service, Petit Goave, Haiti
The X-Ray Multimeter that does it all!

BARRACUDA is a totally new concept and a revolution for X-Ray measurements. Our experience from 20 years in radiation measurements has been packed into this new product for the 21st century. The BARRACUDA is designed with you in mind. Whether you are an X-Ray service or biomedical engineer, a physicist, a government inspector, or a manufacturer of X-Ray machines, the BARRACUDA gives you a customized solution for all your X-Ray QA and service needs.

The BARRACUDA can measure kVp, time, mA, mAs, dose, dose rate, dose/pulse, HVL, illuminance, and luminance all in one exposure. The new MPD (the Multi-Purpose Detector) measures kVp, time, dose, dose rate, dose/pulse, and HVL for Rad, Mammo, Fluoro, Dental, Panoramic Dental, Cine, Portables, and Pulsed Fluoro. It also measures kVp and time for CT and low output small field Fluoro type devices.

Procurement Considerations (5)

Medical Physics Expertise

- Facility
- International?
Procurement Considerations (4)

▲ Manuals
  • Operation
  • Service
▲ Replacement parts
▲ Accessories
▲ Software upgrades

Available “in a local language acceptable to the user” (BSS)
Installation

▲ Acceptance Testing
▲ Commissioning

● Staff training
▲ Clinical
▲ Technical – Informatics!
▲ Radiation Safety
▲ Managerial?
Sustainability

User Responsibilities

♦ Continuing Education of Staff
♦ Preventive & Corrective Maintenance
♦ Quality Control / Quality Assurance
♦ Radiation Safety Issues

BUDGET!
Equipment Recommendations
Medical Imaging Services in the Mekong Delta Region of Vietnam

The whole report is available at:
http://www.biomedea.org/HTTTG/index.htm
Recommendations

Equipment for Health Stations

4. Health stations should have simple ultrasound units for obstetric work

5. It is not recommended at this stage that health stations offer x-ray services, as the priority should be at the district level
Recommendations

X-Ray Equipment for District Hospitals

6. District Hospitals should have at least two fixed x-ray units and one portable unit

7. There should be image receptor cassettes of various sizes to radiograph different body part sizes

8. Rather than purchasing more film/screen cassettes, the image receptors should be CR plates

9. Film printers may be necessary if CR is purchased

10. If there is a radiologist, a fluoroscopy unit for GI work would be very beneficial
Recommendations
Other Imaging Equipment for District Hospitals

11. The District Hospitals should have two ultrasound units, one for general work and a second one for obstetrics, with probes of adequate frequency, including at least one vaginal transducer.

12. Because of the high incidence of stomach cancer in Vietnam, at least one endoscopy unit should be purchased, provided there is a physician on site capable of interpreting the results.