Appendlix D.— Indications for CT Scans (Exhibits 1 -4)

Exhibit 1:

Draft *Screenin Criteria for Body and Head Computerized Axial Tomography (CT) Scans.* **Memorandum from Director, Office of Professional Standards Review Organizations, Health Standards and Quality Bureau, Health Care Financing Administration, DHEW, to Planning and Conditional PSROs, Statewide Councils and Regional PSRO) Officers, Feb. 22, 1979.**

MEMORANDUM

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
HEALTH CARE FINANCING ADMINISTRATION
HEALTH STANDARDS AND QUALITY BUREAU
OFFICE OF PROFESSIONAL STANDARDS REVIEW ORGANIZATIONS

TO : Planning and Conditional PSROs, Statewide Councils, Regional PSRO Project Officers

DATE: FEB 22 1979

GENERAL MEMORANDUM NO. 3.79

FROM : Director

SUBJECT: Draft Screening Criteria for Body and Head Computerized Axial Tomography (CT) Scans

Attached are sample screening criteria for body and head CT scans collected from several sources by the Ad Hoc Computerized Axial Tomography Criteria Commit tee of the American Association of Professional Standards Review Organizations (AAPSRO) . These critertia were accepted without change by the National Professional Standards Review Council (NPSRC) . PSROs may wish to adopt and adapt the criteria for local use. The criteria should be helpful to PSROs that now review CT scan procedures or plan to do so.

Due to rapid developments in the field, the AAPSRO Committee recommended that the criteria be evaluated in six months for necessary revisions. This recommendation was approved by the NPSRC. To assist AAPSRO in this effort, please address your comments to Lloyd Cloud, DDS, Chief, Allied Health Branch. The mailing address is Health Standards and Quality Bureau, Dogwood East Building, 1849 Gwynn Oak Avenue, Baltimore, Maryland 21207.

Dennis F. Siebert

Attachment

NOTE: The PSRO standards (exhibit 1) are virtually identical to the Institute of Medicine standards, so the latter are not reproduced here.

Criteria for CAT Head Scans

CAT scans of the head should be covered for the following signs, symptoms, and/or disease processes:

A. Symptoms - persistent symptoms after physical examination including neurological evaluation.

1. Headache of significant magnitude
2. Persistent vertigo
3. Persistent seizures, adult onset; in the absence of drug/alcohol withdrawal or recent head trauma
4. Acute or progressive focal necrologic findings, when systemetic or metabolic origin has been excluded, such as:
   a) apasia
   b) ataxia
   c) paresis or
   d) sensory deficit
5. Unexplained dementia; progressive organic mental deterioration unexplained by systemic disease (e.g. , memory loss)

B. Physical Findings

1. Papilledema, or other signs of increased intracranial pressure
2. Apraxia or aphasia
3. Visual field defects
4. Cerebella dysfunction signs
5. Hemiparesis
6. Exophthalmos after thyroid disease has been ruled out
7. Other focal neurological signs

C. Unresolved Medical Problems

1. Vascular
   Suspected Intracranial hemorrhage, such as:

   a) subarachnoid hemorrhage,
   b) subdural hematoma,
   c) bleeding arteriovenous malformation (AVM),
   d) bleeding aneurysm,
   e) complications of anticoagulation (e.g., Progressive headache in patient on Coumadin, Heparin ,
   f) intracerebellar or intracerebral hematoma

2. Traumatic

   Suspected lesion secondary to trauma (significant head injury) with progressive neurological findings.

3. Neoplastic

   Suspected neoplastic lesion, such as: a) primary brain or meningeal tumor or cranial nerve tumor or
   b) intracranial metastasis
   c) paranasal sinuses and nasopharynx

4. Congenital Lesions

   Congenital lesions, such as: a) hydrocephalus
   b) encephaloceles
) anomaly of brain

5. Calverial lesions (skull); lesions not fully defined by skull x-rays.

6. Detection of cerebral metastasis in proven lung cancer prior to thoracic surgery

7. Evaluation of effectiveness of treatment of documented cerebral lesion including:

   subdural hematoma
   neoplasm, after surgery, radiation, and/or chemotherapy
   hematoma, arteriovenous malformation or aneurysm
   hydrocephalus, after shunt
   management of brain abscess
   when signs and symptoms suggest progression, recurrence, or lack of response to therapy

