Diffuse Lung Disease

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Conflict of Interest Disclosure

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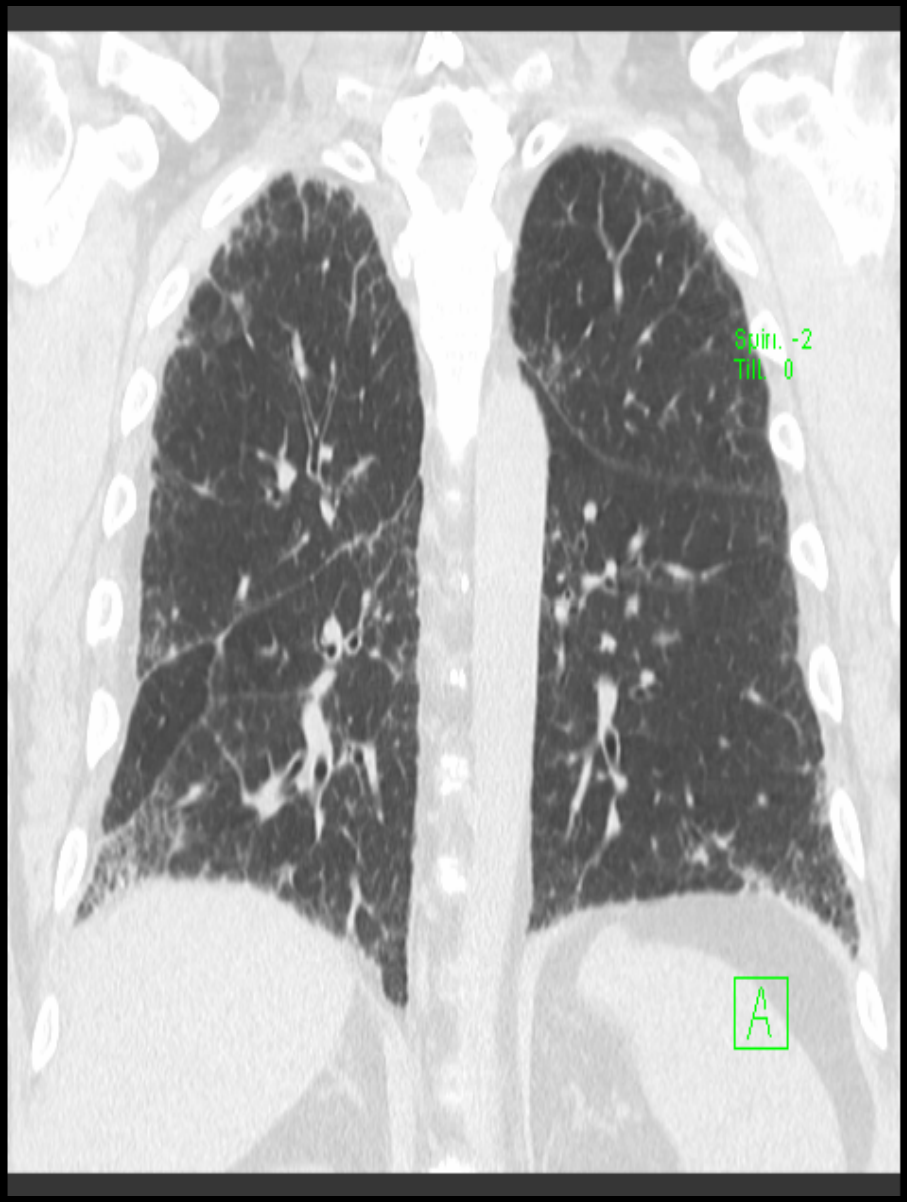
The problem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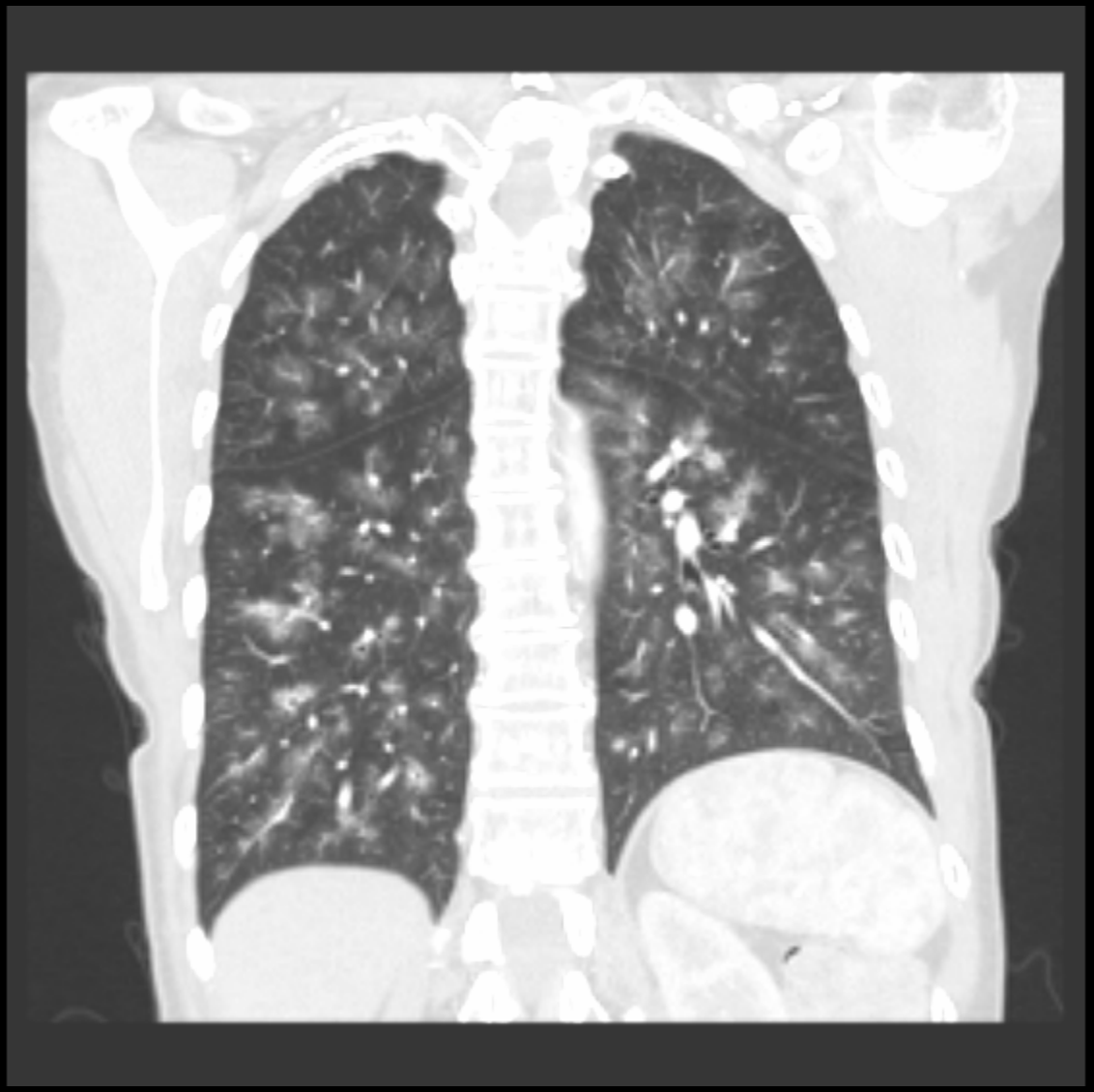

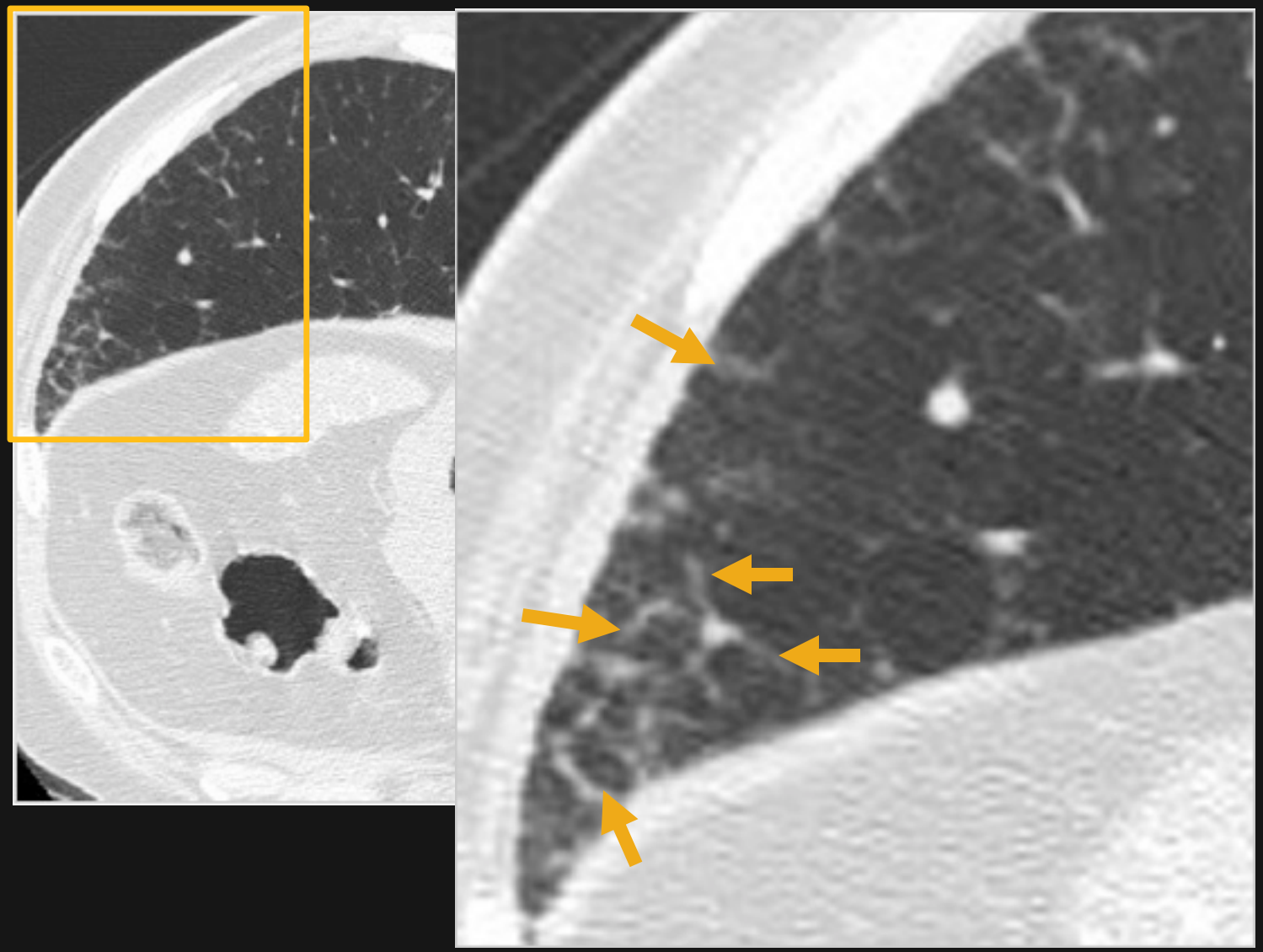

Courtesy of David A. Lynch, MD.

TABLE 1–1 Scope and Classification of Interstitial Lung Disease

	Reference
Collagen vascular disease associated	
Scleroderma	1–3
Polymyositis-Dermatomyositis	4,5
Systemic lupus erythematosus	6–8
Rheumatoid arthritis	9–11
Ankylosing spondylitis	12
Mixed connective tissue disease	13,14
Primary Sjögren's syndrome	15,16
Behcet's syndrome	17,18
Drug and treatment induced	
Antibiotics	
Nitrofurantoin	19
Sulfasalazine	20
Cephalosporin	21
Antiarrhythmics	
Amiodarone	22
Tocainide	23
Propranolol	24,25
Antiinflammatory	
Gold	26–28
Penicillamine	29
Anticonvulsant	
Dilantin	30
Chemotherapeutic Agents	31
Antibiotics	
Mitomycin C	32
Bleomycin	33,34
Alkylating Agents	
Busulfan	35
Cyclophosphamide	36
Chlorambucil	37
Melphalan	38
Antimetabolites	
Methotrexate	39,40
Azathioprine	41
Cytosine Arabinoside	42,43
Nitrosoureas	44
Carmustine (BCNU)	45
Lomustine (CCNU)	46
Other Cytotoxic Drugs	
Procarbazine	47
Nilutemide	48
Drug and treatment induced—cont'd	
Dietary Supplement	
L-Tryptophan	49
Dopaminergic drugs	
Bromocryptine	50
Radiation	51,52
Oxygen	53,54
Paraquat	55,56
Primary or unclassified disease related	
Sarcoidosis	57
Eosinophilic granuloma	58
Amyloidosis	59
Lymphangioleiomyomatosis	60
Tuberous sclerosis	61
Neurofibromatosis	62
Lymphangitic carcinomatosis	63
Gaucher's disease	64
Niemann-Pick disease	65
Hermansky-Pudlak syndrome	66
Adult respiratory distress syndrome	67,68
Bone marrow transplantation	69,70
Acquired immune deficiency syndrome	71
Postinfection	72,73
Wegener's granulomatosis	74
Giant cell arteritis	75
Respiratory bronchiolitis	76
Interstitial cardiogenic edema	
Pulmonary veno-occlusive disease	77
Alveolar filling diseases	
Alveolar proteinosis	78
Diffuse alveolar hemorrhage	79
Lipoid pneumonia	80
Bronchioloalveolar carcinoma	81
Pulmonary lymphoma	82
Chronic aspiration	83
Eosinophilic pneumonia	84–86
Alveolar microlithiasis	87
Alveolar sarcoidosis	57
Metastatic pulmonary calcification	

TABLE 1–1 Scope and Classification of Interstitial Lung Disease—cont'd

	Reference
Occupational and environmental exposure related	
Inorganic	
Silicosis	88–90
Asbestosis	91,92
Talc pneumoconiosis	93,94
Kaolin pneumoconiosis	95
Diatomaceous earth pneumoconiosis	96
Aluminum oxide fibrosis	97
Berylliosis	98,99
Hard metal fibrosis	100
Coal workers' pneumoconiosis	101
Baritosis (barium)	102
Antimony pneumonoconiosis	103
Silicosiderosis (iron oxide)	104
Polyvinyl chloride pneumoconiosis	105
Shale pneumoconiosis	106
Siderosis (arc welder's lung)	107
Stannosis (tin)	108
Silicone pneumonitis	109
Organic (hypersensitivity pneumonitis)	110–131
Bagassosis (sugar cane)	
Bird breeder's lung (pigeons, parakeets, and so on)	
Chicken handler's lung	
Duck fever	
Dove handler's disease	
Farmer's lung	
Coffee worker's lung	
Tobacco grower's lung	
Coptic disease (mummy wrappings)	
Cheese worker's lung	
Fishmeal worker's lung	
Furrier's lung	
Meat worker's lung	
Mushroom worker's lung	
Paprika splitter's lung	
Miller's lung (wheat flour)	
Wood worker's disease	
Sequoiosis	
Occupational and environmental exposure related—cont'd	
Organic (hypersensitivity pneumonitis)—cont'd	
Maple bark stripper's lung	
Malt worker's lung	
Tea grower's lung	
Suberosis (cork)	
Lycoperdonosis (lycoperdon puffballs)	
Compost lung	
Humidifier lung	
Sauna taker's lung	
Woodman's disease (oak and maple)	
Pauli's hypersensitivity pneumonitis (reagent)	
Pituitary snuff taker's disease	
Detergent worker's lung (isocyanates)	
Japanese summer-type hypersensitivity	
Thatched roof lung	
Familial hypersensitivity pneumonitis (wood dust)	
Vineyard sprayer's lung	
Laboratory worker's lung (rat urine)	
Mollusk shell hypersensitivity pneumonitis	
Fibrotic disorders of unknown etiology	
Acute interstitial pneumonia	132
Idiopathic pulmonary fibrosis	133
Familial idiopathic pulmonary fibrosis	134
Lymphocytic interstitial pneumonia	135
Bronchiolitis obliterans organizing pneumonia (cryptogenic organizing pneumonia)	136,137
Autoimmune hemolytic anemia	138
Idiopathic thrombocytopenic purpura	139
Cryoglobulinemia	140
Inflammatory bowel disease	141
Coeliac disease	142
Whipple's disease	143
Primary biliary cirrhosis	144
Chronic active hepatitis	145
Cryptogenic cirrhosis	145

The interstitial lung diseases include a wide variety of pulmonary disorders that diffusely affect all anatomic compartments of the lung.

