ASEAN Movement in Radiology

Report from the 2025 annual meeting of thoracic radiologists in Thailand: Advances and consensus on standards, guidelines, and practices for thoracic disorders

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Figure 1. *(A) Engaging atmosphere during the comprehensive meeting discussion (B) Group photo of the panel captured post-meeting.*

On 12 September 2025, a panel of thoracic radiology experts from across Thailand (Figure 1) convened to address key topics in thoracic diagnostic imaging across both the private and public sectors. Organized by the Royal College of Radiologists of Thailand (RCRT) in collaboration with the Foundation for Orphan and Rare Lung Disease (FORLD), the meeting was held at the Conrad Hotel, Pathum Wan, Bangkok. The agenda covered twelve main topics: (1) the new organizational structure of the Radiological Society of Thailand (RST) and the Thai Subsociety of Thoracic Radiology (TSTR), (2) management guidelines for lung nodules detected on CT screening in Thailand, (3) reporting recommendations for coronary arterial calcium scoring on chest CT, (4) CT Protocol and reporting guidelines for chronic obstructive pulmonary disease (COPD) of the Asian Society of Thoracic Radiology (ASTR), (5) guidelines for reporting chronic obstructive pulmonary disease (COPD) findings on CT lung cancer screening, (6) enhancing the competency of junior radiologists in chest radiograph interpretation to support artificial intelligence (AI) integration, (7) updates on national high-resolution computed tomography (HRCT) diagnostic reference levels (DRLs), (8) a review of the national HRCT protocol, (9) a proposal for a national low-dose CT (LDCT) protocol for lung cancer screening, (10) imaging and LDCT for screening of ILD in CTD patients, (11) structured reporting guidelines and software for HRCT in patients with suspected or confirmed ILD, and (12) outcomes of estimating fibrotic extent on HRCT.

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Agenda 1: The New Organizational Structure of the Radiological Society of Thailand and the Thai Subsociety of Thoracic Radiology

Presented by Wiwatana Tanomkiat, M.D.

At present, professional radiological societies in Thailand are primarily organized in a traditionally adopted imaging modality–based structure, rather than an organ system–based subspecialty model. The Radiological Society of Thailand (RST) has encouraged the development of organ system–based subspecialty groups. In response, the Thai Subsociety of Thoracic Radiology (TSTR) was established under the auspices of the RST.

Participants' conclusion: The meeting unanimously approved the establishment of the TSTR, with the following founding committees:

1.	Wiwatana Tanomkiat	President
2.	Nisa Muangman	Vice President
3.	Nantaka Kiranantawat	Secretary
4.	Sitang Nirattisaikul	Treasurer
5.	Warawut Sukkasem	Registration and Public Relation
6.	Tanisa Tongbai	Committee Member
7.	Phakphoom Thiravit	Committee Member
8.	Pannaya Tumsatan	Committee Member
9.	Yuthapan Wannasopha	Committee Member
10.	Sutarat Tungsagunwattana	Committee Member

Subsociety embler

Agenda 2: Management Guidelines for Lung Nodules Detected on CT Screening in Thailand

Presented by Nutcha Pinjaroen, M.D.

Thailand is currently in the process of developing national guidelines for lung cancer screening and management. Due to the shortage of radiologists in public hospitals—especially in provincial areas—the National Health Security Office (NHSO) has introduced AI technology to assist in interpreting chest X-rays (AI Chest X-ray). The program has been piloted in 167 public hospitals, with plans to expand coverage to 887 hospitals within three years. While this policy is expected to substantially increase the detection of abnormal findings, it will likely result in a significant increase in downstream investigations, including chest CT, PET-CT, invasive procedures, and unnecessary or redundant follow-up imaging. The development of clear and appropriate guidelines is, therefore, essential, not only to standardize clinical practice but also to ensure an appropriate balance between proactive early lung cancer detection and the efficient, judicious use of healthcare resources.

Participants' conclusion: The meeting participants agreed that developing such guidelines would benefit from the formal involvement of the RCRT and/ or the RST during the guideline formulation process. In addition, there was consensus that explicit recommendations are required to address medico-legal responsibilities and liabilities when discrepancies arise between radiologists' interpretations and AI-generated results.

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Agenda 3: Reporting Recommendations for Coronary Arterial Calcium Scoring on Chest CT

Presented by Tanop Srisuwan, M.D.

