CONTINUUM OF CARE IN LUNG CANCER SCREENING

THE WELLSTAR FRAMEWORK

BEST PRACTICES FOR SCREENING SITES
This framework of best practices for lung cancer screening was developed by William R. Mayfield M.D., and his associates at WellStar Health System in 2011 with the assistance of James L. Mulshine, M.D., Associate Provost for Research at Rush Medical University and Frederic W. Grannis Jr., M.D., President of City of Hope Medical Staff.
Continuum of Care (CoC) in Lung Cancer

THE WELLSTAR FRAMEWORK

LUNG CANCER SCREENING DEFINED

Lung cancer screening is not a test. It is a process of serial tests performed over time, supported and managed by an integrated multi-disciplinary team of pulmonary, thoracic and oncology specialists.

RATIONALE FOR LUNG CANCER SCREENING

- Historically high mortality rate
- Historically late stage presentation
- NIH NLST results
  - 20% reduction in mortality in high risk population
- IELCAP observational study
  - 92% 10 year survival of Stage I cancers detected by LDCT

RATIONALE FOR CONTINUUM OF CARE TO SUPPORT SCREENING

- Risks of screening in isolation
  - Excessive procedures
  - Increases in cost
  - Possible rise in deaths
- Value of CoC for lung cancer
  - Safety
  - Quality
  - Cost
COC FRAMEWORK OVERVIEW

Outreach → Outpatient multi-disciplinary evaluation and care → Survivorship

CME
LDCT screening
Smoking cessation

Inpatient multi-disciplinary care

Clinical Research

COMPONENTS OF A COC

- Outreach
  - Education
  - Smoking cessation
  - Screening
- Multi-disciplinary care
  - Key essentials
  - Nurse navigation
  - Team components
  - Advantages
- Clinical investigation
- Survivorship

OUTREACH

Education
- Education about lung cancer and screening
  - Community lay population
    - “Screening Bill of Rights”
      - Technology
      - Dosing
      - Radiologic interpretation
      - Clinician interpretation in clinical context
      - Referral to multi-disciplinary team for evaluation and work-up
  - Primary care physician
    - Part of health and wellness initiatives
  - Specialists
Multi-specialty team working in collaboration for best outcomes

Smoking cessation
- Smoking cessation
  - Public health initiatives
    - Access to state funding is a limiting factor
  - Other resources
    - AHRQ
    - Legacy foundation program / ASCO
    - State quit lines
    - Smoking cessation plan individualized and implemented
    - Education of providers at Mayo Clinic by Richard Hurt, MD

Screening process
- Qualification for LDCT / Risk assessment
  - Self-referral
    - NLST 1A and 2B groups
    - “Sloan Kettering Risk Model”
    - Socio-economic strata
      - Funding for underserved
  - Physician referral
- Pre-screening and scheduling
- Scheduling model
- Arrival, registration, payment
  - Demographics
  - Smoking status, military
  - Family history
  - Contact info
    - Screening participant
    - Primary care physician
    - CoC support team
  - Consent for data collection and review
  - Smoking cessation assessment

- Technology
  - Scanner evolution
  - Higher slice = lower dose and greater speed
  - 16 – 64 slice minimum
  - Single breath hold

- Dosing (NCCN guidelines)
  - LDCT protocols
    - About 1 mSv
    - Physicist evaluation of scanner & protocol
    - Vendor emphasis on low dose
    - Slice value of scanners
    - Slice thickness
    - Resolution
• Post processing
• MIPS
  – Documentation of clinical accumulation of radiation doses over time
• Radiology interpretation of LDCT lung screen
  – Training
    • IELCAP training protocol
    • Aaron Cann, M.D., Ph.D., WellStar
    • Resources from ACR
    • MQSA requirement?
    • Auditing
    • First 100 cases
  – Computer based detection and analysis
  – Software for volumetric and density analysis
  – Reimbursement issues for LDCT interpretation
• Radiology report generation
  – Nodule table
    • IELCAP table
  – Dictation guide
    • Standardization of dictation and report follow up
• Radiology recommendation
  – Modified table from IELCAP and NCCN
  – See WellStar document
  – Patient risk-modification recommendation
• Radiology report and recommendation (RRR) distribution - mandatory
  – Screening participant
  – Primary care provider
  – CoC team
• LDCT image and report storage issues
• CoC referral triggers
  – See WellStar document
• Clinical review of LDCT and RRR
  – Level I: Pulmonary medicine
  – Level II: Thoracic surgery
  – Level III: Medical oncology
• CoC referral for multi-disciplinary evaluation and care

### MULTI-DISCIPLINARY CARE

• Key essentials
  o Patient centered
  o Team can be responsible for primary treatment planning or providing second opinions
  o Team of clinicians present **simultaneously with patient**
    • Nurse Navigation
      • Nursing evaluation
    • Pulmonary Medicine
    • Thoracic Surgery
- Medical Oncology
- Radiation Oncology
- Pathology
- Radiology
- Oncology dietitian
- Psycho-social support
  - Smoking cessation