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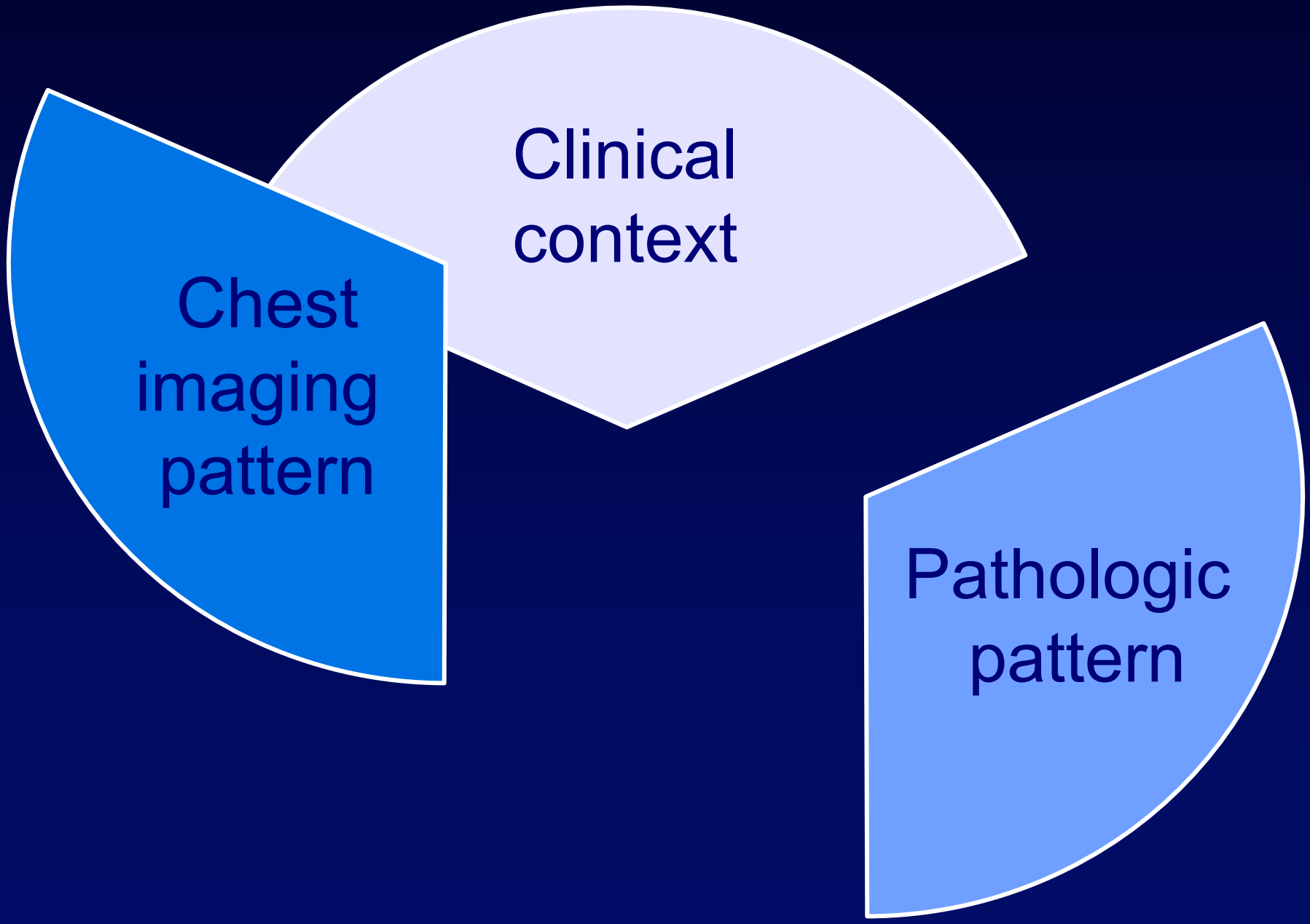
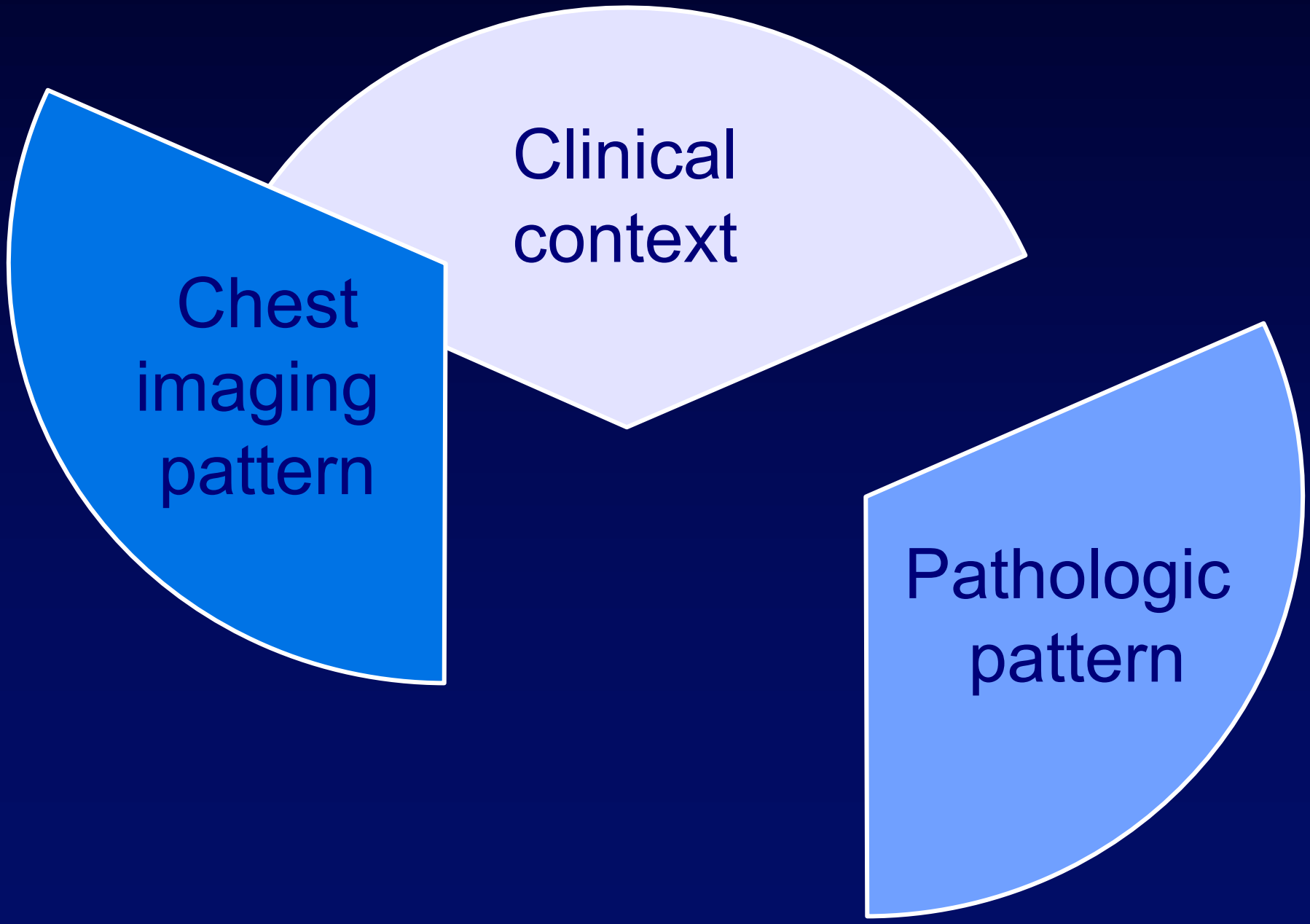
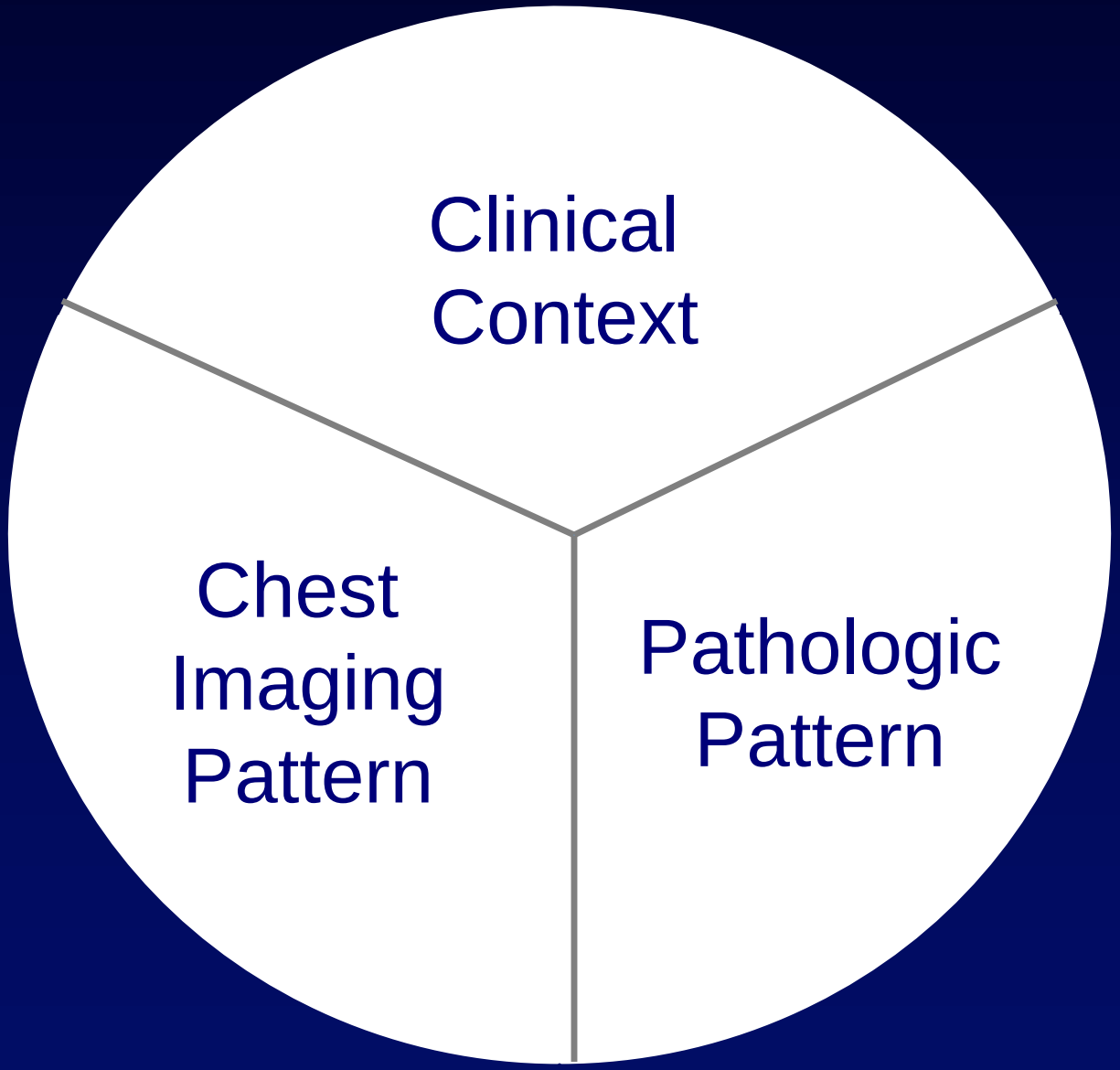
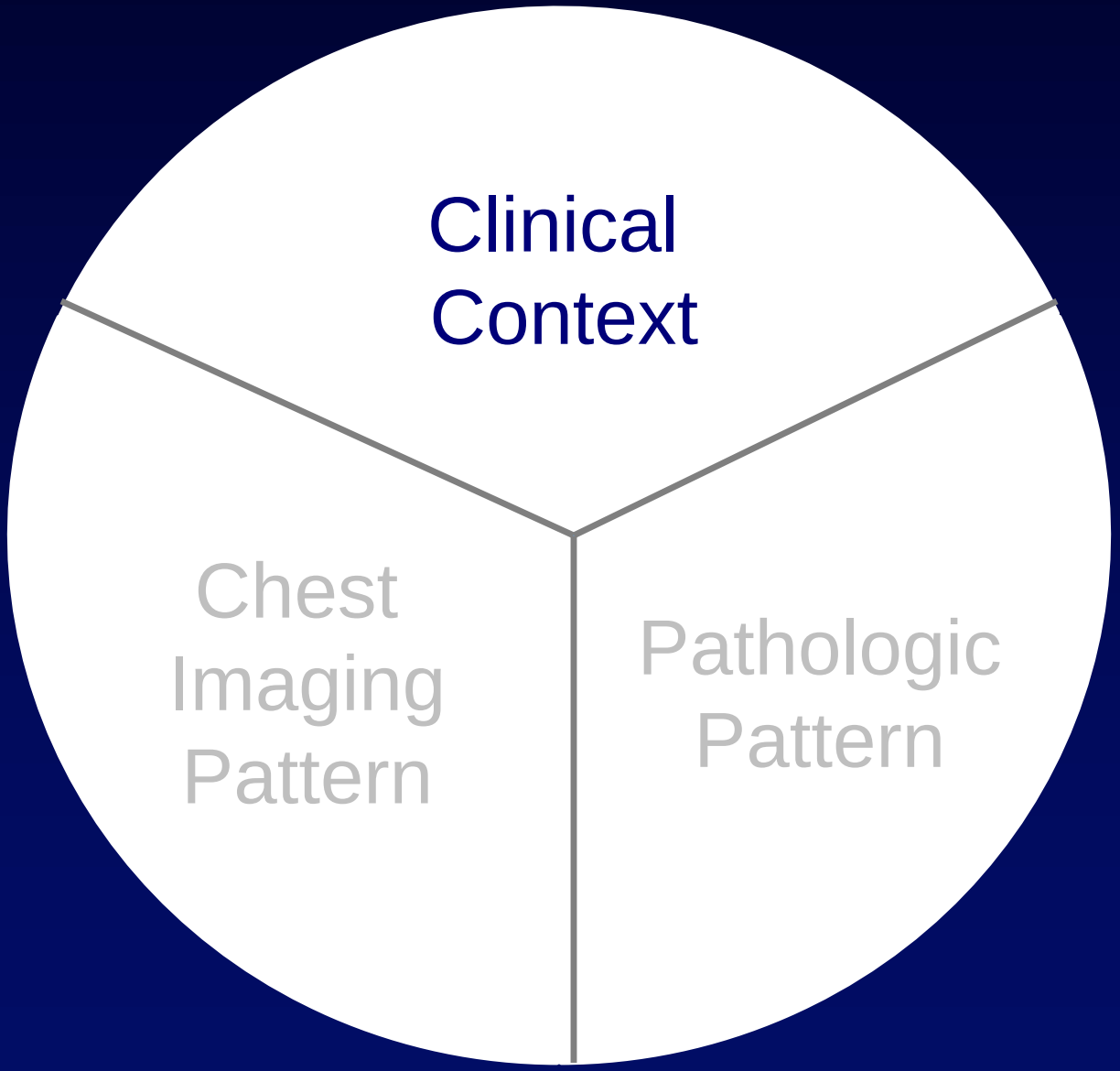
The final diagnosis often requires information from a number specialities