In 2021, acute ischemic heart disease was one of the leading causes of death worldwide, with an estimated 9.1 million cardiovascular-related deaths, accounting for approximately 13% of all global mortality [1]. Patients with certain thoracic conditions requiring a radiologic evaluation, such as chronic obstructive pulmonary disease (COPD), have also been shown to have a higher prevalence of concomitant cardiovascular diseases, including heart failure, ischemic heart disease, and atrial fibrillation [2]. Accordingly, the identification and reporting of coronary arterial calcification (CAC) on CT, a marker of atherosclerotic cardiovascular disease (ASCVD), is considered clinically relevant.

The standard and widely accepted method for coronary calcium assessment is the Agatston score, which requires ECG-gated cardiac CT. However, chest CT examinations commonly performed for pulmonary evaluation—such as in COPD, interstitial lung disease (ILD), or pulmonary nodule assessment—are typically non–ECG-gated. In 2016, the Society of Cardiovascular Computed Tomography (SCCT) and the Society of Thoracic Radiology (STR) issued recommendations for the assessment of coronary calcium on non-cardiac, non–ECG-gated chest CT. These guidelines recommend reporting CAC in all patients using one of several approaches, including visual assessment, nongated ordinal scoring, or nongated Agatston scoring, with severity classified as none, mild, moderate, or severe [3]. A clear clinical benefit of CAC reporting is its role in guiding statin therapy among patients aged 40–75 years with a 10-year ASCVD risk estimate of 5–20% [4].

Reporting coronary calcium on non–ECG-gated chest CT should, therefore, be simple, concise, and clearly worded to avoid misinterpretation. The following reporting phrases were recommended:

- **No CAC identified:** *No identified coronary calcification (not tailored for calcium scoring; subtle calcification may be overlooked),*
- **CAC present:** *Mild / moderate / severe coronary artery calcification by visual assessment.*

Participants' conclusion: The meeting acknowledged the clinical value of reporting coronary calcium on non–ECG-gated chest CT. However, it was agreed that detailed indications, recommendations, and limitations should be clearly defined before being applied in clinical practice.

Agenda 4: CT Protocol and Reporting Guidelines for COPD of the Asian Society of Thoracic Radiology (ASTR)

Presented by Nantaka Kiranantawat, M.D.

This presentation outlines guidelines for CT reporting in patients suspected of or diagnosed with COPD, based on recommendations issued by the ASTR [5].

Indications for CT examination

- Recommendation (one of the following)
  - Persistent exacerbations,
  - Symptoms out of proportion to disease severity on pulmonary function test (PFT),
  - FEV1 < 45% of predicted value, combined with significant hyperinflation and gas trapping,
  - According to lung cancer screening criteria.

- Consideration (one of the following)
  - COPD patients requiring the exclusion of comorbidities (e.g., lung cancer, ILD),
  - Patients at high risk or with clinical suspicion of COPD whose (one of the following):
    - PFT is unable to perform,
    - PFT is unavailable,
    - PFT results are normal, but early screening of COPD is desired.

CT Scanning Recommendations

- Patients already diagnosed with COPD:
  - Use the standard dose or low dose combined with paired inspiratory/ expiratory phases.

- Middle-aged and elderly patients (suspected COPD or high risk, but without clear diagnostic criteria):
  - Use low-dose CT combined with paired inspiratory and expiratory phases.

- Young adults (20–40 years) with risk factors (e.g., history of premature birth, asthma, or respiratory infections in childhood; family history of respiratory disease; smoking, passive smoking, or e-cigarette exposure):
  - Use low-dose CT without the expiratory phase.

CT Report Recommendations

When writing a CT report for a COPD patient, the following sections should be described:

- Emphysema: Specify the type and distribution of emphysema,
- Airway: Describe bronchial wall size, thickening, and narrowing,
- Pulmonary vessels: Note any vascular changes in the lungs,
- Goddard score: Should be included in every report to quantify the extent of emphysema.

Participants' conclusion: The meeting acknowledged the ASTR recommendation on CT scanning and reporting COPD.

Agenda 5: Guidelines for Reporting COPD Findings on CT Lung Cancer Screening

Presented by Warawut Sukkasem, M.D.

The report template for COPD (Figure 2) based on Agenda 4 was proposed.

CT Report Checklist for COPD

ID(HN) ☐☐☐☐☐☐☐

Date of Examination (date-month-year) ☐☐-☐☐-☐☐☐☐

1 Imaging Quality

☐ Good ☐ Suboptimal ☐ Inadequate

If not good, mark the boxes that apply

☐ Not full inspiration ☐ Not full expiration ☐ Artifact ☐ Others ....