The following problems are generally not considered to be appropriate situations for C.A.T. use and will be reviewed:

1. Vertigo as an isolated symptom.
2. Syncope as an isolated symptom.
3. Migraine headache, uncomplicated
4. Febrile seizures in children under six years of age.
5. Alcohol withdrawal, repeated, with seizures, upon initial evaluation.
6. T.I.A. on hospitalized patients unless cerebral arteriography and surgical re-vascularization.
7. Uncomplicated meningitis
8. A head injury followed by a transient loss of consciousness (concussion) admitted for hospital observation which in twenty-four hours resolves without persistent neurological signs.
9. Completed Stable Cerebral Infarction (Stroke).

At the present time, indications for contrast studies vary according to the diagnostic problem and the judgment of the radiologists and clinicians. Therefore, decisions concerning the use of contrast are not addressed in these screening guidelines.

Patients having more than three scans should be subject to peer review.

Criteria for Body CAT Scan

Neck -- CT scanning is not indicated at this time.

Chest --

- Pleura

  --Detection of pleural metastasis and other chest wall lesions.

- Lung

  --Detection of multiple tumor modules where one cr more have been found by conventional x-ray techniques.

  --Search for a primary tumor when a positive sputum for malignant cells has been obtained, but no evidence has been found through conventional x-ray techniques.

  --Determination of extent of spread to adjacent lobes in patients with impaired pulmonary function.

  --Differentiation of solid, cystic, fatty, inflammatory and vascular masses.

  --CT is not indicated for detection of pulmonary emboli at this time.

  (If there is clearcut evidence of bilateral tumor involvement, CT is not appropriate.)

- Mediastinum

  --Detection and evaluation of masses.

  --Differentiation of solid, cystic, fatty, inflammatory, and vascular masses.

  --Determination of extent of primary or secondary tumor.

- Heart

  --Studies of the heart are not indicated at this time

Great Vessels (including abdominal aorta)

-- CT scanning is not indicated in the aorta and great vessels except in the few post-operative patients in whom aortic graft abscesses are suspected.

Spine and Contents -

- Spinal Cord

--CT is not indicated for disease of the spinal cord at this time.

- Spinal Column

--Determination of content and extent of meningoceles and meningomyeloceles.

--Biopsies under CT guidance.

--Otherwise, CT scanning of the spinal column is indicated only where other procedures, including conventional tomography, radionuclide scanning, and myelography have failed to detect primary tumors, metastasis, and inflammatory diseases in the presence of persistent symptoms or *signs*.

Abdomen -

- Retroperitoneal Area

--Diagnosis and staging of nodal and extranodal extension of Iymphomas, determination of extent of retroperitoneal involvement with lymphomas, and extent of other types of retroperitoneal metastasis from various primary sites.

--Detection of primary malignancies such as those of mesenchymal, neural, lymphatic, embryonic rest origin, melanomas, and benign conditions such as cysts which may mimic malignancies. Trauma with suspected retroperitoneal hemorrhage.

Peritoneum -

--Detection and aspiration of abscesses and cysts.

Liver -

--Search for primary and secondary tumors and some life-threatening benign lesions such as liver cell adenomas and cavernous hemangiomas and abscesses.

--Determination of extent of tumor and differentiation of solid, cystic, inflammatory, vascular, and fatty lesions.

-- Biopsies under CT guidance.

Spleen -

--CT 'is not indicated at this time.

Pancreas

--Search for primary and secondary tumor. When principal diagnostic consideration is pancreatic tumor, CT should precede and when positive supplant such less sensitive studies as upper GI, barium enema, liver and spleen scans.

--Determination of extent of tumor.

--Differentiation of solid cystic, inflammatory, vascular, and fatty lesions.

--Biopsies under CT guidance.

Kidney -

CT scanning of the kidney is indicated only when preceded by a conventional IVP study, and then for:

--Search for primary and secondary tumor.

--Determination of extent of tumor.

--Differentiation of solid, cystic, inflammatory, vascular, or fatty lesions.

--Biopsies or aspiration under CT guidance.

Gall Bladder -

--CT is not indicated at this time.

