

# Clinical Guidelines Knowledge Base

## Evidence-Based Medicine Principles

### Hierarchy of Evidence

1. **Systematic Reviews and Meta-analyses**: Highest level of evidence
2. **Randomized Controlled Trials (RCTs)**: Gold standard for interventions
3. **Cohort Studies**: Observational, prospective or retrospective
4. **Case-Control Studies**: Retrospective, good for rare diseases
5. **Case Series and Reports**: Descriptive, lowest level of evidence

### Critical Appraisal

- **Study Design**: Appropriate for research question
- **Sample Size**: Adequate power to detect differences
- **Randomization**: Proper allocation concealment
- **Blinding**: Participants, investigators, outcome assessors
- **Follow-up**: Complete, adequate duration
- **Statistical Analysis**: Appropriate methods, intention-to-treat

### Guidelines Development

- **Systematic Literature Review**: Comprehensive evidence search
- **Expert Panel**: Multidisciplinary, conflict of interest disclosure
- **Grading Systems**: GRADE, Oxford Centre for Evidence-based Medicine
- **Recommendations**: Strong vs weak, based on evidence quality
- **Implementation**: Dissemination, quality improvement initiatives

## Preventive Care Guidelines

### Cancer Screening

- **Breast Cancer**:
  - Mammography: Age 40-50 start, annual or biennial
  - Clinical breast exam: Annual starting age 20
  - Self-exam: Optional, awareness encouraged
- **Cervical Cancer**:
  - Pap smear: Age 21-65, every 3 years

- HPV testing: Age 30-65, every 5 years (with Pap)
- Post-hysterectomy: Discontinue if no cervix, no high-grade lesions
- **Colorectal Cancer**:
  - Colonoscopy: Age 45-75, every 10 years
  - FIT: Annual fecal immunochemical test
  - Flexible sigmoidoscopy: Every 5 years with FIT every 3 years
- **Lung Cancer**:
  - Low-dose CT: Age 50-80, 20+ pack-year history, current or quit <15 years
  - Annual screening until 15 years since quitting

## Cardiovascular Prevention

- **Blood Pressure Screening**: All adults  $\geq 18$  years, annually
- **Lipid Screening**:
  - Men: Age 35+ every 5 years
  - Women: Age 45+ every 5 years
  - Earlier if risk factors present
- **Diabetes Screening**:
  - Age 35-70 with overweight/obesity
  - Every 3 years if normal
  - Annual if prediabetes

## Immunizations

- **Adult Schedule**: Annual influenza, Td/Tdap every 10 years
- **Pneumococcal**: PCV13 and PPSV23 for adults  $\geq 65$
- **Shingles**: Zoster vaccine for adults  $\geq 50$
- **HPV**: Ages 9-26, catch-up to age 45 in some cases

## Chronic Disease Management

### Diabetes Management

- **Glycemic Targets**:
  - HbA1c <7% for most adults
  - <6.5% if achieved without hypoglycemia
  - <8% for limited life expectancy, comorbidities
- **Blood Pressure**: <130/80 mmHg for most patients
- **Lipids**: Statin therapy for ASCVD risk reduction
- **Aspirin**: Primary prevention if ASCVD risk >10%, bleeding risk low

## Hypertension Management

- **Classification**:
  - Normal: <120/80 mmHg
  - Elevated: 120-129/<80 mmHg
  - Stage 1: 130-139/80-89 mmHg
  - Stage 2:  $\geq$ 140/90 mmHg
- **Treatment Thresholds**:
  - Stage 1: If ASCVD risk  $\geq$ 10% or existing CVD
  - Stage 2: All patients
- Lifestyle modifications for all
- **First-line Medications**: ACE inhibitors, ARBs, thiazide diuretics, CCBs

## Hyperlipidemia Management

- **Risk Assessment**: ASCVD Risk Calculator (10-year risk)
- **Statin Indications**:
  - ASCVD: High-intensity statin
  - LDL  $\geq$ 190 mg/dL: High-intensity statin
  - Diabetes (40-75 years): Moderate-intensity statin
  - Primary prevention ( $\geq$ 7.5% risk): Moderate-intensity statin
- **LDL Targets**:
  - Very high risk: <70 mg/dL
  - High risk: <100 mg/dL
  - Moderate risk: <130 mg/dL

## Acute Care Guidelines

### Sepsis Management

- **Recognition**: qSOFA score, SIRS criteria
- **Hour-1 Bundle**:
  - Measure lactate level
  - Obtain blood cultures before antibiotics
  - Administer broad-spectrum antibiotics
  - Begin rapid administration of crystalloid for hypotension/lactate  $\geq$ 4
  - Apply vasopressors if hypotensive during/after fluid resuscitation

### Pneumonia Management

- **Community-Acquired Pneumonia (CAP)**:

- Outpatient: Macrolide or doxycycline
- Inpatient: Beta-lactam plus macrolide or respiratory fluoroquinolone
- ICU: Beta-lactam plus macrolide or fluoroquinolone
- **Healthcare-Associated Pneumonia**: Broad-spectrum antibiotics
- **Duration**: 5-7 days for most cases, longer if complications

## Acute Coronary Syndrome

- **STEMI Management**:
  - Primary PCI within 90 minutes (door-to-balloon)
  - Fibrinolysis if PCI not available within 120 minutes
  - Dual antiplatelet therapy, anticoagulation
- **NSTEMI/Unstable Angina**:
  - Risk stratification: TIMI, GRACE scores
  - Early invasive strategy for high-risk patients
  - Medical management: Antiplatelet, anticoagulation, beta-blockers

## Quality Improvement and Patient Safety

### Medication Safety

- **High-Alert Medications**: Insulin, anticoagulants, opioids
- **Medication Reconciliation**: Admission, transfer, discharge
- **Allergy Documentation**: Clear, specific reactions
- **Dosing Verification**: Weight-based, renal/hepatic adjustment

### Infection Prevention

- **Hand Hygiene**: Before/after patient contact, after body fluid exposure
- **Standard Precautions**: All patients, all body fluids
- **Isolation Precautions**: Contact, droplet, airborne
- **Antimicrobial Stewardship**: Appropriate selection, dosing, duration

### Fall Prevention

- **Risk Assessment**: Morse Fall Scale, Hendrich II Fall Risk Model
- **Interventions**: Bed alarms, non-slip socks, toileting schedules
- **Environmental**: Clear pathways, adequate lighting
- **Medication Review**: Sedatives, antihypertensives, diuretics

## Pressure Ulcer Prevention

- **Risk Assessment**: Braden Scale
- **Repositioning**: Every 2 hours for bed-bound patients
- **Support Surfaces**: Pressure-redistributing mattresses
- **Skin Care**: Keep clean and dry, moisturize
- **Nutrition**: Adequate protein, hydration

## Clinical Decision Support

### Diagnostic Algorithms

- **Chest Pain**: History, ECG, troponins, risk stratification
- **Dyspnea**: BNP/NT-proBNP, chest X-ray, echocardiogram
- **Abdominal Pain**: History, physical exam, laboratory, imaging
- **Headache**: Red flags, neuroimaging indications

### Treatment Protocols

- **Antibiotic Selection**: Culture results, local resistance patterns
- **Pain Management**: WHO analgesic ladder, multimodal approach
- **Fluid Management**: Maintenance, replacement, resuscitation
- **Blood Transfusion**: Indications, compatibility, monitoring

### Discharge Planning

- **Medication Reconciliation**: Home medications, new prescriptions
- **Follow-up Appointments**: Primary care, specialists
- **Patient Education**: Diagnosis, medications, warning signs
- **Care Transitions**: Communication with outpatient providers