2 Parenchymal Abnormalities Consistent with COPD

☐ Yes (Complete Section 2.1 and 2.2) ☐ No (Proceed to Section 3)

2.1 Major Emphysematous Phenotypes with Severity

	Centrilobular emphysema										Paraseptal emphysema				Panlobular emphysema	
	Trace (<0.5%)		Mild (0.5-5%)		Moderate (>5%)		Confluent		Destructive		Mild (≤1cm)		Substantial (>1cm)			
	R	L	R	L	R	L	R	L	R	L	R	L	R	L	R	L
Upper																
Middle																
Lower																

2.2 Visual Goddard scoring (Mild ≤ 8, Moderate 8-16, Severe > 16)

	R	L
Upper (The aortic arch level)	0 1 2 3 4	0 1 2 3 4
Middle (The carina level)	0 1 2 3 4	0 1 2 3 4
Lower (1 cm above right diaphragm)	0 1 2 3 4	0 1 2 3 4

Total score = ...

Score	% emphysema
0	0%
1	0-25%
2	25-50%
3	50-75%
4	75-100%

3 Airway Abnormalities Consistent with COPD

☐ Yes (Complete Section 3.1 and 3.2) ☐ No (Proceed to Section 4)

3.1 Large Bronchial Disease

☐ Bronchial wall thickening
☐ Mucous plugging
☐ Saber sheath trachea

3.2 Small Airway Disease (SAD)

☐ Inflammatory SAD (Centrilobular opacities)
☐ Obstructive SAD (Air trapping without significant emphysema)

4 Comorbidities

☐ Bronchiectasis
☐ Enlarged pulmonary artery
☐ ILA/ILD ....
☐ Combined pulmonary fibrosis with emphysema (CPFE)
☐ Airspace enlargement with fibrosis (AEF)/Thick-walled cystic lesion (TWCL)
☐ Tracheobronchomalacia
☐ Excessive dynamic airway collapsed
☐ Giant bulla
☐ Lung cancer
☐ Pleural lesion ....
☐ Coronary calcifications
☐ Pulmonary cachexia/sarcopenia
☐ Osteoporosis
☐ Others ....

Figure 2. *CT Report Checklist for COPD.*

The checklist is designed to ensure that radiologists provide consistent and actionable data when COPD characteristics are identified incidentally or as part of a screening protocol.

Participants' conclusion: The committee unanimously agreed with the proposed reporting guidelines. Furthermore, the meeting emphasized the critical importance of disseminating these guidelines to both clinicians and radiologists to ensure effective and appropriate implementation in the clinical practice.

Agenda 6: Enhancing the Competency of Junior Radiologists in Chest Radiograph Interpretation to Support AI Integration

Presented by Sutarat Tungsagunwattana, M.D.

Due to the current integration of AI into various medical contexts in Thailand, including the interpretation of radiological images, it is vital for radiologists to prioritize accuracy, precision, and inter-observer agreement. This is essential for maximizing patient benefits and preventing professional disputes. Currently, Thailand offers two primary programs aimed at improving the interpretation competency and diagnostic consistency: the Air Pneumo Program [6] and the NIOSH B-reader Training Course and Examination, which is conducted by the Central Chest Institute of Thailand under the Department of Medical Services. However, these programs are not currently integrated into the official curriculum of the Royal College of Radiologists of Thailand, neither for diagnostic radiology residents nor for advanced diagnostic body imaging fellows.

Participants' conclusion: Representatives from all ten institutions acknowledged the significant impact of AI on chest radiograph interpretation. There was a collective agreement on the need for additional training to reinforce fundamental interpretative skills and promote a deeper understanding of the chest radiograph analysis. The meeting concluded that these educational efforts should be specifically targeted at first-year (R1) diagnostic radiology residents.

Agenda 7: Updates on the Development and Implementation of National HRCT Diagnostic Reference Levels (DRLs)

Presented by Thitiporn Suwatanapongched, M.D., and Panruethai Trinavarat, M.D.

The objective of this session was to promote radiation dose control in HRCT examinations by ensuring alignment with established Global DRLs. Inter-institutional comparisons were discussed using standardized dose metrics, including Computed Tomography Dose Index (CTDIvol), Dose–Length Product (DLP), and Size-Specific Dose Estimate (SSDE), for each examination. In this context, dose optimization was emphasized as a practical and essential strategy to balance radiation safety and diagnostic image quality [7,8].

Several protocol-related parameters were identified as key areas for improvement. These included reducing unnecessary radiation during expiratory and prone imaging by favoring axial acquisition over helical scanning; selecting appropriate patient positioning and restricting the field of view to the region of interest; optimizing the craniocaudal scan length; and ensuring the adequate breath-hold technique during inspiratory acquisition and active, forced expiration during expiratory acquisitions to obtain diagnostically interpretable images in a single acquisition.