Biliary Tree -

--Differentiation of obstructive from non-obstructive jaundice in those cases where cholecystogram and/or ultrasound fails to define cause.

Gastrointestinal Tract -
(Stomach, Small and Large Bowel)

--CT is not indicated at present. Except for determination of extent of tumor spread to other organs (see other indications).

Adrenal Glands -

--Search for primary and secondary tumor.

--Determination of extent of tumor.

--Differentiation of solid, cystic, inflammatory, vascular, or fatty lesions.

--Biopsies under CT guidance.

Pelvis -

- Uterus and Ovaries

--CT scan is appropriate for the staging and evaluation of extent of tumors.

Indication for CT is limited and cases should be subject to individual review. Pelvic exam and ultrasonography should define most masses.

- Bladder, Ureter, Prostate, Testicles

--CT scan is appropriate for the staging and evaluation of the extent of tumors.

CT adds little information and cases should be subject to individual review.

--Differentiation of solid, cystic, inflammatory vascular, or fatty tumors.

(For retroperitoneal primary and secondary, see retroperitoneal.)

Bones

--Evaluation of bone lesions.

--Biopsies under CT guidance.

Extremities -

--CT is indicated for determining the local extent of a tumor and presence of regional metastasis.

Therapy Planning & Follow-up -

--CT may be indicated for collection of information on cross-sectional anatomy and attenuation coefficients of bone

and soft tissue in tumor-bearing areas for planning surgery and radiation therapy.

--CT may be indicated in follow-up evaluation of effectiveness of radiotherapy, surgery, or chemotherapy in cancer patients at primary or metastatic tumor sites when part of an established and acceptable follow-up protocol or when signs and symptoms suggest progression, recurrence or failure or therapy.

Foreign Body -

Foreign body localization anywhere in the body when other conventional techniques have failed to resolve the problem (e.g., F.B. :orbit, globe of eye, intracranial or extremity).

Conditions for which CT scanning is more hazardous than or diagnostically inferior to other procedures were not included in the list of indications. For some indications listed, other tests may be more appropriate in particular patients. If other diagnostic tests have permitted a definitive diagnosis to be made, CT scanning is justified only for planning treatment.

Conversely, if a CT scan establishes a definitive diagnosis, additional diagnostic tests are unjustified. Sometimes, tests may complement each other either by providing difterent information or when one test succeeds after the first has failed to yield useful information. Recent studies comparing CT scanning with ultrasonic imaging of the abdomen suggests the two methods are complementary. (20)

Based on current evidence, CT is not superior in all applications. For dynamic studies of the circulatory and digestive systems and for high-resolution radiography in which structural details below a millimeter must be discerned, CT cannot compete with conventional radiographic techniques. In mammography, for example, xeroradiography provides definitive diagnostic information at a lower cost, although at a higher radiation level. Ultrasonic imaging is safer, and, therefore, diagnostically superior to CT scanning in obstetrics and gynecology. In cardiology, TM mode and real-time ultrasonic imaging provide more valuable data than do currently available CT scanners. CT scanning cannot replace those nuclear medical techniques that provide unique information about body functions and body chemistry, as in the case of thyroid scans.

Because CT scanning of the body is an efficacious diagnostic tool for the conditions listed above on the basis of current standards of evidence, the committee recommends that CT scanning of the body when used for appropriate indications be recognized as a covered service under third-party reimbursement plans until and unless a decision is made to require more demanding standards of evidence for these decisions. However,

experience with body scanning is evolving rapidly and the list of indicators for which coverage is warranted should be reviewed at least every six months. Therefore, the committee recommends that:

- CT scanning of both the head and body, when appropriately used for specified indications should be a covered diagnostic service under third-party reimbursement plans, accepting as criteria of efficacy the usual standards of clinical practice.

As with any radiologic procedure, the clinician must exercise caution in ordering number and extent of studies and repeat studies, since radiation dose varies widely with number of slices and area examined, and with the equipment used.