* Nurse Navigation
  - Qualification of the referral – Is this the right place for the chief complaint?
  - Intake / referral screening
  - Smoking questionnaire per IASLC
  - Referral diagnostic evaluation
    - Appropriate pre-visit testing
    - Navigator access to clinicians for questions
  - WellStar STAT Clinic visit
    - Setting patient expectations
    - Assembly of data
    - Appropriate clinician consultation
      - Stage dependent
      - Diagnosis dependent
    - “Master board” of patient/diagnosis/clinician
  - STAT Clinic database

* Components of the multi-disciplinary care team

**Pulmonary Medicine**
- Tiers of expertise volumes
  - Tier 1
    - Diagnosis and treatment of COPD
    - PFT’s
  - Tier 2
    - Diagnostic bronchoscopy
    - Interventional bronchoscopy
      - Laser/cryo ablation
      - Brachytherapy
      - Stents
    - EBUS
  - Tier 3
    - Mucosal bronchoscopy
    - SuperDimension navigational bronchoscopy

**Thoracic Surgery**
- Tiers of expertise volumes
  - Tier 1
    - Interventional bronchoscopy
    - Mediastinoscopy
    - Open surgery
      - Including pneumonectomy and chest wall resection
  - Tier 2
    - VATS
• Wedge resection

  o Tier 3
    ▪ Anatomic lobectomy
    ▪ Chest wall resection
    ▪ Segmentectomy, pneumonectomy

  • Complete Staging
  • Quality metrics / STS database-willingness to collect and share outcomes
  • Learning VATS Lobectomy

  o Tier 4
    ▪ Complete conversion to VATS and minimally invasive techniques

Medical Oncology
• Appropriate pre-treatment staging
• NCCN guidelines
• Clinical trial access and discussion of options
• Identification of “bad actor” mutations
• Discussion of appropriate biomarker testing/blood testing

Radiation Oncology
• Tiers of expertise volumes
  • Tier 1
    ▪ Conventional
    ▪ Brachytherapy
  • Tier 2
    ▪ Radiosurgery
      ▪ Image guided
      ▪ Non-image guided

Pathology
• Frozen and permanent histology
• Order appropriate testing on tissue
  – Immunohistochemistry
• Image and report storage and distribution
  – Genetic analysis
• Tissue banking-options for further research
• Options for patients for blood/biomarker testing

Radiology
• Diagnostic
• Interventional
  – Lung biopsy
    ▪ Treatment of pneumothorax
  – Effusion drainage
• Technology
• Cumulative dosing
• Access
ADVANTAGES OF OUTPATIENT SIMULTANEOUS COC

WellStar Specialty Teams and Treatment (STAT) Clinic

• Saves time
  – Avoids serial trips from doctor to doctor
  – Multiple opinions rendered simultaneously

• Lowers cost
  – All practitioners review the same single set of data in a short period of time
  – All agree on diagnostic plan
  – Avoid multiple serial repeat tests
  – Avoid unnecessary testing: consensus

• Improves quality and access
  – Multiple specialties simultaneously available
  – Improves interpretation of tests and communication of conclusions and opinions
  – Allows for immediate follow up and clarifying questions among physicians

• Improves patient satisfaction
  – Fewer “sleepless nights” waiting
  – Faster time from abnormal finding to diagnosis to treatment
  – Evaluation and diagnosis obtained with fewer tests

• Improves clinical trial recruitment

CLINICAL INVESTIGATION OPPORTUNITIES

• Risk model development
• Documentation of cost and time savings of multi-disciplinary care
• Incidence of lung cancer per population decade
• Screening interpretation accuracy (cross examination)
• Screening frequency
• Screening result recommendations
• Needle biopsy on-site cytology versus later interpretation
• Needle biopsy versus wedge resection versus SuperDimension navigational bronchoscopy
• Clinical trials in all specialties
• “Give a Scan” enrollment
• Reduction in PET scans and unnecessary tests

SURVIVORSHIP

• Survivorship programs
• Affiliation with local support and active survivor groups
• Activities promoting awareness
INSTITUTIONAL ISSUES FOR COC LUNG CANCER SCREENING

- Embracing a CoC model with all Tier 1 components (or referral to Tier 1 support if not present)
- Dedication of hospital resources to a multi-disciplinary clinic
- Physician support/objections to a patient centered simultaneous multi-disciplinary clinic function
- Support for lung cancer screening staff and process
- Scaling up infrastructure as LDCT screening volumes increase
- How to manage/refer non-pulmonary positive findings
- Process improvement, change management
Continuum of Care Example
WellStar Model for Continuum of Care for Lung Cancer
WellStar Health System
Marietta, GA

1. Lung cancer screening consistent with Level 1A data and NCCN and IELCAP guidelines. Access for lower socio-economic strata.
2. Pulmonary medicine with bronchoscopy, image guided biopsy (SuperD), EBUS services.
3. Thoracic surgery with expertise in VATS procedures and VATS Lobectomy with complete staging through lymphadenectomy, subscribing to the STS database.
4. Medical oncologic treatment consistent with NCCN guidelines, and with access to clinical trials for all stages.
5. Radiation oncology with state of the art technology and CyberKnife therapy.
6. Pathology with specific pulmonary expertise and access to genomic tissue profiling.
7. Diagnostic and interventional radiology have direct interface with multi-disciplinary team for nodule evaluation.