Algorithm 1

PXR, plain X-ray; CT, computed tomography; FNAC, fine needle aspiration cytology.
**Algorithm 2**

- Age >40
- Dementia
-Positive physical examination
- Hemoptysis
- Leukocytosis, hypoxemia
- Risk factors like coronary artery disease, CHF, or drug-induced acute respiratory failure

Acute respiratory illness

Clinical picture, physical exam, and lab workup

Age <40 with normal physical exam

COPD patient with no complications

Immunocompromised

Nonspecific PXR findings
Severe pneumonia
High suspicion of SARS or H1N1

CT

Treatment

Nonspecific, equivocal, or normal PXR findings with high suspicion

CT+/- guided biopsy

PXR, pain X-ray; CT, computed tomography; CHF, congestive heart failure; COPD, chronic obstructive pulmonary disease; SARS, severe acute respiratory syndrome; +/- with or without.
Algorithm 3

Solitary pulmonary nodule

Comparison with previous films

Definitely benign

Possibly malignant

CT without contrast

No further investigation

Definitely benign

Indeterminate appearance

Calculate pretest probability for malignancy

For indeterminate lesions > 8–10 mm

Low probability

Intermediate probability

High probability

Serial CT scanning at 3, 6, 12, and 24 months

FDG–PET scanning (>20mm), contrast-enhanced CT scanning, transthoracic needle aspiration, and/or transbronchial needle aspiration

Surgical resection

CT, computed tomography; FDG–PET-fludeoxyglucose–positron emission tomography
Suspected pulmonary embolism

CTPA
- Unstable
  - Negative
    - Other diagnosis
  - Positive
    - Treatment
- Stable
  - PXR
    - Clinical score
      - Low-to-moderate pretest probability
        - D-dimer
          - Negative
            - CTPA or V/Q scan
          - Positive
            - Radionuclide V/Q scan
              - Low/Intermediate probability
                - Consider CTPA
              - High probability for PE
              - Negative and low or medium probability for PE
                - Negative and high probability for PE
                  - Lower limb US +/- radionuclide scan
                    - Treatment
                - No further test
              - Treatment
      - High pretest probability
        - Large body habitus allergic to contrast non-cooperative
        - Abnormal PXR previous chronic lung diseases
          - CTPA
            - Positive
              - Treatment
            - Negative
              - Treatment

PXR, plain X-ray; CTPA, computed tomography pulmonary angiogram; V/Q scan, ventilation/perfusion scan; US, Ultrasonography.
Algorithm 5

Patient with secondary HTN

Causes

Renovascular

US doppler

Normal

Abnormal

CTA or gadolinium MRA

Normal

Abnormal

Pheochromocytoma

Clinical and labs surreptitious

CT or MRI of adrenals

Negative

Positive

Cushing syndrome

ACTH dependent

ACTH independent

Screening positive

Hyperaldosteronism

US, Ultrasonography; CTA, computed tomography angiography; MRA, magnetic resonance angiography; CT, computed tomography; MRI, magnetic resonance imaging; ACTH, adrenocorticotropic hormone; MIBG, metaiodobenzylguanidine scan.
Algorithm 6

Jaundice

Ultrasonography

Dilated ducts/ suspected obstruction

RUQ pain with H/O of cholelithiasis

ERCP for extraction

Clinical suspicion of malignancy

CT or MRI

Solid mass/stricture

EUS biopsy

Unclear cause

Examine infiltrative liver disease

MRCP/MRI if no cause found

CT, computed tomography; MRI, magnetic resonance imaging; RUQ, right upper quadrant pain; MRCP, magnetic resonance cholangiopancreatography; EUS, endoscopic ultrasonography.
Algorithm 7

Acute GI bleeding

Clinical H/O

Upper GI bleeding

Endoscopy

Cause not found

CT angiography/radionuclide imaging/angiography

Lower GI bleeding

If cause is not found on sigmoidoscopy or colonoscopy

CT, computed tomography.
Algorithm 8

Right lower quadrant pain

History and BhCG

Appendicitis
Suspected clinically

Other causes requiring further investigation

Pregnant women/children

Others

USG

CT

Equivocal/inconclusive USG findings

MRI

Young patient/pregnant women/children

USG

Pelvic +/- Trans vaginal USG

MRI

Female of reproductive age

Others

USG

CT

BhCG, beta-human chorionic gonadotropin; CT, computed tomography; MRI, magnetic resonance imaging; USG, ultrasonography.
Algorithm 9

Painless hematuria

Microscopic
- Asymptomatic young adult
  - No further evaluation
- Young women
  - Clinical picture of cystitis
  - Treatment
- Patient with risk factors
  - Cystoscopy and CT urography

Macroscopic
- Evidence of glomerular disease
  - USG KUB
- Pregnant women/children
  - USG and cystoscopy
- Other patients
  - Cystoscopy and CT urography

CT, computed tomography; MRI, magnetic resonance imaging; USG, ultrasonography; KUB, kidney ureter bladder.
Algorithm 10

UTI, urinary track infection; TRUS, trans rectal Ultrasoundography; CT, computed tomography.
Algorithm 11

Endometrium:
- Proliferative phase: 4–8 mm
- Secretory phase: 7–14 mm
- Menstrual phase: 1–2 mm
- Postmenopausal, without bleeding <8 mm
- Postmenopausal, with bleeding <5 mm
  (>15 mm ➔ increased risk of malignancy)
- Add 1–2 mm for HRT
Adnexal lesions

Hx, P/E, and BhCG level to exclude ectopic pregnancy

Transvaginal USG and Doppler US ± MRI with gadolinium if indeterminate

Simple adnexal cyst

<5 cm resolve spontaneously

>5 cm US follow-up and aspiration if symptomatic

Complex cyst

Endometrioma

Hemorrhagic cyst

MRI if atypical features

US follow-up

Hydrosalpinx or tuboovarian abscess

USG follow-up

Transvaginal aspiration

Pedunculated leiomyomas

Ovarian tumors

Benign like teratoma fibromas, thecomas

Surgery if large or symptomatic

Malignant

Torsed ovary

Surgery

BhCG, beta-human chorionic gonadotropin; MRI, magnetic resonance imaging; USG, ultrasonography.
Algorithm 13

CT, computed tomography; CTA, computed tomography angiography; MRI, magnetic resonance imaging; MRA, magnetic resonance angiography; MRV, magnetic resonance venography.
USG, ultrasonography; CT, computed tomography; CTA, computed tomography angiography; MRI, magnetic resonance imaging; MRA, magnetic resonance angiography; MRV, magnetic resonance venography.
Algorithm 15

Hip and knee pain

Chronic hip and knee pain
- PXR
  - X-ray normal or abnormal further imaging is based on clinical picture
    - Fracture
      - Treatment
    - No fracture
      - MRI is considered if ongoing suspicion of fracture

Acute traumatic hip pain
- Clinical Picture
  - PXR
    - Fracture
      - MRI is considered if suspicion of ligament/meniscal injury
    - No fracture
      - MRI

Acute traumatic knee pain
- Clinical Picture
  - PXR
    - Fracture
      - MRI
    - No fracture
      - CT/MRI indicated to R/O occult fracture

H/O of trauma
- CT/MRI

H/O of cancer
- Bone scan

H/O of infection
- Joint aspiration for septic arthritis
  - MRI/bone scan for osteomyelitis

Suspected osteonecrosis
- MRI

CT, computed tomography; MRI, magnetic resonance imaging.
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**Algorithm 16**

USG, ultrasonography.