Exhibit 2:

New Indications for Computed Body Tomography. **Update to indications published in the April 1977 policy statement of the Institute of Medicine by the Society for Computed Body Tomography, July 1979. Published in the American Journal of Roentgenology, July 1979.**

Special Report

New Indications for Computed Body Tomography

[redacted]

Society for Computed **Body Tomography**

The Society for Computed **Body Tomography has prepared the following** list **of indications for computed tomography in extracranial applications. These new guidelines are intended to clarify, update, and augment the indications published** in the April 1977 policy statement of the Institute of Medicine. They reflect the consensus opinion of members of the Society and include many new uses for which CT body scanning has been judged to be clinically indicated by the Society.

The Society met on three separate occasions as a group to formulate, debate, and, by general concensus, to select the following indications. During the Society's first annual meeting in the spring of 1978, members were divided into various subcommittees, each with a chairman and several subcommittee members to examine indications for computed tomography related to a particular organ system. During the ensuing months the chairman of each subcommittee, after discussion with members of the subcommittee, was able to compile a list of indications related to that organ system. Once completed, these were submitted to the president of the Society. They were reorganized, edited, and sent to all members of the Society for their comment and study.

At the scientific meeting of the Society in August 1978, the drafts of the subcommittees were presented to the Society members, where again indications were discussed and selections made by concensus. Between August 1978 and February 1979 additional details were added, and again recirculated to the members. They were again discussed at the annual meeting of the Society, February 1979. Final decisions were made and the document submitted for publication.

Prior to submission for publication, the American College of Radiology, the President of the National Blue Cross, the Secretary of the Department of Health, Education and Welfare, the Office of Technologic Assessment, the Bureau of Radiologic Health, and the Institute of Medicine were contacted and supplied with drafts for their suggestions and comment. In all, the manuscript has gone through six drafts, including preliminary study by the editorial staff of the *American Journal of Roentgenology*.

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Indications for Body CT

Neck

- Determinationsmatton of the extent of primary and secondary neoplasms of the neck.
- Evaluation of **bony abnormalities of the cervical spree** including neoplasms, fractures, dislocations, and congenital anomalies.
- **Localization of foreign bodies in the soft tissues, hypopharynx, or larynx and assessment of airway integrity after trauma.**
- **Evaluation of retropharyngeal abscesses**

Mediastinum

- **Evaluation of problems presented by chest radiograph**
  - **— Mass.**
    - **— Differentiation among cystic, fatty, or solid nature**
    - **— Localization relative to other mediastinal structures.**
  - **— Mediastinal widening.**
    - **— Assessment of whether cause is pathologic or anatomic variation**
    - **— Distinction of solid mass, vascular anomaly, or aneurysm, and physiologic fat deposition.**
  - **— Hilum**
    - **— Differentiation of enlarged pulmonary artery from solid mass when conventional tomography fails or is not capable of making this distinction**
  - **— Paraspinal line widening.**
    - **— Distinction among lymph node enlargement, vascular cause, or anatomic variant**
- **Search for occult thymic lesion**
  - **— Detection of thymoma or hyperplasia in selected** patients with myasthenia gravis when plain chest radiography is negative or suspicious

Lung

- **Search for pulmonary lesions**
  - **— Detection of occult pulmonary metastasis when**
    - **— Extensive surgery is planned for a known primary neoplasm with a high propensity for lung metastasis or for apparent solitary lung metastasis.**
  - **— Detection of primary tumor in patient with positive sputum cytology and negative chest radiography and fiberoptic bronchoscopy.**
  - **—— Assessment of lung and mediastinum for underlying pleural effusion and the postpneumonectomy fibrothorax for recurrent disease**
- **Search for diffuse or central calcifocation in a pulmonary** nodule **when conventional tomography is Indeterminate**
- **Determination of extent of intrathoracic spread in selected patients with bronchogenic carcinoma including mediastinal or pleural Invasion.**

Chest Wall

- **Determination of extent of neoplastic disease.**
  - **— Assess bone, muscle, and subcutaneous tissues**
  - **— Detection of intrusion into thoracic cavity or spinal canal**

Percutaneous Needle Biopsy

- Assist **biopsy of lesions when fluoroscopic guidance inadequate.**
  - **— Certain mediastinal masses.**
  - **— Mass low in costovertebral angle or obscured by overlying bone.**

