

# Procurement - Donated vs Purchased Equipment

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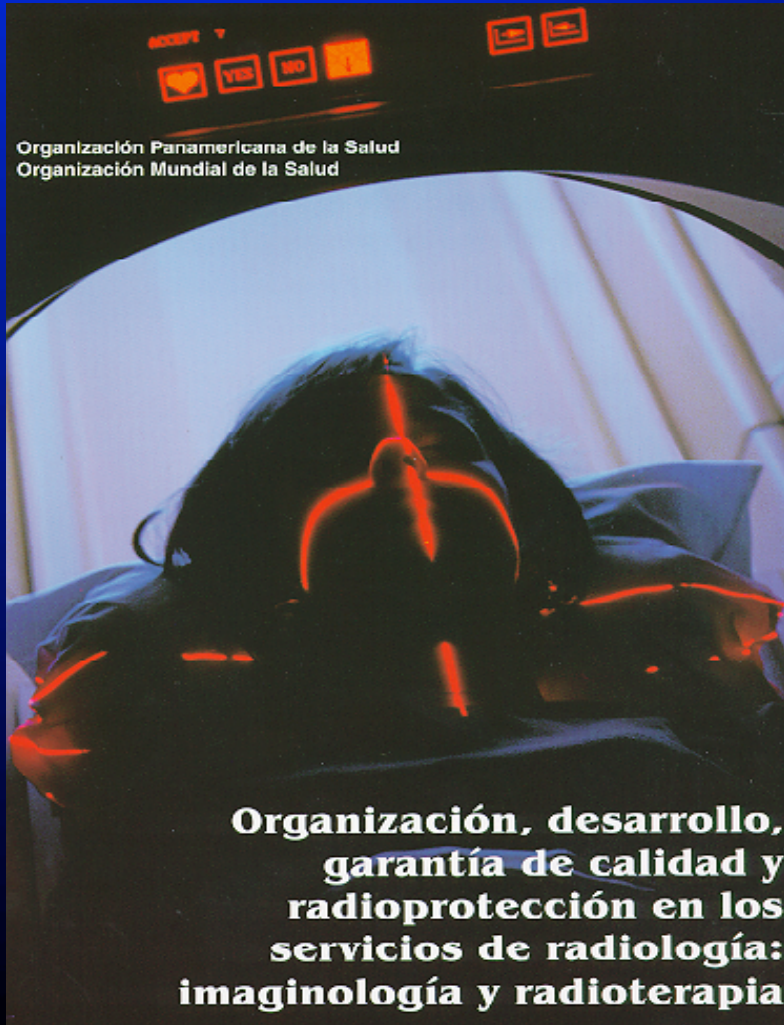
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**Task Group**

# 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



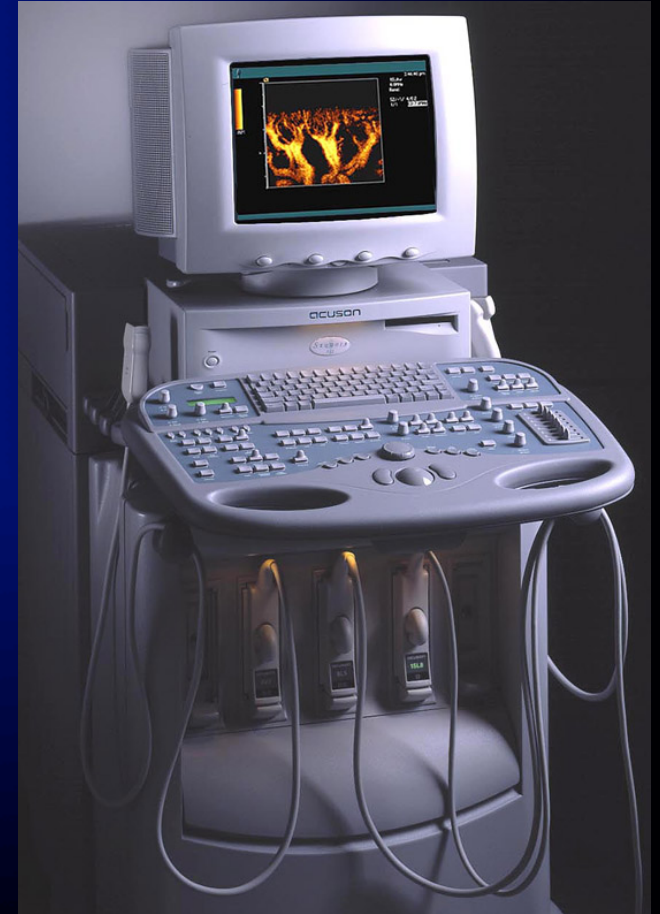
In developing countries these costs are higher than in industrialized ones because of the need to import expertise