Participants' conclusion: The panel agreed that general recommendations for HRCT protocols can be defined at the national level. However, given the variability in CT scanner performance across institutions, a higher radiation dose may still be required in certain settings to achieve acceptable image quality. If markedly elevated DRL values are identified at a specific institution, direct communication may be undertaken to understand the contributing factors and support further protocol optimization, rather than enforcing uniform dose-reduction targets indiscriminately.

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Agenda 8: A Review of the National HRCT Protocol

Presented by Chayaporn Kaewsathorn, M.D.

Following the release of the National HRCT Protocol for ILD in 2019 [9], several revisions were proposed to improve its use for other thoracic conditions.

For collimation, a change from <1.5 mm to ≤1.25 mm was proposed based on recent recommendations for CT evaluation of COPD issued by the Asian Society of Thoracic Radiology in 2025 [5]. The meeting, however, noted that most CT scanners currently available in Thailand are unable to achieve a collimation of ≤1.25 mm. Furthermore, assessment of emphysema and bronchitis using a collimation of ≤1.5 mm remains clinically acceptable. Therefore, no major change to the existing protocol was recommended, aside from revising the wording from "<1.5 mm" to "≤1.5 mm."

Regarding mediastinal window reconstruction, increasing the slice thickness from ≤1.5 mm to 2.5–3 mm was proposed to facilitate coronary calcium assessment, in accordance with the 2016 guidelines issued by the SCCT and the STR [3]. The panel considered that thinner slice thickness provides higher sensitivity for the detection of coronary calcification. Furthermore, visual assessment on non–ECG-gated chest CT does not require the same degree of quantitative precision as formal Agatston scoring. When thicker reconstructions are required, they can be generated from thin-section source images. Accordingly, no modification of the current recommendation was deemed necessary.

Participants' conclusion: The existing National HRCT Protocol remains suitable for routine practice in Thailand and does not limit the evaluation of COPD or coronary artery calcification. Future updates should mainly focus on further reducing radiation dose to patients.

HRCT Protocol for ILD: Version.2/2026

	Supine/Inspiration (ทำทุกราย ทั้งครั้งแรกและ follow-up)	Supine/Expiration (ทำทุกรายในครั้งแรก ในกรณี follow-up ให้พิจารณาเป็นรายๆ ไป)	Prone/inspiration (Optional ให้พิจารณาเป็นรายๆ ไป)
Scan coverage	Whole chest[1]	Whole chest[1]	limited to region of interest[2] (เช่น lower chest) หรือ Whole chest1
Technique	Volumetric[3]	Recommended: sequential[4] (every 10-20 mm interval) ในช่วง end expiration Optional: ถ้ากลั้นใจไม่ได้นานหรือสงสัยภาวะ TBM อาจทำ volumetric scan ในขณะ forced expiration และควรใช้ ultralow radiation dose (*) และ pitch สูงสุด[7]	Recommended: sequential[4] (every 10-20 mm interval) Optional: ถ้ากลั้นใจไม่ได้นาน อาจทำ volumetric scan เฉพาะ region of interest[2] และควรใช้ radiation dose ที่น้อยกว่าหายใจเข้า และ pitch สูงสุด[7]
Collimation	Thinnest (≤1.5 mm)[5]	Thinnest (≤1.5 mm)[5]	Thinnest (≤1.5 mm)[5]
Rotation time	Shortest (<0.5 s)[6]	Shortest (<0.5 s)[6]	Shortest (<0.5 s)[6]
Pitch	Highest (>1)[7]	-	-
Radiation dose	120 kVp, auto mAs[8] (1-3 mSv)	120 kVp, 20-60 mAs[8] *100 kVp, 40-60 mAs[8] (<1 mSv)	100 or 120 kVp, 20-30 mAs[8] (<1 mSv)
Reconstruction[12]	1. Axial, lung-window[9] (high-spatial algorithm) ≤1.5 mm thicknessบ overlap (30-50%)[9] 2. Axial, mediastinal-window[10] (low-spatial algorithm), ≤1.5 mm thick ness, overlap (30-50%) 3. Coronal[11], mediastinal- window (low-spatial algorithm), ≤1.5 mm thickness contiguous	Axial, lung-window[9] (high-spatial algorithm), ≤1.5 mm thickness	Axial, lung-window[9] (high-spatial algorithm), ≤1.5 mm thickness