Heart

- **Examinations of Intracardiac anatomy are not indicated at this time. Future advances in CT equipment may allow** more **clinically useful demonstration of cardiac anatomy and physiology.**
- **Distinction of cardiac (e. g., ventricular aneurysm) from pericardiac (e.g., mediastinal or pulmonary lesion) mass.**
- **Detection of aortacoronary vein graft occlusion is possible with Intravenous contrast medium bolus with third- and fourth-generation scanners.**

Major Blood Vessels

- **Evaluation and detection of thoracic aortic aneurysms**
- **Screening and measurement of abdominal aortic aneurysms** when ultrasound fails or is unavailable
- Detection of Intraluminal clots, chrome leakage, and rupture of thoracic and abdominal aneurysms.
- Evaluation of aortoprosthetic disruption
- Evaluation of suspected infection of synthetic grafts of the major vessels
- Detineation of relation of major vessels to retroperitoneal tumors, infections, or other abnormalities.
- Demonstration of invasion of vena cava by tumor

Spine

- Type I **examination. No contrast medium Type II examinatlon: Dilute metrizamide. Type III examination Concentrated metrizamide Installed originally for conventional myelography with subsequent CT, performed within 4 hours after metrizamide instillation.**

- Evaluation (type 1) of spinal stenosis to determine extent and specific causes of bony and soft tissue encroachment.
  - — Diffuse spinal stenosis, congenital or acquired.
  - — Localized spinal stenosis, associated with degenerative disease or malalignment.
  - — Posttraumatic stenosis: detection of fracture fragments or hematoma.
  - — Postspinal fusion stenosis: fusion bone overgrowth.
  - — Detection of midline or foraminal spurs not seen on plain films.
  - — Combined causes including degenerative, iatrogenic, traumatic, infection/tumor, as well as herniations of the nucleus pulposus.
- Evaluation (types I and II) of congenital dysraphic abnormalities (spina bifida, meningomyelocele, meningocele, diastematomyelia).
- Evaluation (type I or II) of spinal cord and/or nerve root masses, usually as secondary procedure to further determine nature and extent of lesion.
- Localization procedure (type O for CT-guided biopsy or aspiration.
- Evaluation (type 1) of nature and extent of boney or paraspinal tumors and inflammatory masses.
- Following nondiagnostic conventional myelography (type I or II procedure) using myelogram and/or clinical findings to specify CT level(s).
- Alternative procedure (type 1) in situations precluding standard myelography as primary examination (allergic history, mechanical difficulties, emotional factors).

Retroperitoneum

- Detection of primary malignancies such as those of mesenchymal, neural, lymphatic, and embryonic rest origin, melanomas and benign conditions, such as cysts that may mimic malignancies.
- Staging of nodal and extranodal extension of lymphomas and other types of retroperitoneal metastasis from various primary sites (e g., initial staging or detection of recurrent metastatic testicular tumor).
- Detection of retroperitoneal abscess or hemorrhage (hematoma); localization for needle aspiration.
- Further evaluation when other radiologic studies unexpectedly suggest abnormality, such as deviated ureter by normal retroperitoneal fat.
- Guidance for retroperitoneal biopsy

Peritoneum

- Detection and differential diagnosis of free or loculated intraperitoneal fluid collections and inflammatory processes.
- Detection of primary or secondary peritoneal masses (neoplasms and abscesses, etc.)
- Guidance for the aspiration of intraperitoneal fluid collections and peritoneal masses.

Liver

- Evaluation of space-occupying lemons.
  - — Primary and secondary malignant neoplasm and clinically significant benign lesions, such as adenomas, cavernous hemangiomas, and abscesses.
    - — Initial detection; whether liver is primary organ of interest or examined as part of CT evaluation of other suspected abdominal disease, such as pancreatic carcinoma, in which knowledge of associated hepatic lesions is of clinical importance.
    - — Confirmation of the presence or clarification of the nature of hepatic lesion(s) suspected or found on other imaging procedure. such as an inconclusive or nonspecific radionuclide scan.
    - — Differentiation of solid, cystic, inflammatory, and vascular lesions.
    - — Assessment of location, extent, and number of lesions, when such information is of clinical Importance.
    - — Guidance for hepatic biopsy and aspiration.
    - — Assessment of response to nonoperative therapy.
- Evaluation of trauma.
  - — Detection of hepatic laceration and intrahepatic and subcapsular hematoma, and determination of extent of injury in cases of blunt or penetrating trauma
- Evaluation of diffuse liver disease.
  - — CT currently of limited value, but may be useful in specific circumstances, such as detection of fatty infiltration of the liver and conditions of excessive iron deposition (hemochromatosis) and glycogen storage disease in children.