# **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.



[Click to Enlarge](#)

### □ 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.

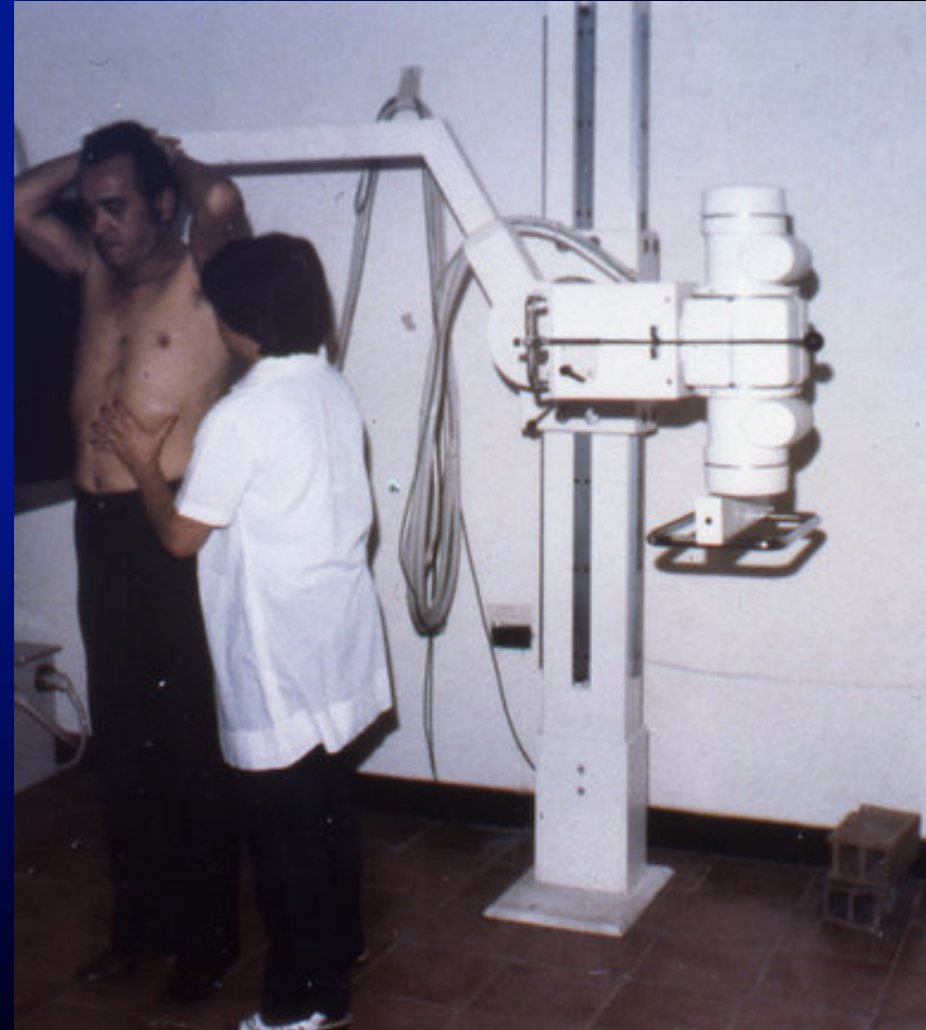
- The ProSound C3CV supports a wide variety of transducers and exam types, delivers powerful vascular and cardiac reporting, and is designed to augment larger systems for imaging at remote locations or to serve as the primary imaging solution in smaller or office-based practice settings.