<u>หมายเหตุ</u> *WL/WW for lung-window setting: -450 to -600 HU/1450 to 1600 HU*
WL/WW for mediastinal-window setting: 30 to 50 HU/350 to 450 HU
TBM = tracheobronchomalacia

<u>เหตุผลหรือประโยชน์ที่ได้</u>

- [1,3] *เพิ่ม rate of detection ถึงแม้จะเป็น focal lesion ขนาดเล็ก นอกจากนี้ยังสามารถสร้าง multiplanar reformation เพื่อศึกษาการกระจายตัวได้ดีอีกด้วย*
- [2] *อาจจะทำเฉพาะที่เพื่อลด radiation dose*
- [4] *โดยเฉพาะในผู้ป่วยที่เป็นผู้หญิง และ/หรือ ที่อายุ <45 ปี*
- [5] *หากบางกว่า 1 mm สามารถกระทำได้แต่จะมี noise มาก*
- [6,7] *เพื่อสร้างภาพที่ motion-free (shortest rotation time และ high pitch จะใช้เวลา scan ทั้งทรวงอกไม่เกิน 5 วินาที)*
- [8] *เครื่อง CT ในปัจจุบัน จะสามารถตั้ง auto mA (automatic exposure control) ได้ ซึ่งจะสะดวกกว่า เพราะไม่ต้องปรับ mA ในผู้ป่วยที่ขนาดไม่เท่ากัน โดยเฉพาะทรวงอกด้านบนที่มี soft tissue มากกว่า ในผู้ป่วยอายุน้อยโดยเฉพาะเพศหญิงที่ follow up ต่อเนื่อง หากต้องการลดปริมาณรังสีมากกว่านี้ สามารถใช้โปรแกรมอัตโนมัติ low dose ซึ่งจะสามารถกำหนดเพดาน mA ได้ หรือกำหนด mA คงที่ตลอดทั้งทรวงอก อย่างไรก็ตามควรหลีกเลี่ยง ultralow dose ในการทำ supine inspiratory HRCT*
- [9] *เพื่อความคมชัด*
- [10] *เพื่อแสดงพยาธิสภาพที่เกี่ยวข้องใน mediastinum และ soft tissue*
- [11] *เพื่อแสดงระนาบบนล่าง (vertical distribution)*
- [12] *แนะนำให้ใช้ Iterative reconstruction (IR) เพื่อลด noise*

จัดทำเอกสารโดย : ศ.พญ.ฐิติพร สุวัฒนะพงศ์เชฎ, รศ.นพ.วิวัฒนา ถนอมเกียรติ, รศ.พญ.จันทิมา เอื้อตรงจิตต์, และ ผศ.นพ.ธนพ ศรีสุวรรณ

เอกสารอ้างอิง:

1. *Raghu G, Remy-Jardin M, Myers JL, et al. American Thoracic Society, European Respiratory Society, Japanese Respiratory Society, and Latin American Thoracic Society. Diagnosis of Idiopathic Pulmonary Fibrosis. An Official ATS/ERS/JRS/ALAT Clinical Practice Guideline. Am J Respir Crit Care Med 2018;198(5):e44-e68.*

Figure 3. *National HRCT Protocol for ILD, version 2/2026.*

Agenda 9: A Proposal for a National Low-dose CT (LDCT) Protocol for Lung Cancer Screening

Presented by Thitiporn Suwatanapongched, M.D., and Thanisa Thongbai, M.D.

Following the discussion on lung nodule management in CT-based screening, the use of LDCT for lung cancer screening was proposed. The discussion emphasized the need for a standardized, dose-optimized protocol that is feasible within the context of available CT technology and clinical practice in Thailand. Particular attention was given to balancing sufficient image quality for early lung cancer detection with radiation dose minimization, especially in the setting of population-based screening [7,8].

Several key technical factors were highlighted for consideration [7,8], including:

- Scan coverage, ensuring complete lung coverage from lung apices to costophrenic angles;
- Acquisition technique parameters, including detector collimation, gantry rotation time, pitch, and the use of tube current modulation);
- Radiation dose parameters, including tube voltage (kVp), tube current–time product (mAs), and target dose metrics such as CTDIvol and DLP appropriate for screening purposes; and
- Reconstruction parameters, including slice thickness and interval, reconstruction kernel, iterative reconstruction technique, and generation of multiplanar reformation.

Participants' conclusion: The participants agreed that a dedicated LDCT protocol for lung cancer screening should be developed. This protocol will be refined by an appropriate working group and presented for further discussions and endorsement at a future meeting.