Spleen

- Detection and estimation of age of subcapsular hematoma.
- Detection of intrasplenic mass and differentiation of solid, cystic, and inflammatory lesions.

Pancreas

- Evaluation for possible mass lesion.
  - — Detection of primary tumor and its extent.
  - — Search for primary lesion in patient with distant metastasis.
  - — Evaluation of jaundiced patient.
  - — Evaluation of suspected pancreatitis.
  - — Evaluation of patient with possible upper abdominal masses.
  - — Serial assessment of regression or persistence of tumor during and after therapy.
- Differentiation of pancreatic from parapancreatic mass.
  - — Distinction among solid, cystic, vascular, inflammatory, calcified, and fatty lesions.
- Detection of complications of acute or subacute pancreatitis.

— Detection of pseudocysts, their number, size, and extent
— Serial assessment of pseudocyst following medical or surgical management.
— Detection of abscess: determination of size and extent.
. Guidance of percutaneous pancreatic biopsy and aspiration procedures.

Kidneys

. Evaluation of kidneys when excretory urography or angiography is contraindicated by risk of serious reaction to contrast medium.
. Evaluation of renal mass or suspected mass detected on another imaging procedure.
— Differentiation of an anatomic variant from a pathologic process,
— Differentiation of a benign fluid-filled cyst from a cyst and/or solid renal mass.
— Determination of the extent of renal neoplasm before and after treatment.
. Evaluation of selected patients, suspected clinically of renal neoplasm, when excretory urogram is negative.
. Evaluation of juxtarenal (para- or perirenal) lesions seen or suspected on excretory urography
— Differentiation of anatomic vanant from pathologic process.
— Determination of the cause, location, and extent of a lesion.
• Evaluation of urographic nonfunctioning kidney(s)
— Assessment of size, outline, and parenchymal thickness.
— Detection of obstruction, determination of site, cause, and extent of disease process
— Documentation of congenital absence.
— Detection of minimally calcified renal calculi not demonstrated by conventional techniques.
. Determination of cause of renal and perirenal calcification
• Assessment of extent of renal trauma.
. Guidance for antegrade nephrostomy, renal biopsy, or mass aspiration.

Gallbladder

• CT is not Indicated at this time unless oral and Intravenous cholecystography and ultrasonography are indeterminate or unobtainable

Biliary Tree

. Differentiation of obstructive from nonobstructive jaundice.
•Determination of site and etiology of obstruction
. Determination of etiology of obstruction

Gastrointestinal Tract

. CT is useful in the assessment of extent or recurrence of tumor or tumorlike condition into the mesentery or adjacent organs. CT is not currently indicated for the detection of mucosal lesions.

Adrenal Gland

. Evaluation of patients with biochemical evidence of adrenal hyperfunction
. Evaluation of patients with suspicion of adrenal mass found on conventional radiographic examination.
• Guidance for adrenal biopsy.

Uterus and Ovaries

• Evaluation of mass detected by clinical examination, after positive biopsy, after failure of ultrasound examination, or when strong clinical suspicion exists for a mass lesion.
• Evaluation of primary tumor and its extent of spread: and evaluation of secondary tumor.
. Differentiation of solid, cystic, inflammatory, vascular, or fany masses.
• Guidance for uterine and ovanan biopsy.

Bladder, Ureters, Prostate, and Seminal Vesicles

• Evaluation of primary and secondary tumor, including extent of tumor.
•Differentiation of solid, cystic, inflammatory, vascular, or fatty tumors.
. Detection of obstructing, minimally calcified ureteral calculi not detected by conventional studies
• Guidance for biopsy

Pelvic Bones

• Evaluation of bone lesions and accompanying soft tissue extent
. Guidance for biopsy.