# Chest X-Ray – Which one?

BRS (WHO)



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

Factors	Importance	CR	Double Sided CR	DR	Film
Initial Cost	10	1	-1	-5	4
Recurring Cost	5	1	-1	6	-2
Image Quality	6	1	6	7	8
Image Capture Time	3	1	1	7	-2
Simplicity of Operation	2	1	1	1	-1
Ease of Capturing High Quality Image	4	1	1	0	-1
X-Ray Dose	2	1	1	3	0
Retrofit Feasibility	10	1	1	-1	1
Teleradiology Potential	5	1	1	0	-1
Productivity	1	1	1	1	-2
<b>Weighted Total</b>		<b>42</b>	<b>47</b>	<b>41</b>	<b>31</b>

# Procurement Considerations (1)

## Development / Review Technical Specifications

- **General Requirements**
- **Functional Parameters**



and, where applicable:

- **Image Quality Factors**
- **Radiation Dose Constraints**

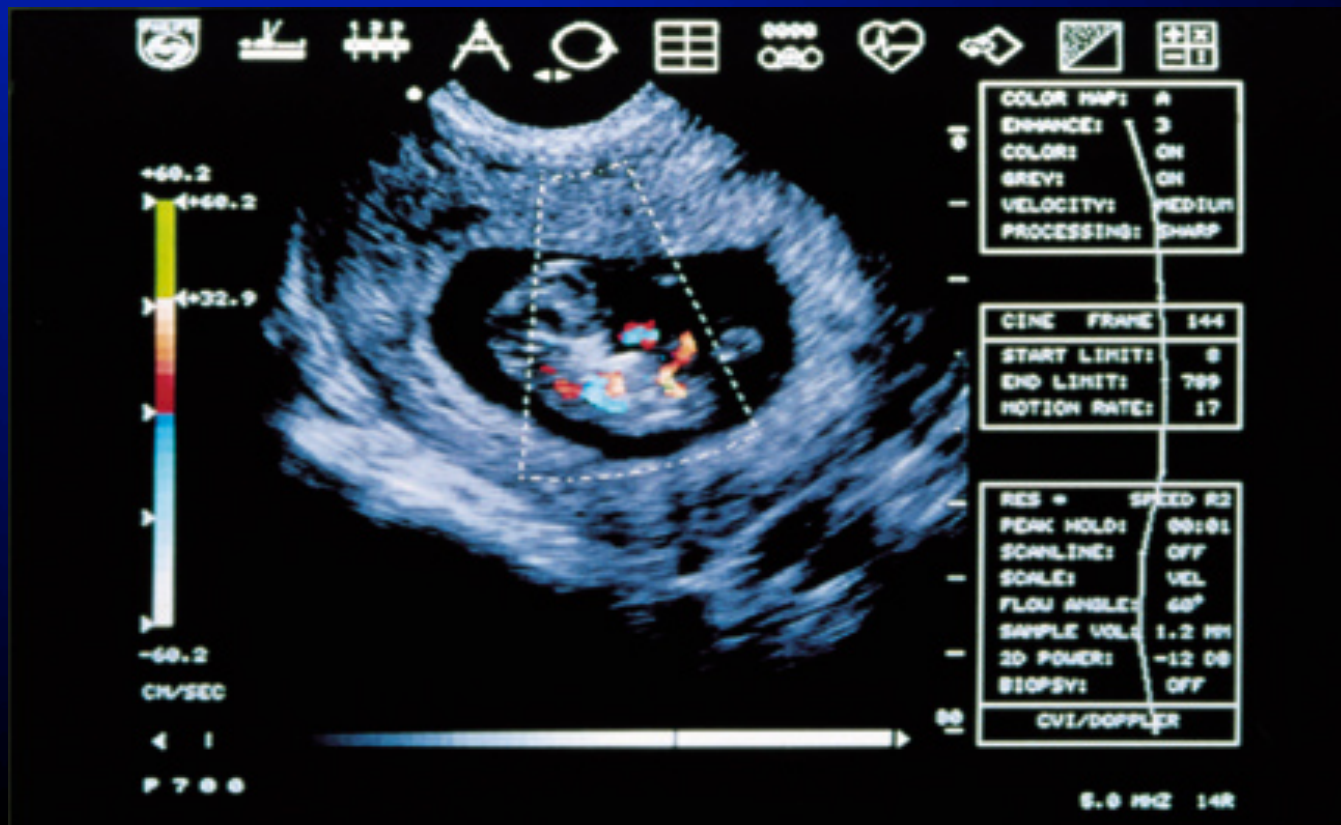


# Procurement Considerations (1)

Development / Review

Technical Specifications

**HARDWARE / SOFTWARE**



# Imaging Technology News

[http://www.reillycomm.com/imaging/  
comparisonchart.php](http://www.reillycomm.com/imaging/comparisonchart.php)

## 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 Catalog published by Scranton Gillette Communications from the manufacturers. ECRI Institute publishes the catalog and can be contacted by email at [hpcs@ecri.org](mailto:hpcs@ecri.org) or [www.ecri.org](http://www.ecri.org) 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