Agenda 10: Imaging and LDCT for Screening of ILD in Connective Tissue Disease (CTD) Patients

Presented by Chayanin Nitiwarangkul, M.D.

It is well established that the prevalence of ILD is increasing, driven by improved access to medical information and diagnostic technology. Adhering to the principle of "early detection and early treatment" to improve therapeutic outcomes, diagnostic and monitoring tools are of paramount importance. Based on the Guideline for screening and monitoring CTD-ILD from the American College of Rheumatology (ACR)/American College of Chest Physicians (CHEST) 2023 [10] and ERS/EULAR 2026 [11], the following recommendations were presented:

- Screening
  - o HRCT: Recommended for patients with Systemic Sclerosis (SSc), Mixed Connective Tissue Disease (MCTD), and high-risk Idiopathic Inflammatory Myopathies (IIM). It is also indicated for patients with Rheumatoid Arthritis (RA) and Sjögren's syndrome (SjS) who possess risk factors, serving as a baseline for newly diagnosed individuals.
  - o CXR: Not recommended for screening due to insufficient diagnostic sensitivity.

- Monitoring
  - o HRCT:
    - Every 1-2 years for SSc, MDCT, RA, and SjS;
    - Every 3-6 months for IIM if rapidly progressive disease, annually in others; and
    - May obtain promptly if progression is suspected (e.g. new crackles, hypoxia, or >10% FVC decline).
  - o CXR: May be utilized for monitoring, but is limited in detecting subtle worsening, typically revealing changes only when disease progression is distinct.

Given that monitoring lung fibrosis requires HRCT at least annually, accumulating radiation exposure is a concern. Consequently, LDCT has gained significance, offering a radiation dose reduction of 60% to 80% compared to standard HRCT while maintaining diagnostic reliability for assessing ground-glass opacities, reticulations, and honeycombing. Furthermore, advanced reconstruction techniques, such as iterative reconstruction and deep learning, play a vital role in achieving image quality comparable to HRCT.

Participants' conclusion: The meeting reached an agreement on these recommendations.

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Agenda 11: Structured Reporting Guidelines and Software for HRCT in Patients with Suspected or Confirmed ILD

Presented by Chayanin Nitiwarangkul, M.D.

The increasing prevalence of ILD and the subsequent rise in HRCT indications necessitate efficient and adequate reporting, as the quality of radiological data directly impacts treatment decisions. Research indicates that Structured Reporting (SR) enhances the quality of HRCT reports, particularly in complex contexts such as suspected CTD-ILD [12]. Consequently, a reporting program for chest HRCT (Figure 4) was developed with the following objectives:

1. To serve as a guideline for HRCT reporting in patients suspected of having fibrotic-ILD, such as Idiopathic Pulmonary Fibrosis (IPF) or CTD-associated ILD,
2. To provide comprehensive data to enhance the efficiency of assessment and treatment for fibrotic-ILD patients, and
3. To apply to fibrotic ILD, not for use as a primary reference in other conditions.