Clinical context
Chest imaging pattern
Pathologic pattern


Clinical context
Chest imaging pattern
Pathologic pattern

Diagnosis


Clinical
Context
Chest
Imaging
Pattern
Pathologic
Pattern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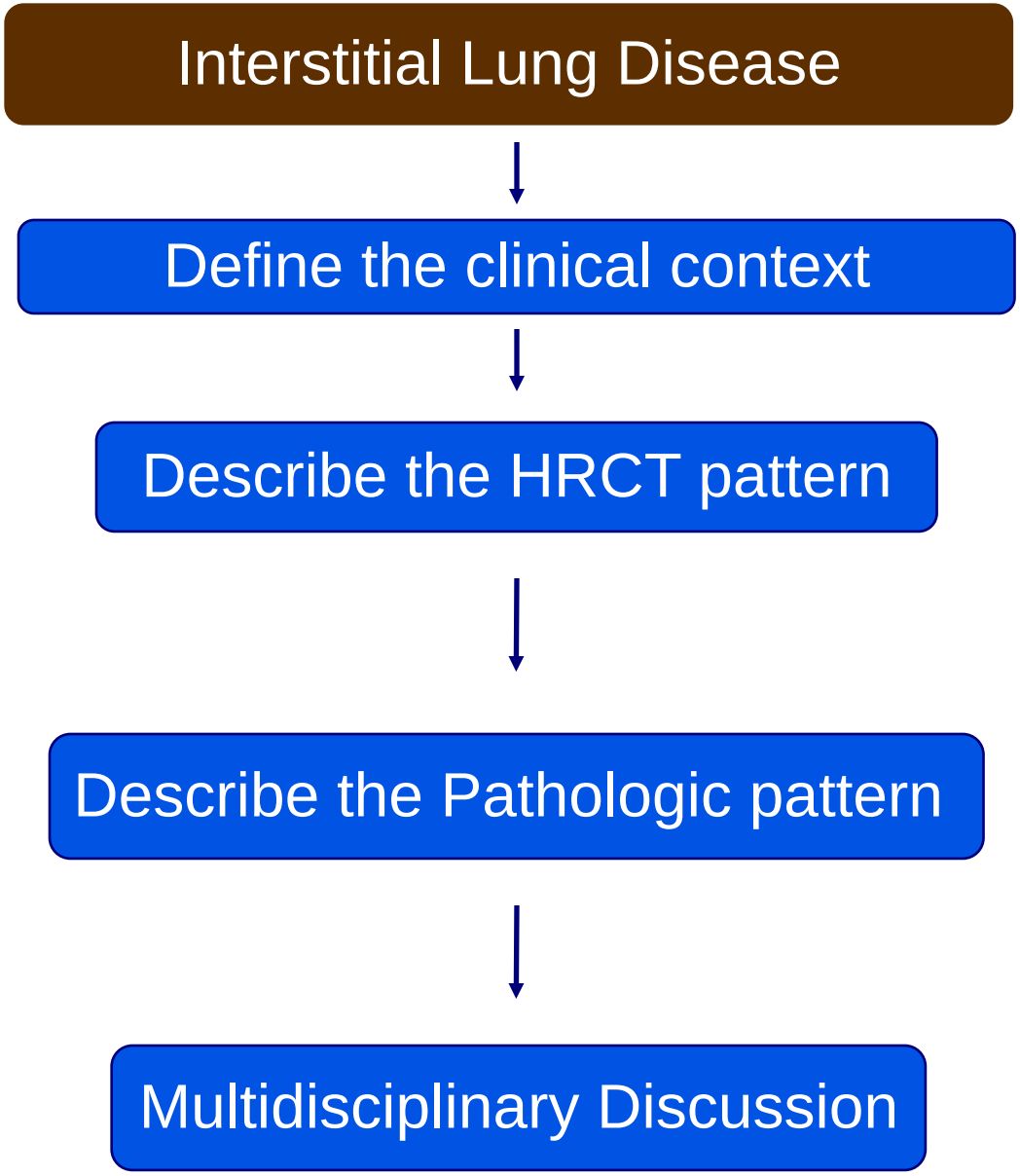
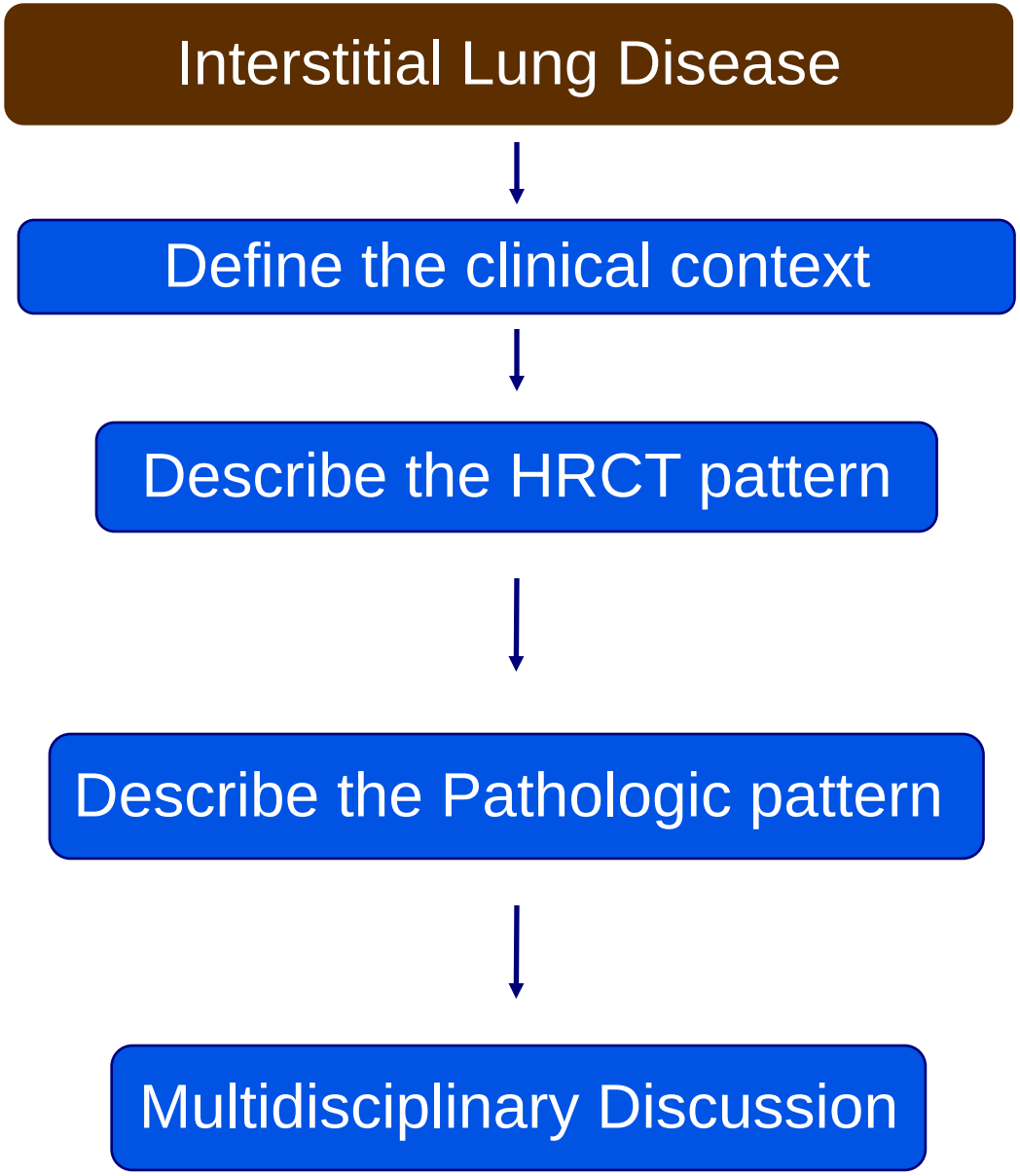

Interstitial Lung Disease
Define the clinical context
Describe the HRCT pattern
Describe the Pathologic pattern
Multidisciplinary Discussion

The clinical context improves the diagnostic accuracy of radiologists

Degree of Difficulty Based on the Diagnosis	No Cue	Irrelevant Cue	Directive (Correct) Cue
Normal (obvious)	0.81	0.78	0.81
Normal (difficult)	0.73	0.73	0.73
Abnormal (difficult)	0.44	0.48	0.67
Abnormal (obvious)	0.92	0.82	0.89