Musculoskeletal System

• Evaluation of selected patients with known or suspected primary bone tumors.
• Evacuation of patients with suspected recurrence of bone tumors.
• Evaluation of patients with suspected but Indefinite signs of skeletal metastasis when Conventional studies fail to clarify.
• Evaluation of joint abnormalities difficult to detect by conventional methods.
• Evaluation of patients with soft tissue tumors, either

known or suspected to confirm presence and determine extent.
- Guidance for biopsy.

Therapy Planning and Followup

- Definition of cross-sectional anatomy and attenuation coefficients of bone and soft tissue in tumor-bearing areas for the purpose of planning radiation therapy.
- Provision of baseline prior to radiation therapy and chemotherapy from which effectiveness of these treatment modalities can be judged
- Conformance as part of an established and acceptable follow-up protocol.
- Evaluation of signs and symptoms suggesting progression, recurrence, or failure of therapy.

Foreign Body Localization

- In chest and abdomen when other traditional imaging techniques provide insufficient information.

ACKNOWLEDGMENT

The Society is greatly indebted to Dr Peter Livingston, Hollywood Memorial Hospital, Florida for his input and Joan Collie for her assistance m manuscript preparation

Members and Officers of the Society for Computed Body Tomography

Exhibit 3:

New Policy CT *Approved.* **Policy statement by the American College of Radiology,** October 1980. **Published in the ACR Bulletin, October 1980.**

American College of Radiology, reprinted with permission.

New Policy on CT Approved

Computed tomography is a proven radiologic modality which provides **valuable clinical information in the early detection, differentiation and demarcation-of** disease.

Abundant documentation of its safety and diagnostic **efficacy has** been presented in the scientific literature, It has totally changed the practice of radiology and has become the primary diagnostic modality for a variety of presenting problems. it is even more widely accepted as a supplement to other imaging techniques. It is particularity helpful in solving problems where there is conflicting information from other radiologic or laboratory studies. It frequently replaces other examinations, many of which carry greater discomfort and expense.

APPROPRIATE SUPERVISION OF **CT** FACILITIES

1) Computed tomography is a form of medical imaging which, like other x-ray and radionuclide procedures, involves the exposure of patients to ionizing radiation. Its use should be limited to physicians with the necessary training in radiation protection to optimize examination safety. Radiation physics support and a trained technical staff must be provided.

a) Necessary training in radiation protection to optimize examination safety should include formal structured didactic **and practical** courses in radiation physics, monitoring and safety including **actual** experience in the use of radiation monitoring equipment and the design and use of **equipment** for radiation protection. Certification by the American Board of Radiology would be acceptable as verification of this level of competence for a physician,

b) Radiation physics support should include regular, periodic inspection, and performance and quality testing of both the scanning equipment and the protection devices. Access to the consultative services of a qualified radiation physicist should be readily available at all times

c) At least one registered radiologic technologist should be present at ail times during the actual operation of the scanning equipment for patient use. Trained technologists with prior experience in operation of the equipment must be available in sufficient numbers to allow patient access to the equipment over a broad range of time.

2) The different imaging procedures now available in diagnostic radiology, i.e., angiography, ultrasound, radionuclide imaging and computed tomography make selection and interpretation of appropriate studies for a specific patient more complex. A referring physician should consult with a radiologist with experience in imaging with ail available modalities concerning the procedures and sequence best suited to answer a specific clinical question.

Such experience in the selection, execution and interpretation of appropriate imaging procedures is usually obtained during radiological residency training or fellowships and supervised clinical experience following such radiological training. Any training program or experience should emphasize gross and cross-sectional anatomy, radiation absorption characteristics of the involved tissues and the pharmaco-physiology of contrast media in the organ systems of interest,

3) Each computed tomographic procedure must be individually designed for the problem presented by the patient. The radiologist should be directly involved in the performance of the procedure, determining its extent, administering and/or supervising the use of contrast media and modifying the study after immediate interpretation of the initial images obtained.

Direct involvement in the performance of scanning procedures requires:

a) Selection of the appropriate scanning sites, levels and sequences for each patient.

b) Determination of the need for contrast media (if any), the type and quantity of contrast, and the route and method of administration.

c) Administration or supervision of the administration of the contrast.

d) Recognition and proper treatment of any and all contrast reactions

Council OKs New CT Concept

e) Modification of the procedure after viewing the initial **scans** in order to optimally demonstrate the appropriate findings in each case.