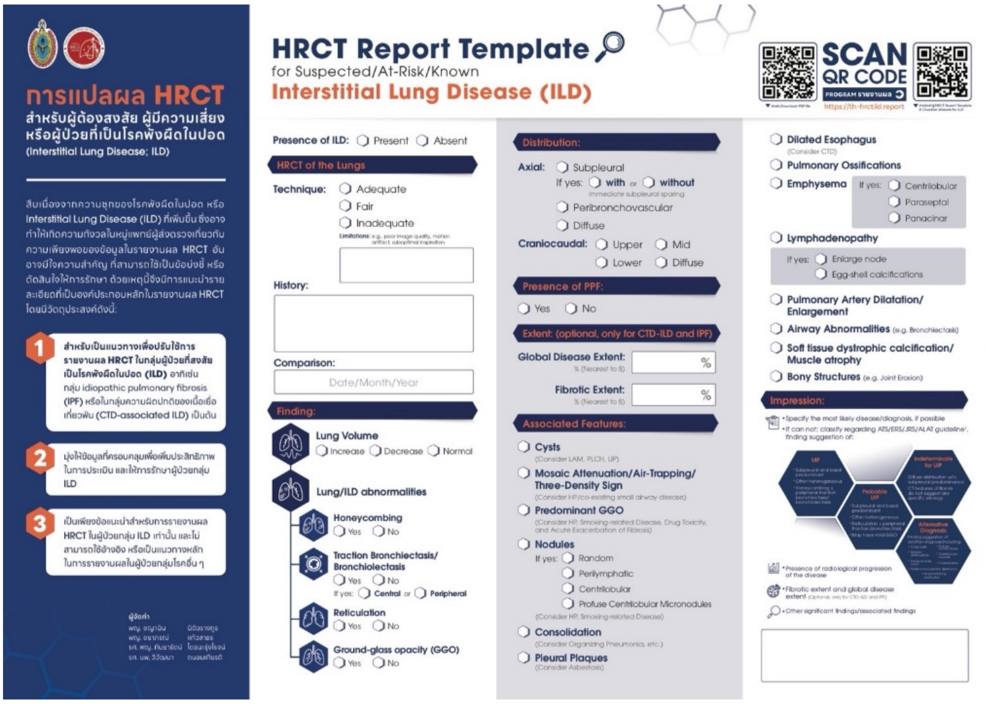

Figure 4. *HRCT Report Template for suspected/at-risk/known IILD.*

Participants' conclusion: The participants expressed a mutual understanding and supported the wider promotion of the reporting program to identify advantages and areas for improvement in the future (Figure 5).

Figure 5. *Subsequent signing of a Memorandum of Understanding (MoU) between RST and Boehringer Ingelheim (Thailand) on 14 November 2025 to improve ILD diagnosis by joint development of the HRCT Checklist & Structured Report Program through the website https://th-hrctild.report. This digital tool is designed to establish a nationwide standard for HRCT reporting, which serves as a cornerstone of ILD diagnosis, and aims to empower radiologists across Thailand, enhancing the diagnostic efficiency and fostering confident decision-making for all physicians involved in ILD care.*

Agenda 12: Outcomes of Estimating Fibrotic Extent on HRCT

Presented by Sitang Nirattisaikul, M.D.

Songklanagarind Hospital has implemented ILD diagnostic guidelines based on the ATS/ERS/JRS/ALAT 2011 recommendations [13]. However, challenges persisted in interpreting HRCT patterns, specifically in distinguishing between Idiopathic Pulmonary Fibrosis (IPF) and Connective Tissue Disease-related Interstitial Lung Disease (CTD-ILD), which require distinct therapeutic approaches [14]. Following the publication of the 2018 ATS/ERS/JRS/ALAT guidelines [15], this study aimed to share experiences on survival rates and predicted 10-year changes in pulmonary function using these updated criteria.

A retrospective review of 356 ILD patients from January 1, 2006, to December 31, 2016, was conducted. HRCT images were evaluated by three radiologists to assess morphology, fibrotic extent, and severity scores using a consensus-based three-level method [16] combined with ICOERD criteria. These findings were correlated with clinical data. Survival analysis was performed using Kaplan-Meier curves, and 10-year changes in lung function were predicted using a linear mixed-effects regression model.

Results:

- Prevalence: The probability of CTD-ILD was 64.3%, compared to 26.7% for IPF,
- Survival: The mean survival time for IPF patients was 3.5 years (95% CI: 0.61, 0.70), whereas CTD-ILD patients had a significantly longer mean survival of 11.3 years (95% CI: 0.35, 0.46) ($p < 0.0001$),
- Lung Function: The 10-year prediction showed a significant decline in %predicted FVC for IPF patients, while CTD-ILD patients exhibited a decline in %predicted DLCO. Other disease groups showed increases in FVC0 and %predicted FVC ($p < 0.05$).

Conclusion: CTD-ILD is the most common subtype and is associated with the best survival outcomes, whereas IPF presents the poorest prognosis. Patients younger than 60 years demonstrated significantly better prognoses in the CTD-ILD and other groups. The study underscores the role of Multidisciplinary Discussion (MDD) and the 2018 guidelines in improving diagnostic accuracy.

Participants' conclusion: The meeting acknowledged the findings.

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References

1. World Health Organization [Internet]. Geneva: WHO; c2026; [cited 2026 Jan 31]. The top 10 causes of death. 7 August 2024. Available from: https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death

2. Vogelmeier CF, Friedrich FW, Timpel P, Kossack N, Diesing J, Pignot M, et al. Comorbidities and cause of death in COPD patients compared to non-COPD controls: An 8-year observational retrospective healthcare claims database cohort study. Int J Chron Obstruct Pulmon Dis 2025;20:2117-30. doi: 10.2147/COPD.S488701.

3. Hecht HS, Cronin P, Blaha MJ, Budoff MJ, Kazerooni EA, Narula J, et al. 2016 SCCT/STR guidelines for coronary artery calcium scoring of noncontrast noncardiac chest CT scans: A report of the Society of Cardiovascular Computed Tomography and Society of Thoracic Radiology. J Cardiovasc Comput Tomogr 2017;11:74-84. doi: 10.1016/j.jcct.2017.02.011.