Potchen, J Am Coll Radiol 2006; 3:423-432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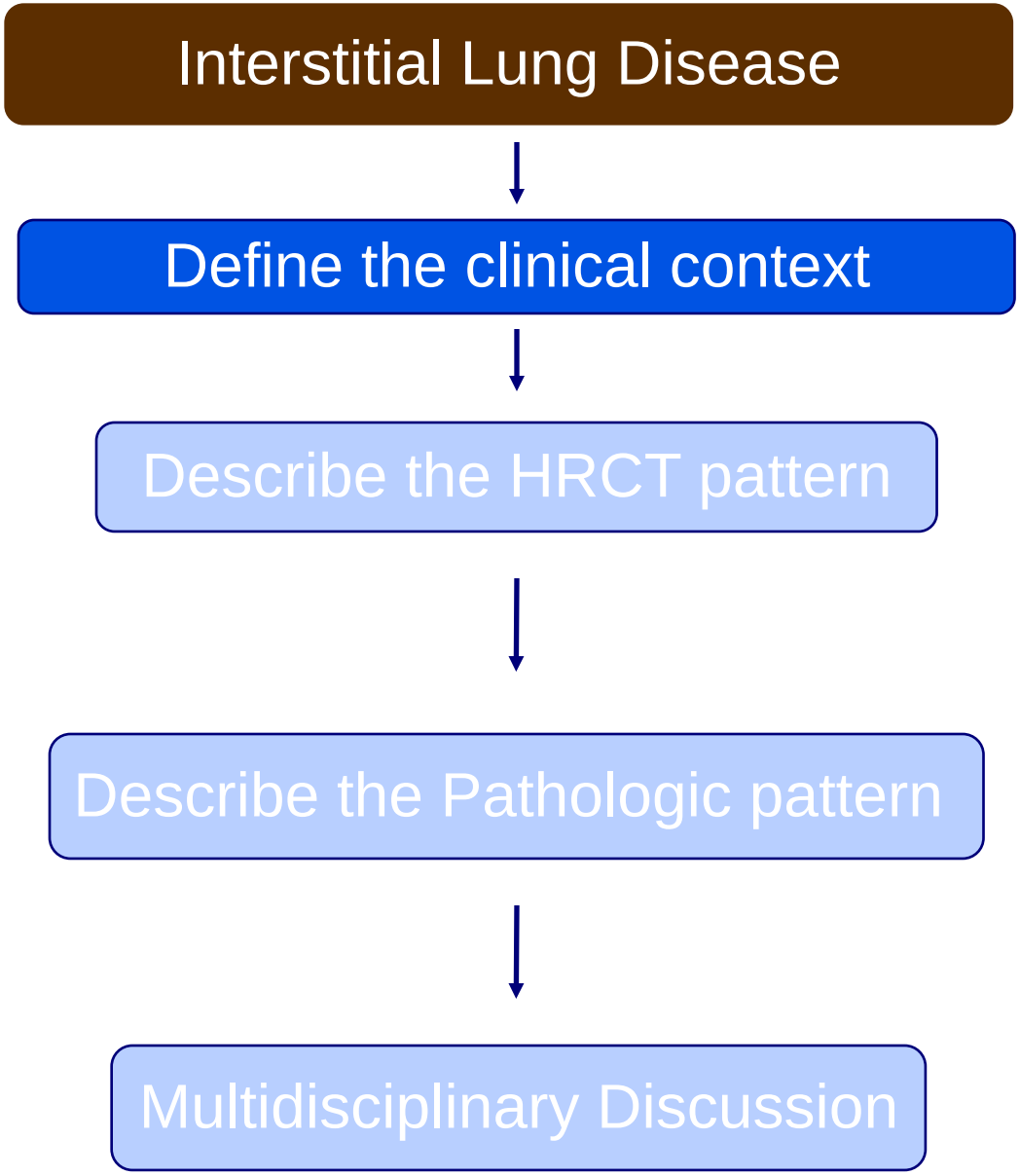
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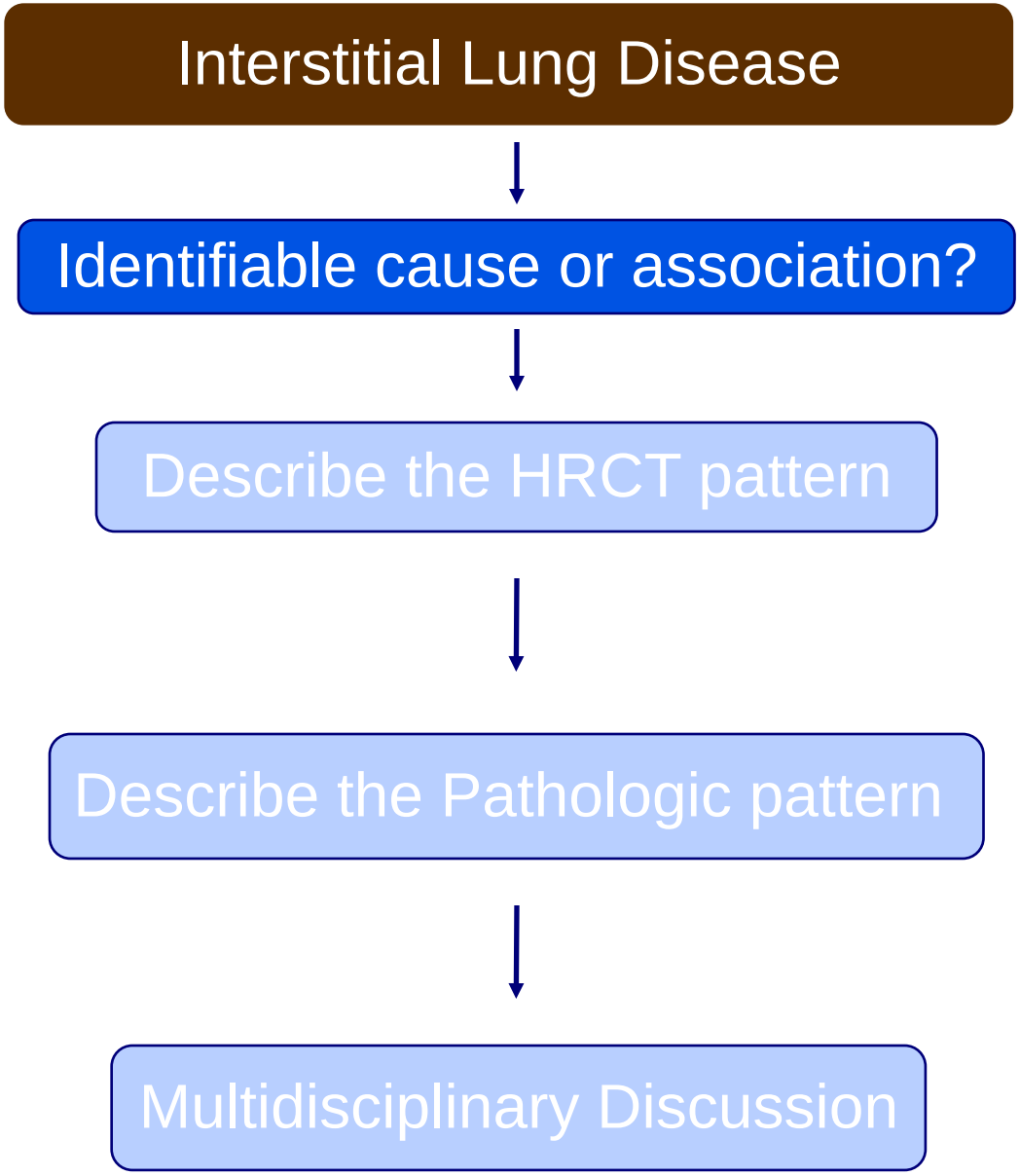
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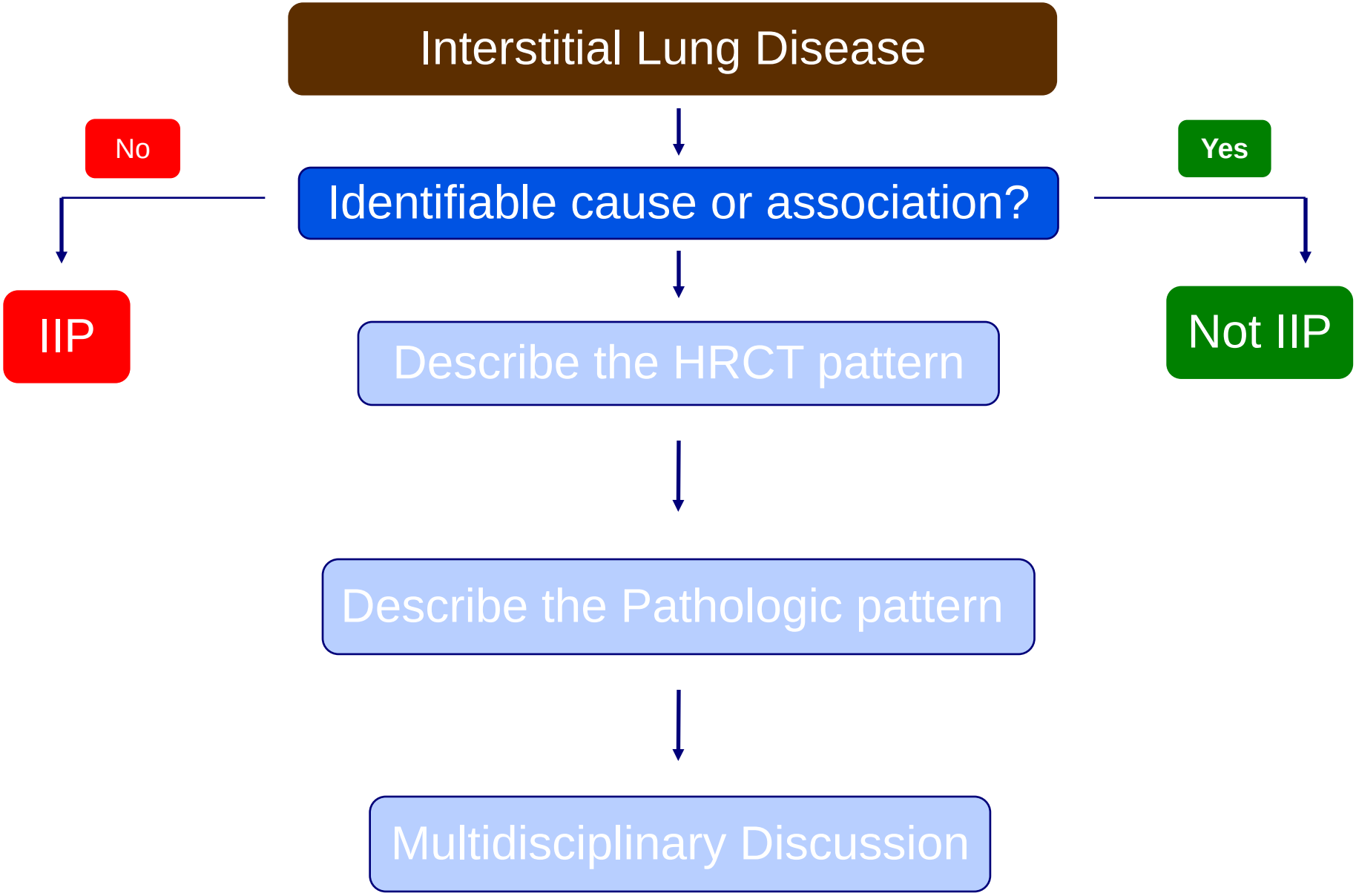
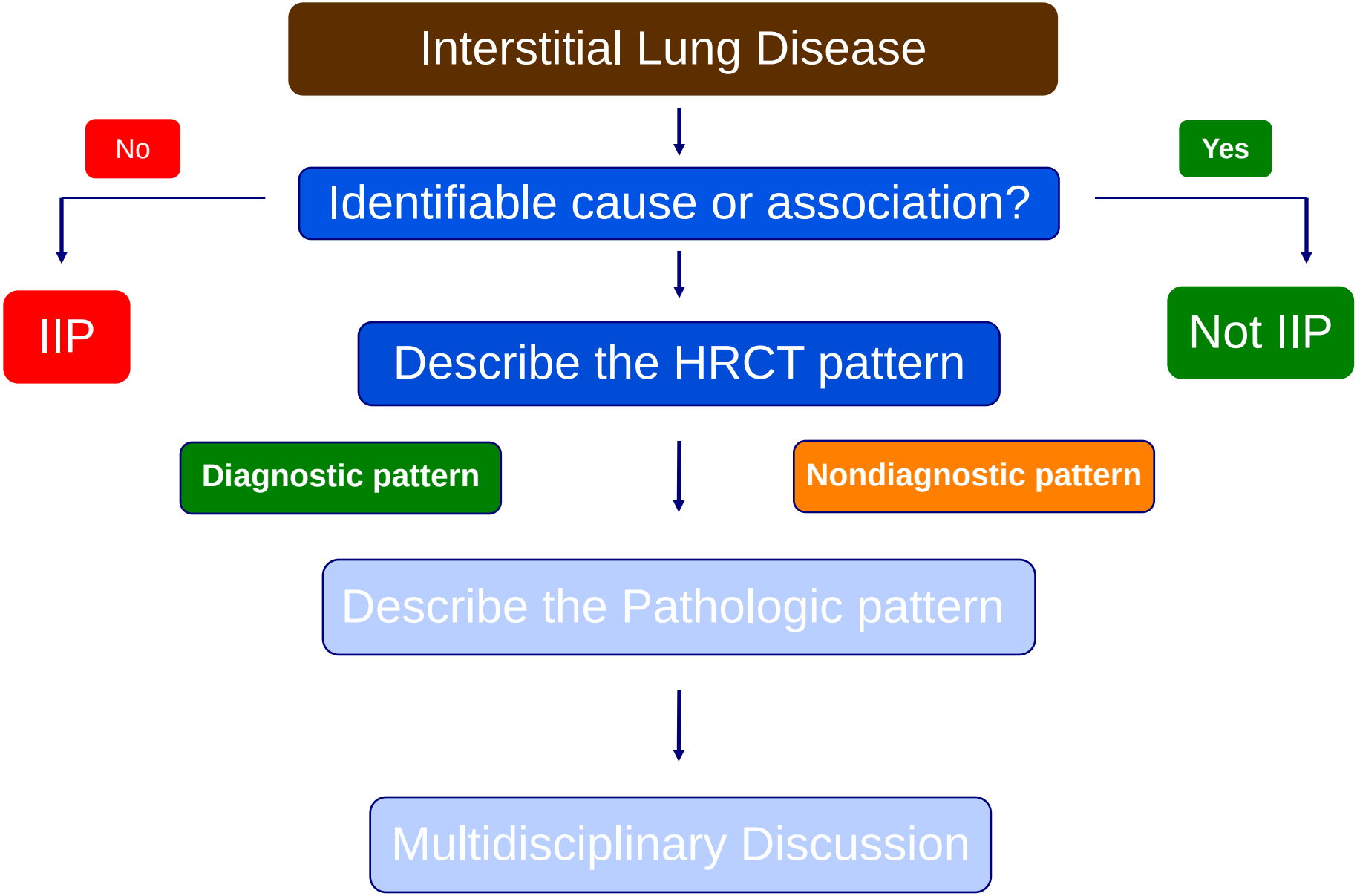
Identifiable cause or association?
Describe the HRCT pattern
Describe the Pathologic pattern
Multidisciplinary Discussion


Interstitial Lung Disease
Identifiable cause or association?
No
Yes
IIP
Not IIP
Describe the HRCT pattern
Describe the Pathologic pattern
Multidisciplinary Discussion