# Procurement Considerations (4)

## ▲ Facility Conditions

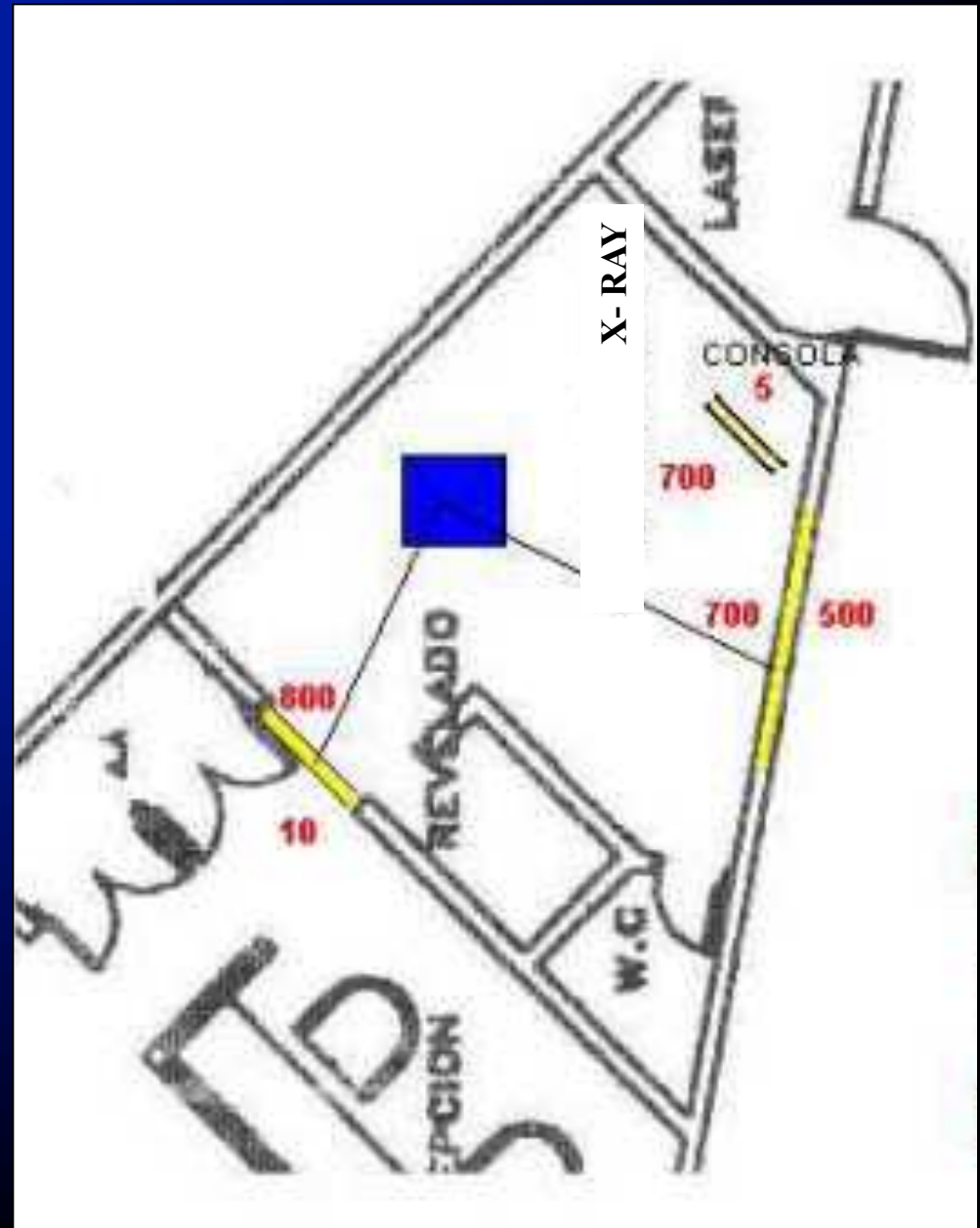
- Space
- Shielding



# Calculating

Shielding  
for

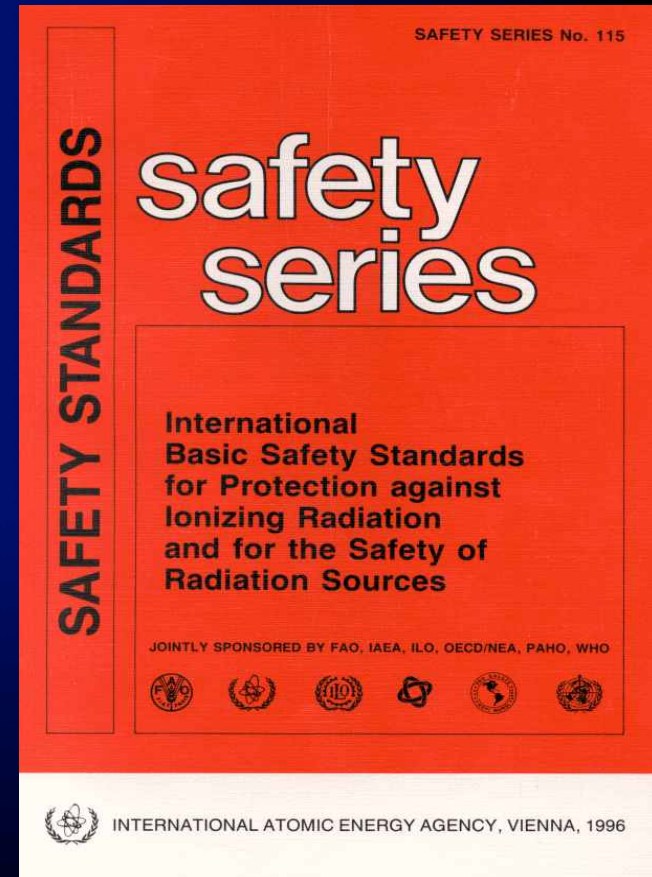
Primary  
&  
Secondary  
Barriers



# Procurement Considerations (5)

## ▲ Permits / Regulations

- Import? - Customs
- Building Codes
- Ministry of Health
- Ministry of Labor
- Radiation Regulatory Authority
- Local Ordinances



BSS

# Procurement Considerations (3)

## ▲ Time Line



**Radiology Service, Petit Goave, Haiti**

- **Building Modifications?**
- **Equipment Access?**
- **Temporary Storage?**

# Procurement Considerations (5)

Digital kV Meter  
Gammex 330



## ▲ 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*