4. Greenland P, Blaha MJ, Budoff MJ, Erbel R, Watson KE. Coronary Calcium Score and Cardiovascular Risk. J Am Coll Cardiol 2018;72:434-47. doi: 10.1016/j.jacc.2018.05.027.

5. Fan L, Seo JB, Ohno Y, Lee SM, Ashizawa K, Lee KY, et al. Chest CT in the evaluation of COPD: Recommendations of Asian Society of Thoracic Radiology. Br J Radiol 2025;:tqaf111. doi: 10.1093/bjr/tqaf111.

6. Tungsagunwattana S, Lertrojanapunya S. AIR Pneumo, a project to standardize chest radiograph interpretation of occupational lung diseases in Thailand and ASEAN countries: Challenges and future trends. ASEAN J Radiol [Internet]. 2025 [cited 2026 Jan 31];26:56-76. Available from: https://www.asean-journal-radiology.org/index.php/ajr/article/view/942

7. Vañó E, Miller DL, Martin CJ, Rehani MM, Kang K, Rosenstein M, et al. ICRP Publication 135: Diagnostic Reference Levels in Medical Imaging. Ann ICRP 2017;46:1–144. doi: 10.1177/0146645317717209.

8. Kalra MK, Sodickson AD, Mayo-Smith WW. CT radiation: key concepts for gentle and wise use. Radiographics 2015;35:1706–21. doi: 10.1148/rg.2015150118.

9. Tanomkiat W, Suwatanapongched T, Euathrongchit J, Srisuwan T. HRCT protocol for ILD: Version 1/2019. 2019 [cited 2026 Jan 31]. Available from: https://www.radiologythailand.org/wp-content/uploads/2024/10/HRCT-Protocol-for-ILD-Version.1-2019.pdf

10. Johnson SR, Bernstein EJ, Bolster MB, Chung JH, Danoff SK, George MD, et al. 2023 American College of Rheumatology (ACR)/American College of Chest Physicians (CHEST) Guideline for the treatment of interstitial lung disease in people with systemic autoimmune rheumatic diseases. Arthritis Care Res (Hoboken) 2024;76:1051-69. doi: 10.1002/acr.25348.

11. Antoniou KM, Distler O, Gheorghiu AM, Moor CC, Vikse J, Bizymi N, et al. ERS/EULAR clinical practice guidelines for connective tissue disease-associated interstitial lung disease developed by the task force for connective tissue disease-associated interstitial lung disease of the European Respiratory Society (ERS) and the European Alliance of Associations for Rheumatology (EULAR) Endorsed by the European Reference Network on rare respiratory diseases (ERN-LUNG). Ann Rheum Dis 2026; 85:22-60. doi: 10.1016/j.ard.2025.08.021.

12. Cereser L, Marchesini F, Di Poi E, Quartuccio L, Zabotti A, Zuiani C, et al. Structured report improves radiology residents' performance in reporting chest high-resolution computed tomography: a study in patients with connective tissue disease. Diagn Interv Radiol 2022;28:569-75. doi: 10.5152/dir.2022.21488

13. Raghu G, Collard HR, Egan JJ, Martinez FJ, Behr J, Brown KK, et al. An official ATS/ERS/JRS/ALAT statement: idiopathic pulmonary fibrosis: evidence-based guidelines for diagnosis and management. Am J Respir Crit Care Med 2011;183:788-824. doi: 10.1164/rccm.2009-040GL.

14. Wiwatana T, Nontakorn A, Siwasak J, Asma N, Boonjing S, Geater SL. High-Resolution Computed Tomography (HRCT) disease patterns and survival times in patients with interstitial lung disease at a University Tertiary Hospital in Southern Thailand from 2006 to 2012. Asian J Med Radiol Res 2021;9:80-6. doi: dx.doi.org/10.47009/ajmrr.2021.9.2.16.

15. Raghu G, Remy-Jardin M, Myers JL, Richeldi L, Ryerson CJ, Lederer DJ, et al. Diagnosis of idiopathic pulmonary fibrosis. An official ATS/ERS/JRS/ALAT clinical practice guideline. Am J Respir Crit Care Med 2018;198:e44-e68. doi: 10.1164/rccm.201807-1255ST.

16. Sánchez RP, Fernández-Fabrellas E, Samper GJ, Montañana MLD, Vilar LN. Visual HRCT score to determine severity and prognosis of idiopathic pulmonary fibrosis. Int J Respir Pulm Med 2018;5:084. doi: 10.23937/2378-3516/1410084.