Interstitial Lung Disease
Identifiable cause or association?
No
Yes
IIP
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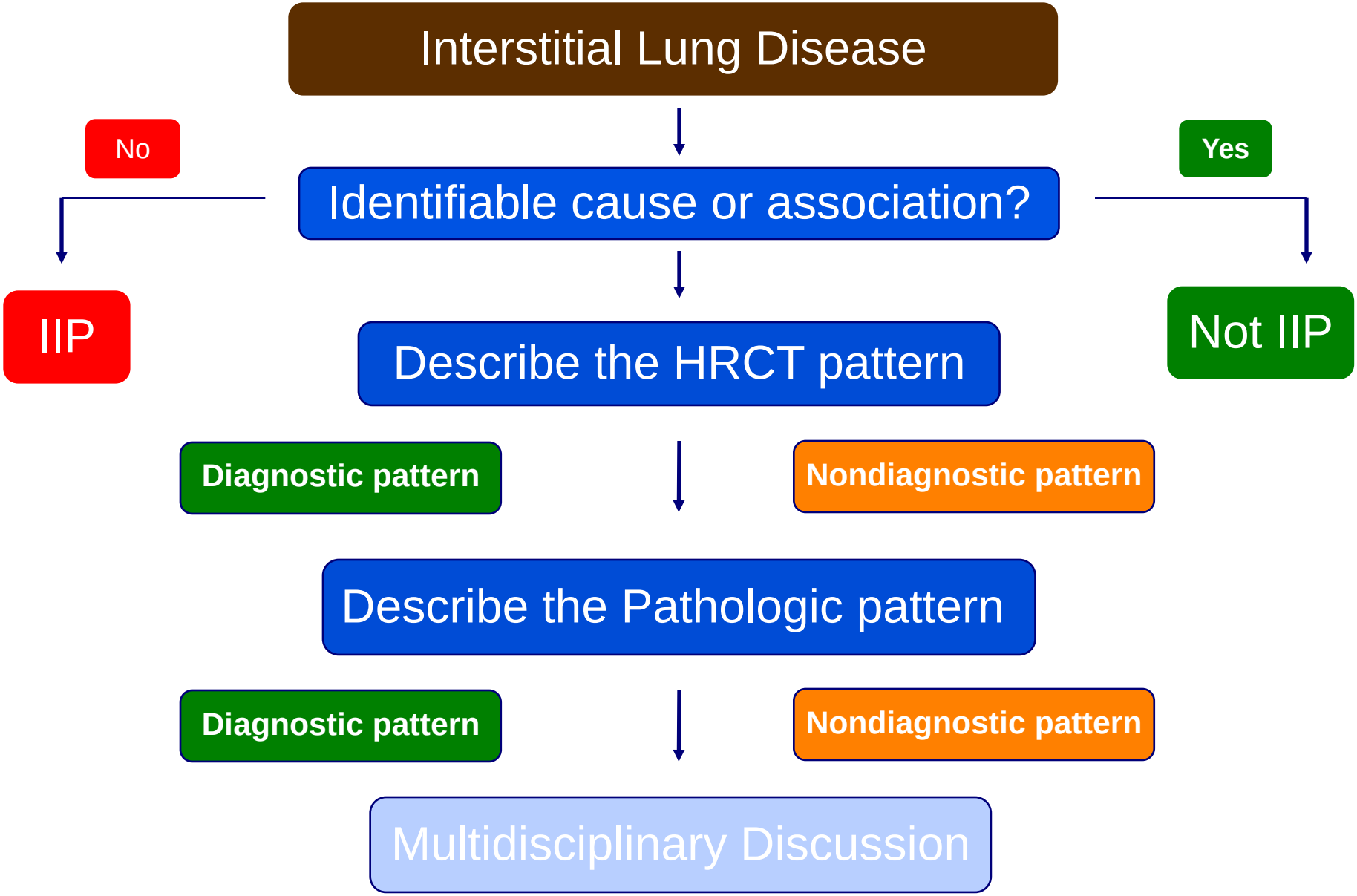
Describe the HRCT pattern
Diagnostic pattern
Nondiagnostic pattern
Describe the Pathologic pattern
Multidisciplinary Discussion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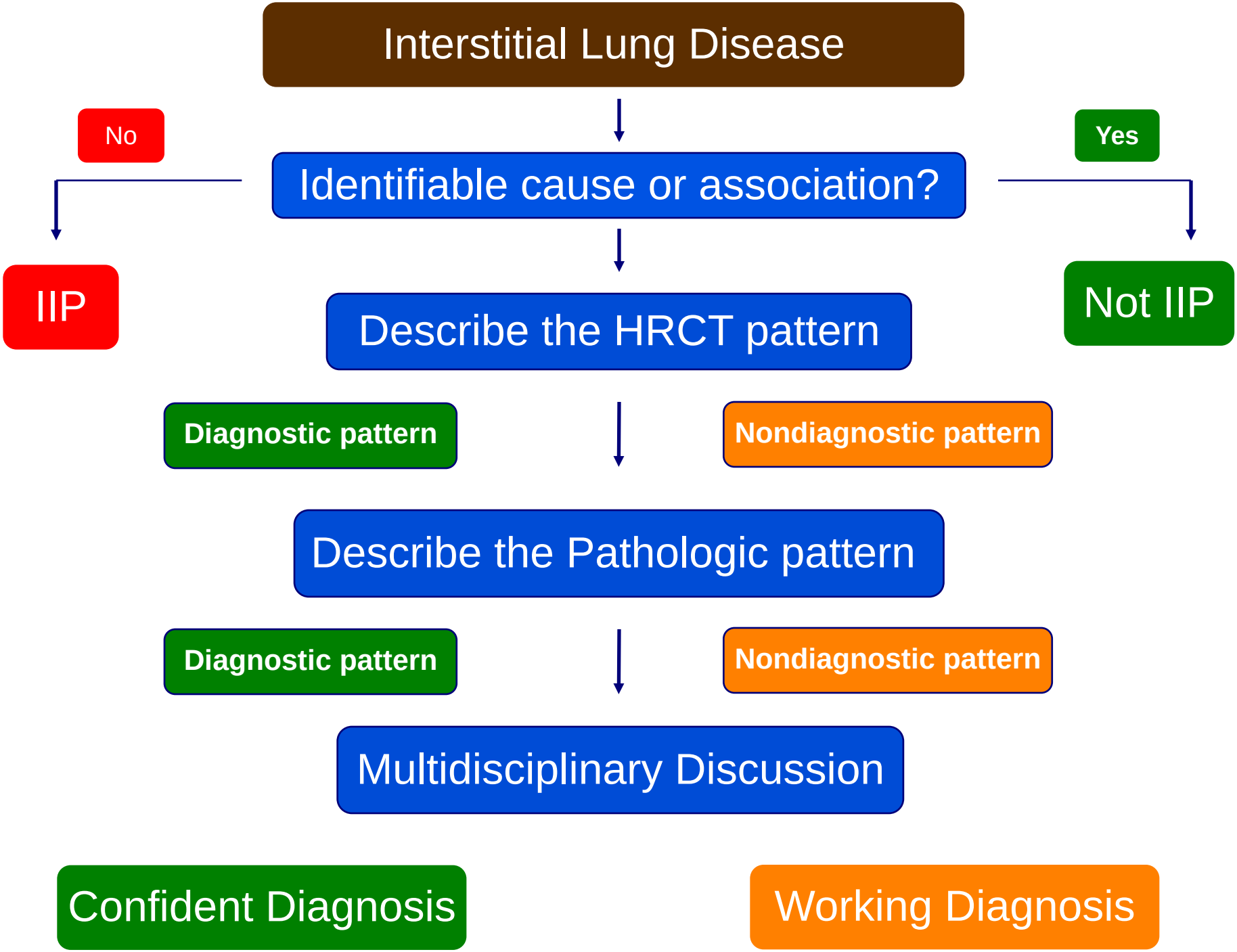
Diagnostic pattern
Nondiagnostic pattern
Multidisciplinary Discussion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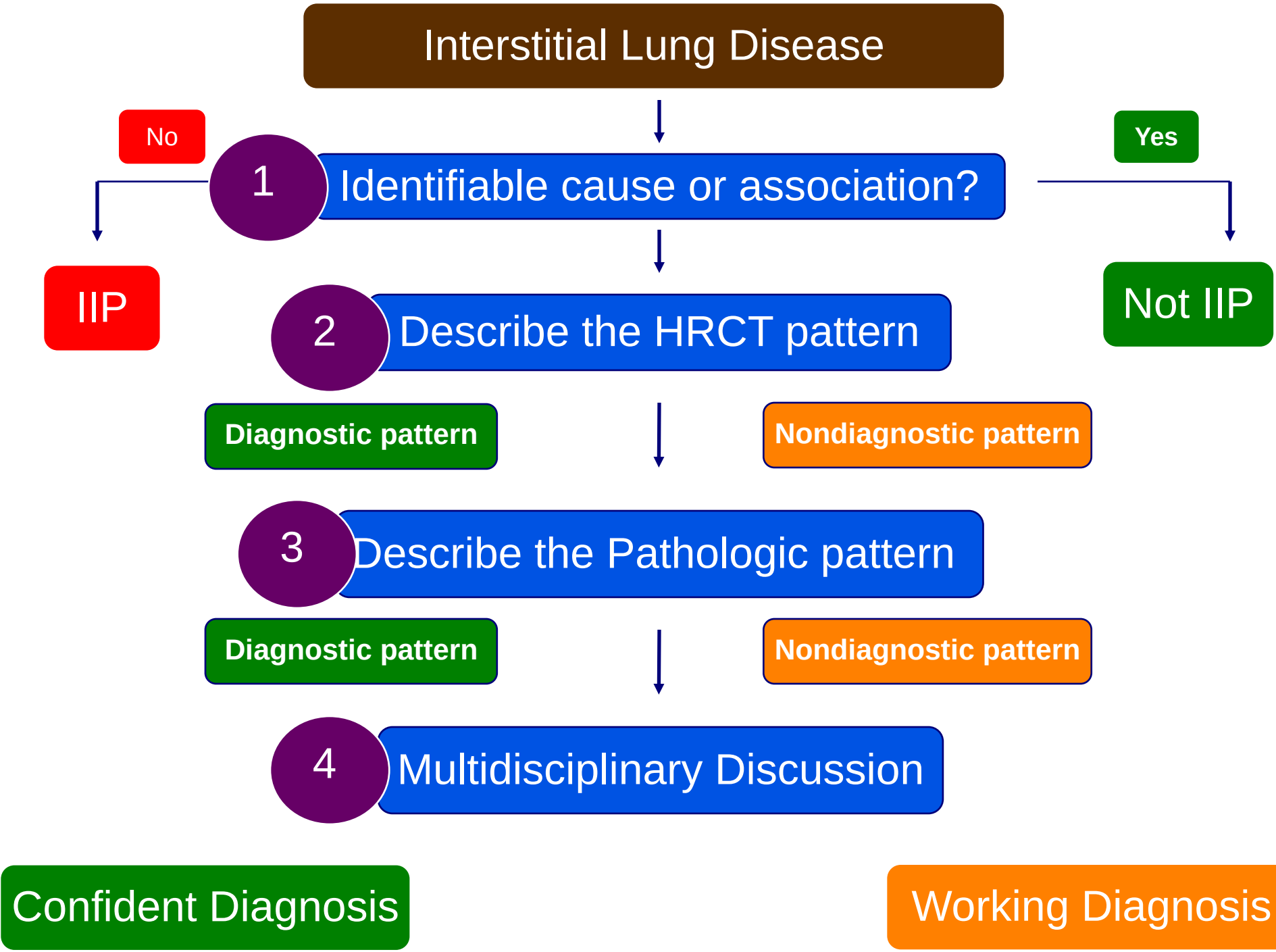
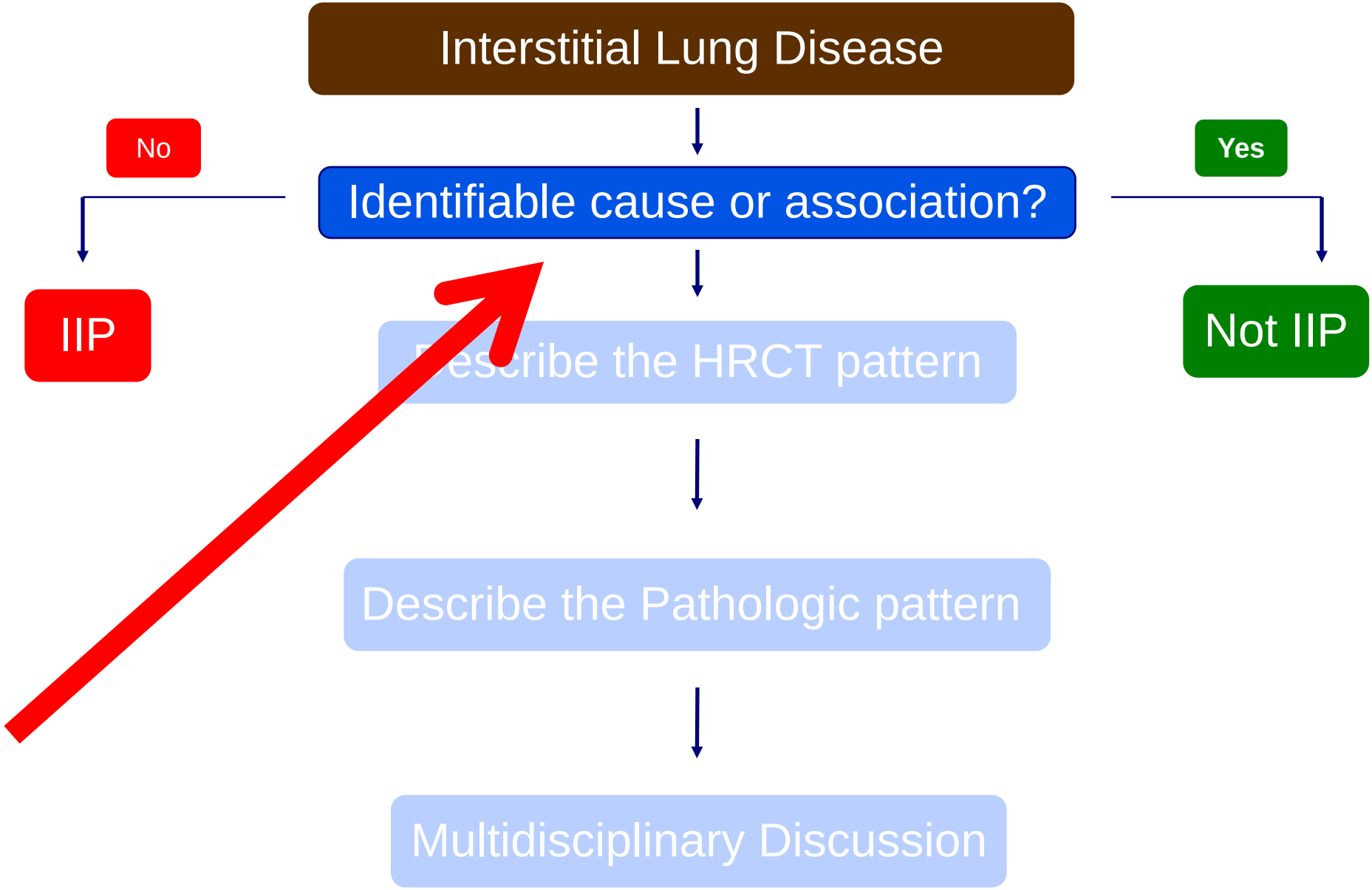
Describe the HRCT pattern
Diagnostic pattern
Nondiagnostic pattern
Describe the Pathologic pattern
Diagnostic pattern
Nondiagnostic pattern
Multidisciplinary Discussion
Confident Diagnosis
Working Diagnosis

The problem areas


Interstitial Lung Disease
No
1
Identifiable cause or association?
Yes
IIP
Not IIP
2
Describe the HRCT pattern
Diagnostic pattern
Nondiagnostic pattern
3
Describe the Pathologic pattern
Diagnostic pattern
Nondiagnostic pattern
4
Multidisciplinary Discussion
Confident Diagnosis
Working Diagnosis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Multidisciplinary Discussion

Useful clinical questions

Review

Diagnostic criteria for idiopathic pulmonary fibrosis: a Fleischner Society White Paper

David A Lynch, Nicola Sverzellati, William D Travis, Kevin K Brown, Thomas V Colby, Jeffrey R Galvin, Jonathan G Goldin, David M Hansell, Yoshikazu Inoue, Takeshi Johkoh, Andrew G Nicholson, Shandra L Knight, Suhail Raoof, Luca Richeldi, Christopher J Ryerson, Jay H Ryu, Athol U Wells

Lynch DA, et al Lancet Respir Med 2018; 6: 138–53

Panel 2: Clinical checklist for alternative diagnoses

General

- What are the severity, duration, and pace of the primary respiratory symptoms?

Systemic autoimmune disease

- Are symptoms or signs of a systemic autoimmune disorder present?
- Are serological findings suggestive of an autoimmune disorder? Eg, rheumatoid arthritis, systemic sclerosis, polymyositis and dermatomyositis, Steven-Johnson syndrome, or mixed-connective tissue disease.

Other systemic disease (sarcoid, immune-system abnormalities)

- Is there evidence of other organ involvement?

Hypersensitivity pneumonitis

- Does the patient have a clinically relevant exposure to an antigen, generally inhaled, known to result in the development of hypersensitivity pneumonitis?
- Do they have pets, including birds?
- What are they exposed to in their home or work environment? Is there water damage?
- Is the exposure clinically significant?
- Is the intensity clinically significant?
- Is there a temporal association between the exposure and symptom onset?

Occupational and environmental lung disease

- Does the patient work in an occupation known to be at risk for the development of lung disease?
- What do they do in their current job and previous jobs?
- What avocational exposures exist?

Drug-induced lung disease

- Does the patient use any medicines, herbs, vitamins, supplements, or recreational drugs that could account for the presence of lung disease?

Specific genetic syndromes

- Is there a family history of lung fibrosis?
- Is there evidence of premature graying, cryptogenic cirrhosis, aplastic anaemia, myelodysplasia, macrocytosis, or thrombocytopenia?