ALL of the elements listed are equally necessary regardless of the anatomical area being examined.

APPROPRIATE UTILIZATION OF CT SCANNERS

The diagnostic efficacy of the CT is no longer in question. In general, guidelines for its utilization are based upon:

1) Determining the site, type and extent of disease.
2) Immediate diagnosis of trauma and other medical emergencies.
3) Problem solving in patients when conflicting information exists.
4) Radiation therapy planning and monitoring.
5) Follow-up of treatment **results.**
6) Guidance for **biopsy control.**

There are many specific clinical *areas* in which CT is recognized as **a** necessary and definitive diagnostic modality. However, specific indications for CT scanning should be determined locally by hospital medical staffs or other recognized peer review groups.

APPROPRIATE DISTRIBUTION OF COMPUTED TOMOGRAPHY SCANNERS

Adequate distribution of safe and reliable CT scanning service is necessary to assure accessibility to appropriate and equitable medical care for all patients. CT scanners should be located in facilities which permit their availability to patients of all physicians. No one set of criteria meets the dual requirements of medical need and economic justification. Determination of need for a CT scanner should be **made at** the local level.

In addition to demographic and geographic factors, special considerations should be given to the capabilities and demands of the medical community. Teaching and research centers, regional medical facilities, cancer treatment programs, neurological facilities and trauma centers all have a demonstrated need **for CT scanning capabilities.** The existence of any of these may produce numerical relationships between CT scanners and need indicators at a variance from community criteria based **upon population** or utilization projections.

The location of a CT unit in a physician's office should meet the same criteria as for institutions. Instances when a CT unit is located other than in an acute care hospital should be infrequent due to the interdependency of CT scanning and specialized medical services.

The economic justification of a CT scanner depends upon sufficient patient demand to allow reasonably full utilization of the unit. Capital costs are high and depreciation over five years is prevalent. Operating costs are substantial, particularly when CT scanners are operated and available outside of normal working hours. Provision must be made for updating and replacement of obsolescent equipment. Utilization goals should be directed toward optimal performance, allowing for maintenance, research and patient handling. They should not be set so high as to generate marginal patient referrals or to impose unrealistic working conditions for staff and supporting institutions.

SUMMARY

When appropriately located, properly utilized and correctly supervised, CT scanners can have a positive impact upon both the cost and the quality of medical care. Through reduction or elimination of hospital stays, replacement of other expensive and more hazardous diagnostic studies and avoidance of some operative procedures, CT scanning can contribute positively to cost containment. Earlier and more precise diagnoses will provide opportunities to modify therapeutic approaches which may be expected to improve the outcome and/or the quality of life. **Access to** this technology must therefore be assured to all patients who may be expected to benefit from CT scanning.

Exhibit 4:

Criteria for Clinically Indicated Head Scans. **Used by the Colonial Virginia Foundation for Medical Care, Virginia Beach, Va., in a concurrent review of CT of the head in PSRO Area V, Va., 1980.**

Criteria for Clinically Indicated Head Scans (16)

Criteria

1—Suspected Intracranial Hemorrhage
2—Suspected Lesion Sec. Head Trauma
3—Suspected Neoplastic Lesion
4—Congenital Lesions
5—Skull Lesions Undefined by X-Ray
6—Detection Cerebral Met. Before Tharacic Surgery
7— Eval. Treatment of Documented Cerebral Lesion
8—Delineation of Residual Structural Abnormality After Neur. Disease, Injury
9—Papilledema, Obtundation or Coma
10—Apraxia or Aphasia
11 —Visual Field Defect
12—Ataxia, Nystagmus, Dsmetria, Tremor or Incoordination
13— Hemiparesis or Hemiplegia
14—Exophtalmos After Thyroid Disease Ruled Out
15—inequality of Pupils, Ocular Palsies, Ocular Ptosis
16—Proptosis (suspected orbital tumor)
17— Headache
18—Persistent Vertigo Unresponsive to Outpatient Management
19—Seizures (grand mal or complete, focal or partial, with altered level of consciousness)
20—Acute Focal Neurological Symptoms
21 —Unexplained Dementia, Progressive Mental Deterioration
22— Does Not Meet Criteria