Lynch DA, et al Lancet Respir Med 2018; 6: 138–53

Clinical questions

Lynch DA, et al Lancet Respir Med 2018; 6: 138–53

Clinical questions

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Lynch DA, et al Lancet Respir Med 2018; 6: 138–53

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Lynch DA, et al Lancet Respir Med 2018; 6: 138–53

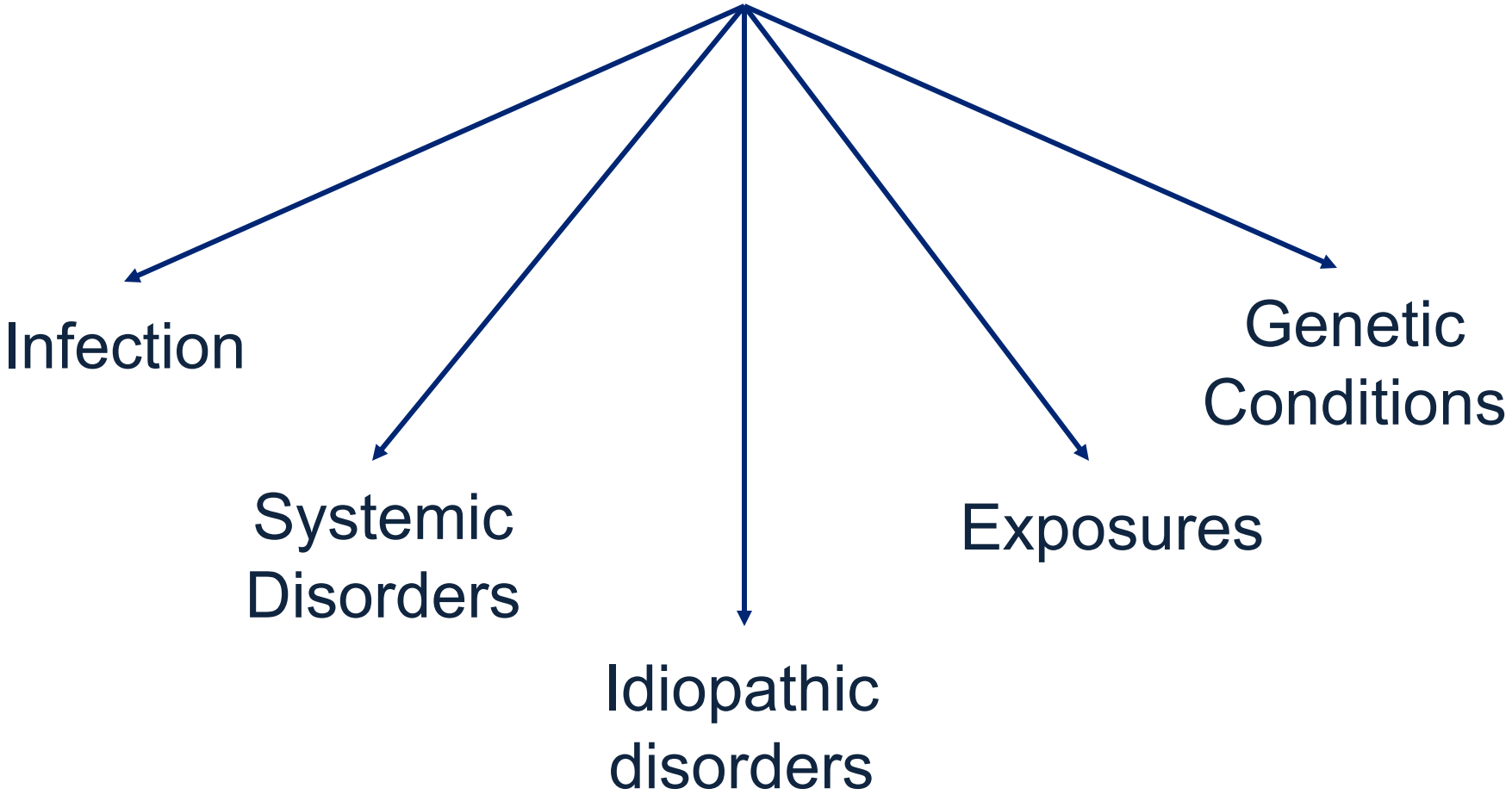
Clinical questions

Specific genetic syndromes

- Is there a family history of lung fibrosis?
- Is there evidence of premature graying, cryptogenic cirrhosis, aplastic anaemia, myelodysplasia, macrocytosis, or thrombocytopenia in the patient or the extended family?

Lynch DA, et al Lancet Respir Med 2018; 6: 138–53

Interstitial Lung Disease



Idiopathic Interstitial Pneumonias

Idiopathic Pulmonary Fibrosis (IPF)

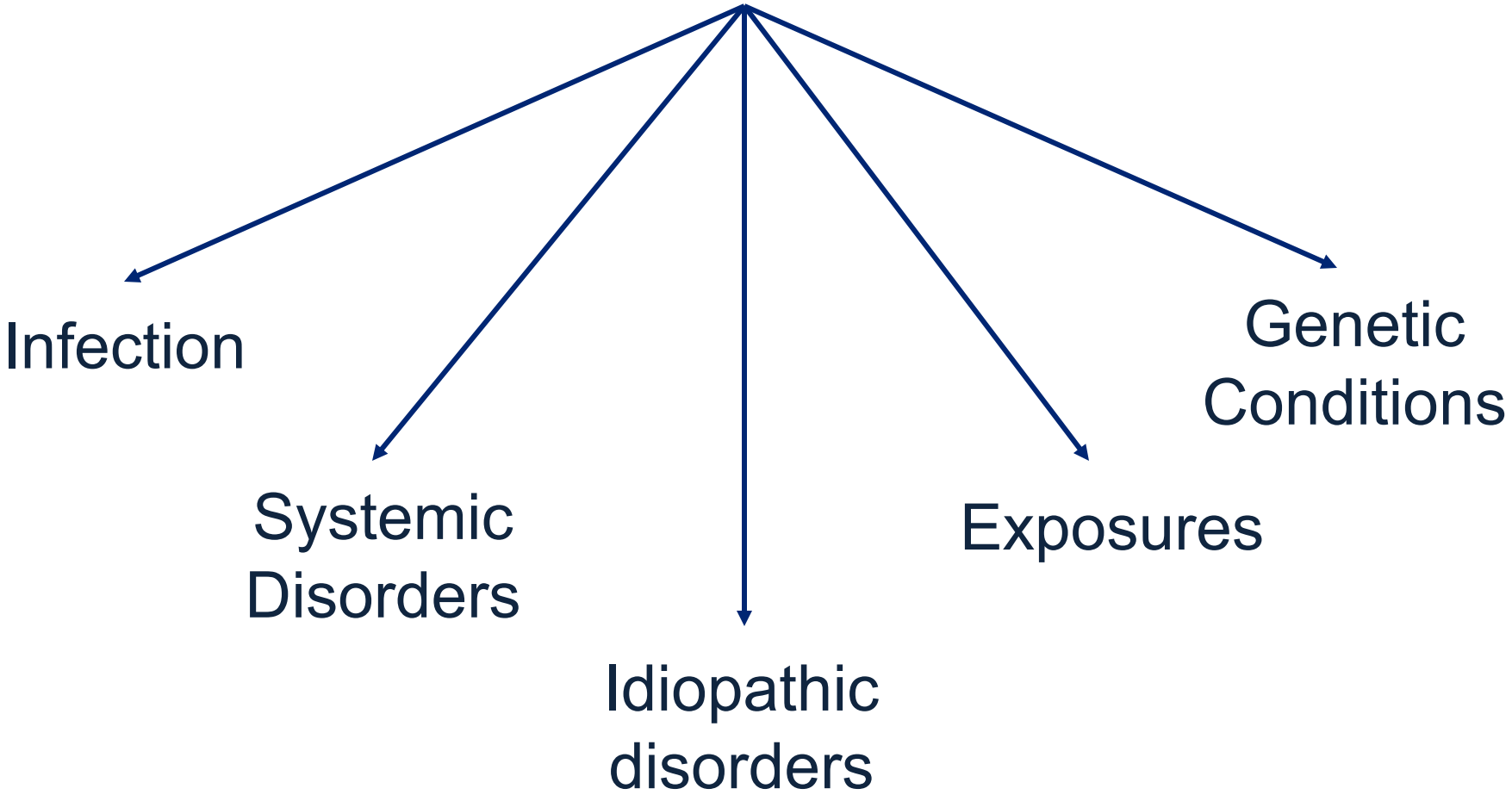
Nonspecific Interstitial Pneumonia (NSIP)

Cryptogenic Organizing Pneumonia (COP)

Desquamative Interstitial Pneumonia/
Respiratory Bronchiolitis-ILD (DIP/RBILD)

Acute Interstitial Pneumonia (AIP)

Interstitial Lung Disease

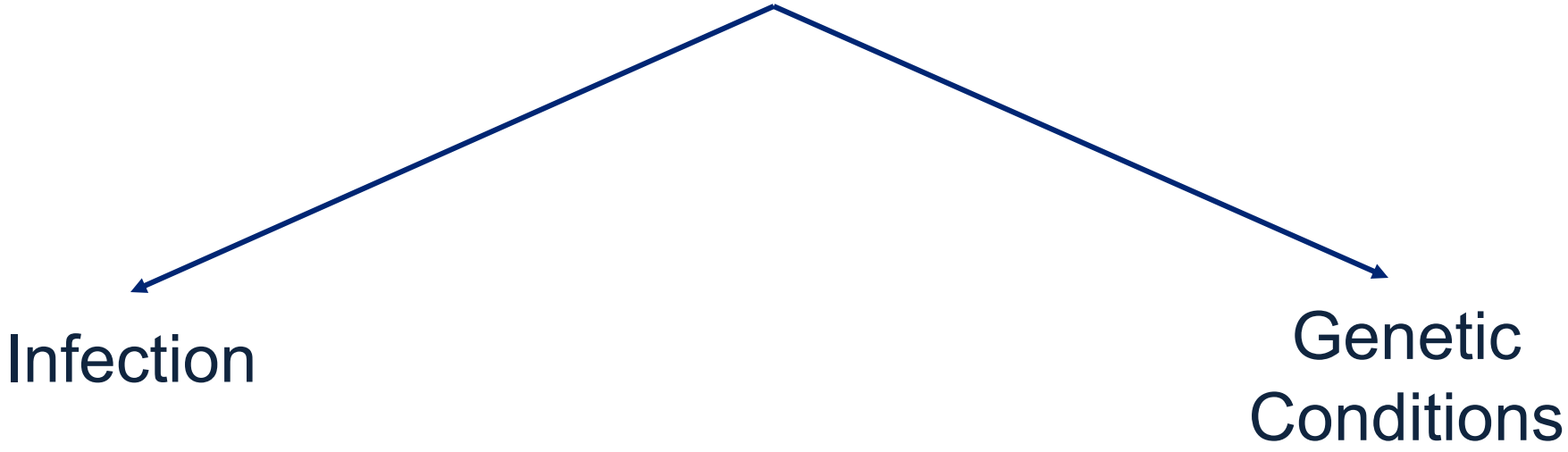


Infections

Atypical Pneumonia

Mycoplasma
Chlamydia
Viral
Pneumocystis
Mycobacterial

Interstitial Lung Disease



Genetic conditions

Hermansky Pudlak

Familial Interstitial Pneumonia

Defects in which of the following pathways have been associated with pulmonary fibrosis?

1. Airway mucins
2. Telomere length
3. Toll-like receptors
4. Desmoplakin
5. All of the above

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1. Airway mucins
2. Telomere length
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4. Desmoplakin
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Summary of common genetic variants linked to idiopathic pulmonary fibrosis (IPF)

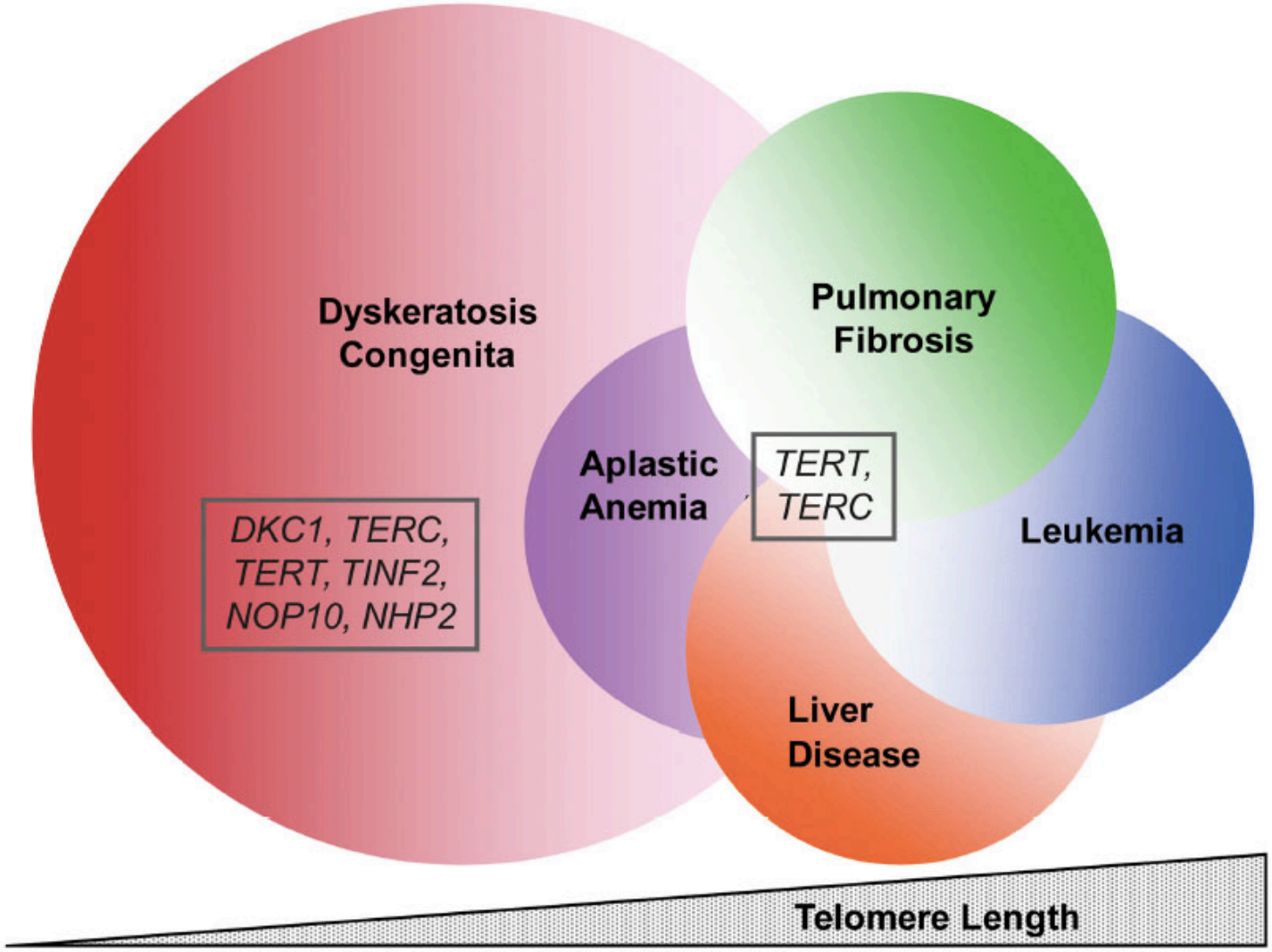
Locus	Gene	SNP	IPF risk	IPF survival
2q14	*IL1RN*	rs408392	Yes	
		rs419598	Yes	
		rs2637988	Yes	
3q26	*hTR*	rs6793295	Yes	
4q13	*IL8*	rs4073	Yes	
		rs2227307	Yes	
4q22	*FAM13A*	rs2609255	Yes	
4q35	*TLR3*	rs3775291		Harmful
5p15	*TERT*	rs2736100	Yes	
6p21	*CDKN1A*	rs2395655	Yes	Harmful
6p21	*HLA-DRB1*		Yes	
6q24	*DSP*	rs2076295	Yes	
7q22	Intergenic	rs47274443	Yes	
10q24	*OBFC1*	rs11191865	Yes	
11p15	*MUC5B*	rs35705950	Yes	Protective
	MUC2	rs7934606	Yes	
	TOLLIP	rs111521887	Yes	
	TOLLIP	rs5743894	Yes	
	TOLLIP	rs2743890	Yes	Protective
13q34	*ATP11A*	rs1278769	Yes	
14q21	*MDGA2*	rs7144383	Yes	
15q14–15	Intergenic	rs2034650	Yes	
17q13	*TP53*	rs12951053	No	Harmful
	TP53	rs12602273	No	Harmful
17q21	*MAPT*	rs1981997	Yes	
17q21	*SPPL2C*	rs17690703	Yes	
19q13	*DPP9*	rs12610495	Yes	
19q13	*TGFB1*	rs1800470	No	Harmful

Kropski JA et al, Eur Respir J 2015

Rare genetic variants linked to familial interstitial pneumonia (FIP)

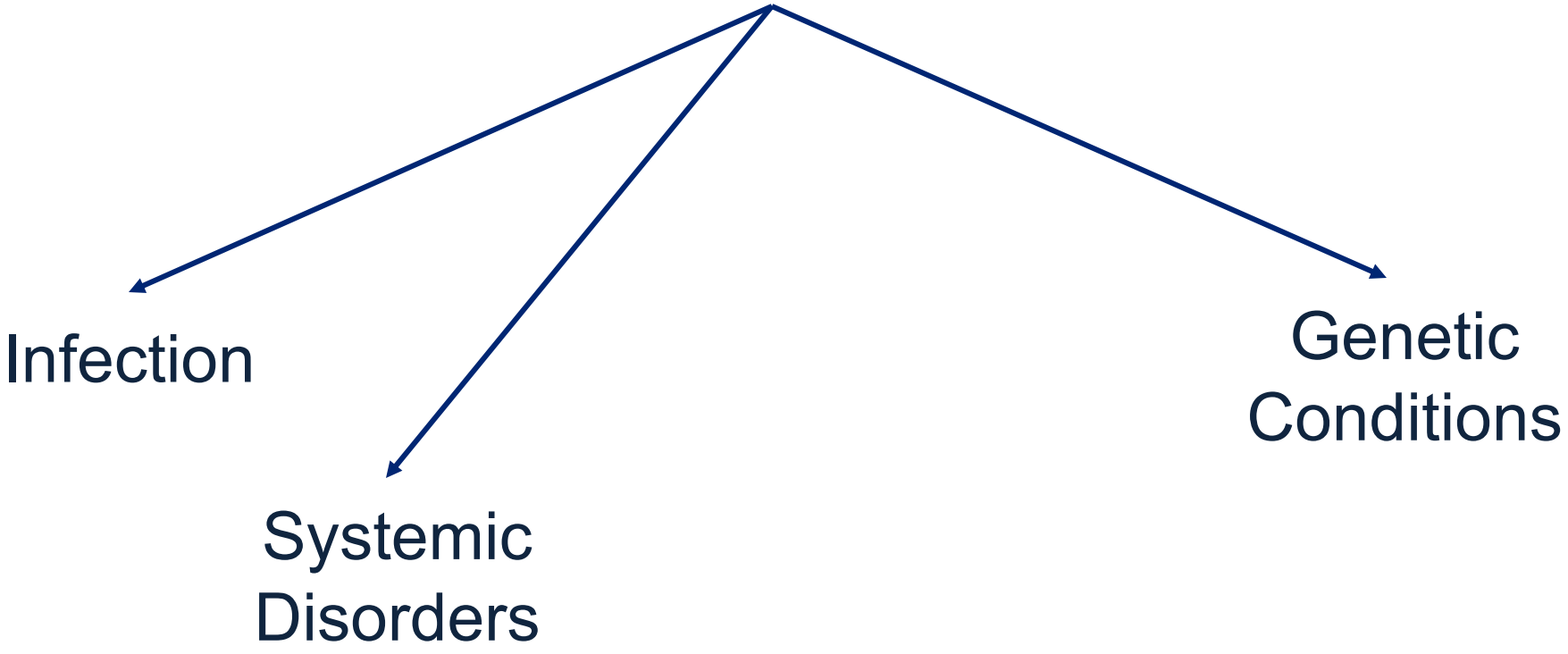
Gene	Reported % of FIP
TERT	8–15%
RTEL1	5%
hTR	<1%
DKC1	<1%
TINF2	<1%
SFTPC	2–25%
SFTPA2	<1%
ABCA3	<1%
Unknown	75–85%

Kropski JA et al, Eur Respir J 2015



Savage and Bertuch, Genet Med 2010 December; 12(12)

Interstitial Lung Disease



Systemic Disorders

Sarcoidosis

Connective Tissue Disease

Immunodeficiency

Malignancy

Rheumatoid arthritis (RA)-specific autoantibodies in patients with interstitial lung disease and absence of clinically apparent articular RA

Alison M. Gizinski · Margherita Mascolo · Jennifer L. Loucks · Alma Kervitsky · Richard T. Meehan · Kevin K. Brown · V. Michael Holers · Kevin D. Deane

Gizinski, Clin Rheumatol 2009

Lung disease with anti-CCP antibodies but not rheumatoid arthritis or connective tissue disease

Aryeh Fischer*, Joshua J. Solomon, Roland M. du Bois, Kevin D. Deane, Amy L. Olson, Evans R. Fernandez-Perez, Tristan J. Huie, Allen D. Stevens, Mary B. Gill, Avi M. Rabinovitch, David A. Lynch, David A. Burns, Isabel S. Pineiro, Steve D. Groshong, Rosane D. Duarte Achcar, Kevin K. Brown, Richard J. Martin, Jeffrey J. Swigris

Fischer et al, Respiratory Medicine 2012

It is common for patients with ILD to have signs/symptoms/serologic abnormalities suggestive, but not diagnostic of an autoimmune disease. What impact does this have on prognosis?

1. Better response to immunosuppression
2. Shorter survival
3. Longer survival
4. Higher risk of treatment complications
5. Unknown

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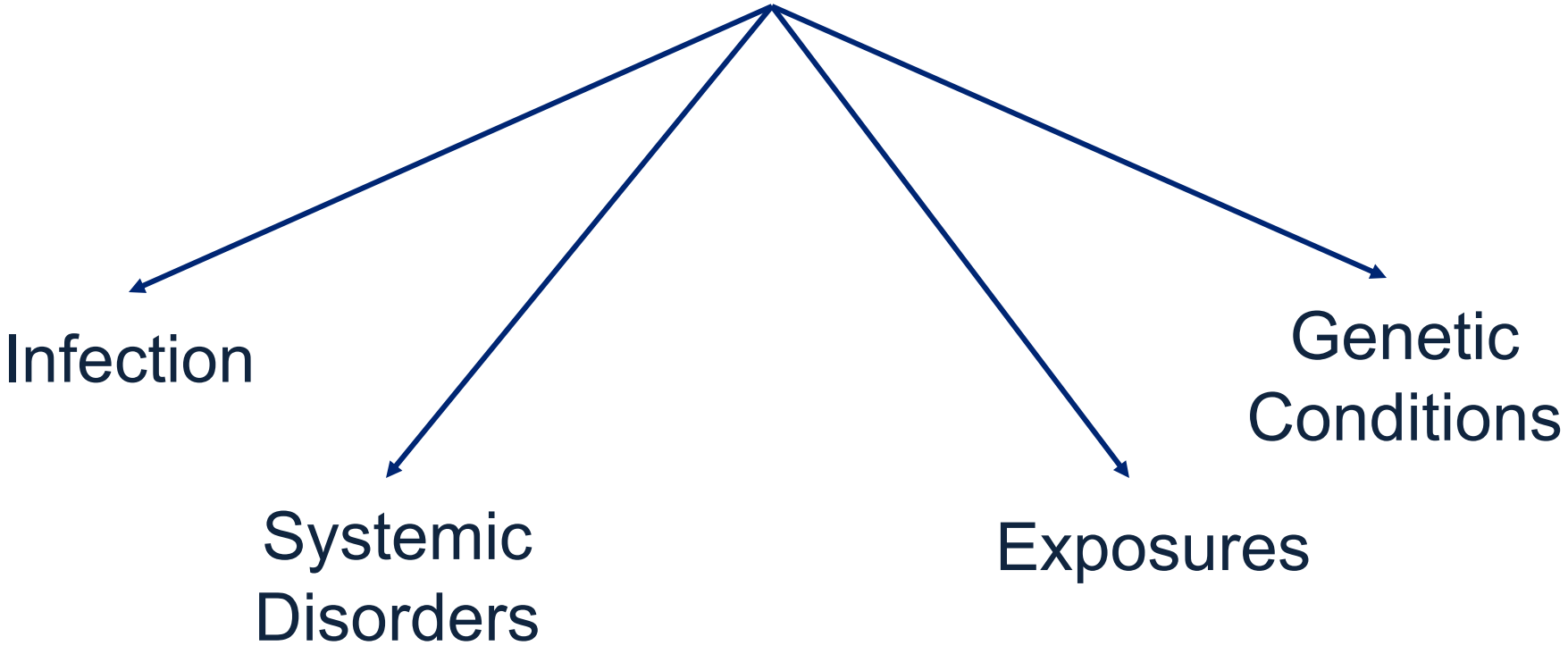
5. Unknown

ERS/ATS TASK FORCE
INTERSTITIAL LUNG DISEASE

An official European Respiratory Society/ American Thoracic Society research statement: interstitial pneumonia with autoimmune features

Aryeh Fischer[1,17,18], Katerina M. Antoniou[2], Kevin K. Brown[3], Jacques Cadranel[4], Tamera J. Corte[5,18], Roland M. du Bois[6], Joyce S. Lee[7,18], Kevin O. Leslie[8], David A. Lynch[9], Eric L. Matteson[10], Marta Mosca[11], Imre Noth[12], Luca Richeldi[13], Mary E. Strek[12,18], Jeffrey J. Swigris[3,18], Athol U. Wells[14], Sterling G. West[15], Harold R. Collard[7,18,19] and Vincent Cottin[16,18,19], on behalf of the "ERS/ATS Task Force on Undifferentiated Forms of CTD-ILD"

Interstitial Lung Disease



Exposures

Medications/Drugs/Tobacco

Occupational

Avocational

Environmental

Accidental

ORIGINAL ARTICLE

Interstitial Lung Disease in India

Results of a Prospective Registry

Abstract

Rationale: Interstitial lung disease (ILD) is a heterogeneous group of acute and chronic inflammatory and fibrotic lung diseases. Existing ILD registries have had variable findings. Little is known about the clinical profile of ILDs in India.

Objectives: To characterize new-onset ILDs in India by creating a prospective ILD using multidisciplinary discussion (MDD) to validate diagnoses.

Methods: Adult patients of Indian origin living in India with new-onset ILD (27 centers, 19 Indian cities, March 2012–June 2015) without malignancy or infection were included. All had connective tissue disease (CTD) serologies, spirometry, and high-resolution computed tomography chest. ILD pattern was defined by high-resolution computed tomography images. Three groups independently made diagnoses after review of clinical data including that from prompted case report forms: local site investigators, ILD experts at the National Data Coordinating Center (NDCC; Jaipur, India) with MDD, and experienced ILD experts at the Center for ILD (CILD; Seattle, WA) with MDD. Cohen's κ was used to assess reliability of interobserver agreement.

Measurements and Main Results: A total of 1,084 patients were recruited. Final diagnosis: hypersensitivity pneumonitis in 47.3% (n = 513; exposure, 48.1% air coolers), CTD-ILD in 13.9%, and idiopathic pulmonary fibrosis in 13.7%. Cohen's κ: 0.351 site investigator/CILD, 0.519 site investigator/NDCC, and 0.618 NDCC/CILD.

Conclusions: Hypersensitivity pneumonitis was the most common new-onset ILD in India, followed by CTD-ILD and idiopathic pulmonary fibrosis; diagnoses varied between site investigators and CILD experts, emphasizing the value of MDD in ILD diagnosis. Prompted case report forms including environmental exposures in prospective registries will likely provide further insight into the etiology and management of ILD worldwide.

Keywords: interstitial lung disease; registry; India

Singh et al, Am J Respir Crit Care Med 2017; 195(6), 801–813

Which pathologic pattern is seen in patients with hypersensitivity pneumonitis?

1. Non-specific interstitial pneumonia (NSIP)
2. Usual interstitial pneumonia (UIP)
3. Airway-centered granulomatous pneumonitis
4. Organizing pneumonia
5. All of the above

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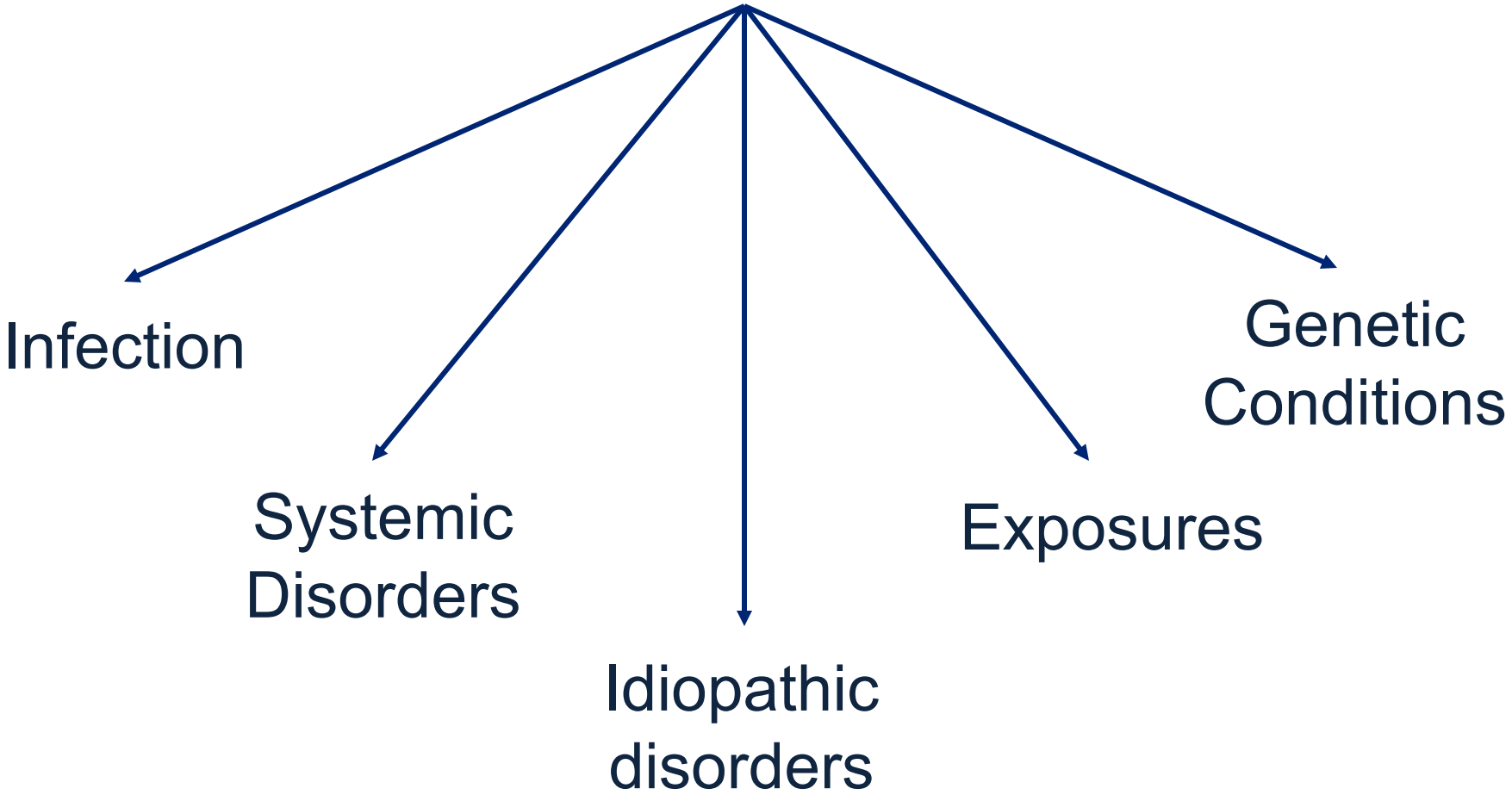
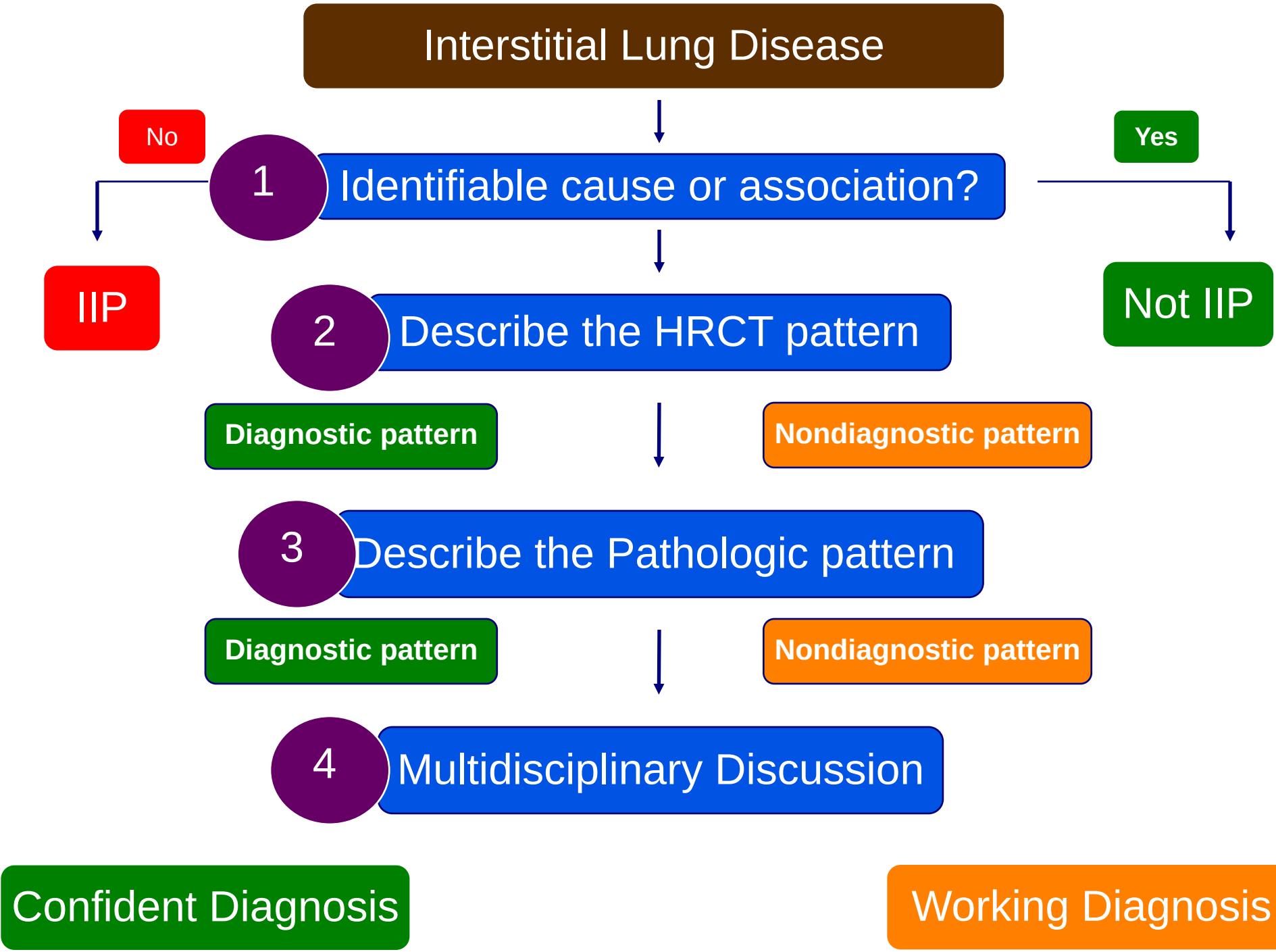
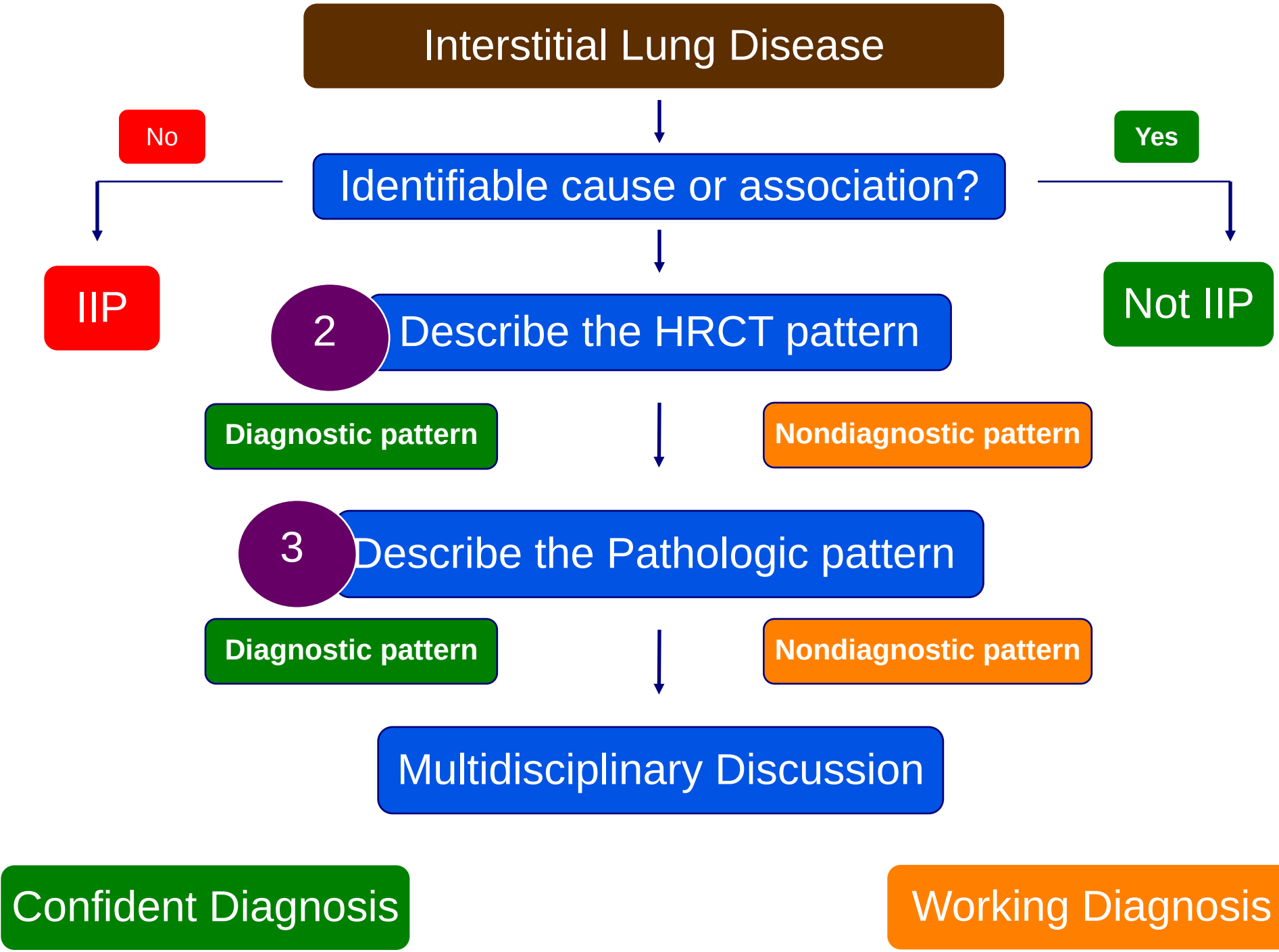
Interstitial Lung Disease




Interstitial Lung Disease
No
1
Identifiable cause or association?
Yes
IIP
Not IIP
2
Describe the HRCT pattern
Diagnostic pattern
Nondiagnostic pattern
3
Describe the Pathologic pattern
Diagnostic pattern
Nondiagnostic pattern
4
Multidisciplinary Discussion
Confident Diagnosis
Working Diagnosis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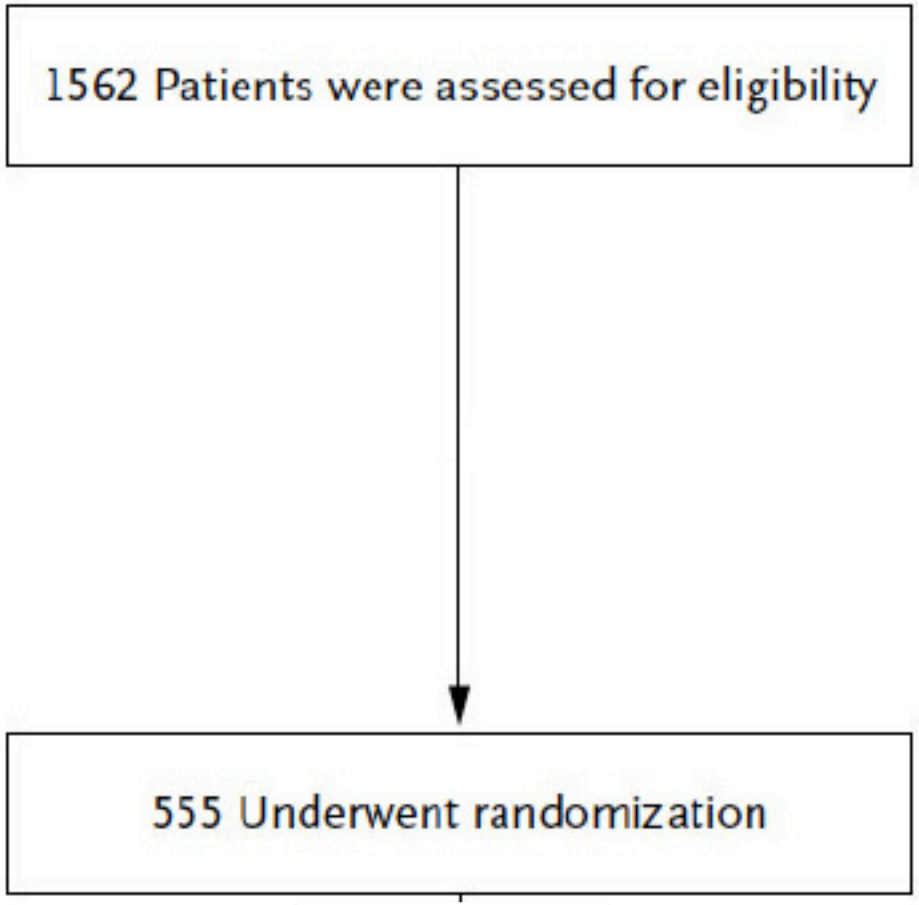
ASCEND/Pirfenidone Screen failures



King et al, New Engl J Med 2014

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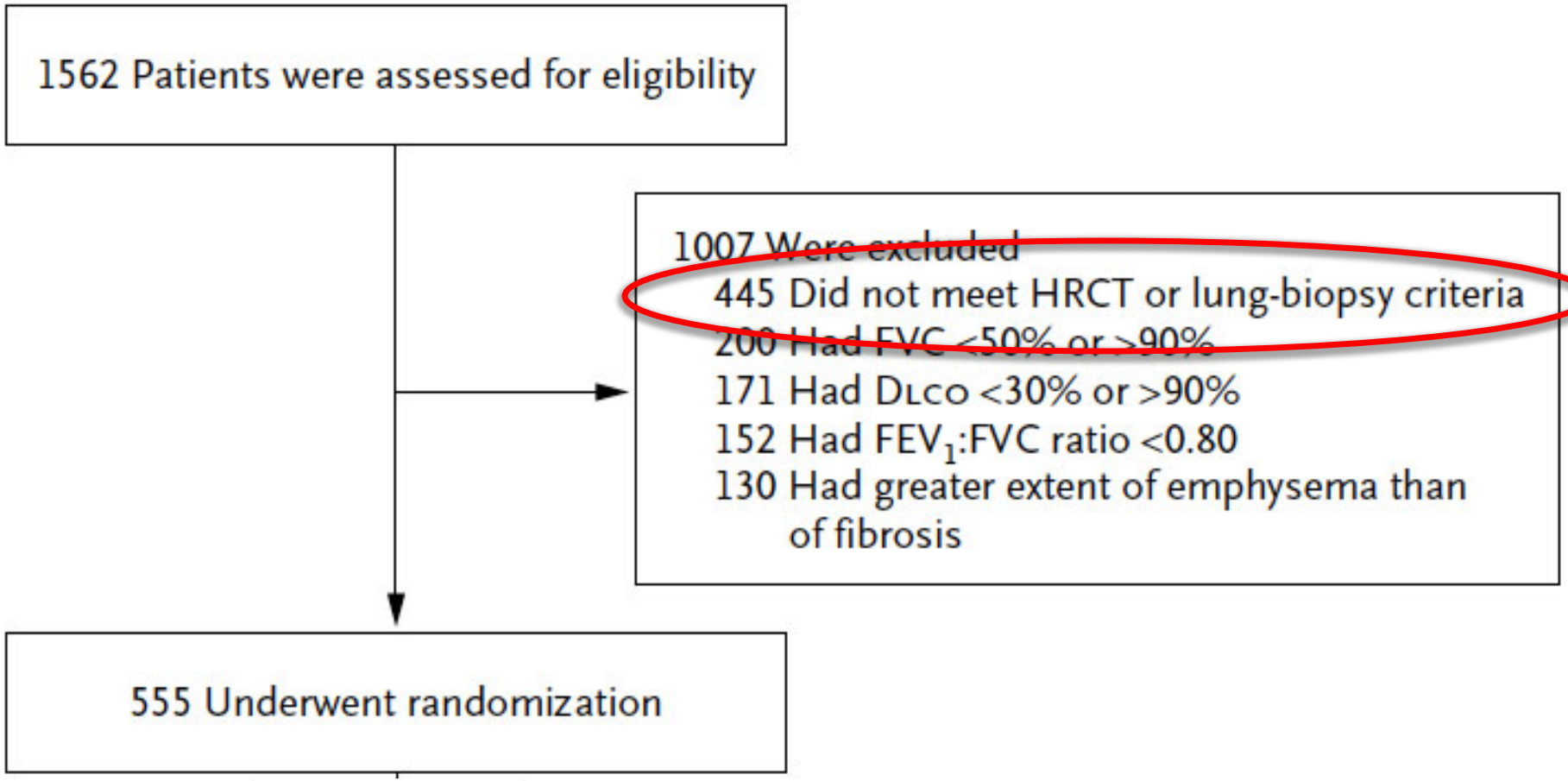

King et al, New Engl J Med 2014

Comparison of Selected Inclusion/Exclusion Criteria

Inclusion/Exclusion criteria	Pirfenidone	Nintedanib	PANTHER/NAC
Screen failure rate	64%	29%	33%
Diagnostic criteria	ATS/ERS	“Modified” ATS/ERS	“Modified” ATS/ERS
HRCT and Surgical Lung Biopsy review	Central	Central	Local + Central
Age	40-80 years	> 40 years	35 - 85 years
Duration of disease	6 – 48 months	< 5 years	< 4 years
FVC	50% - 90%	> 50%	> 50%
FEV1/FVC	> 79%	> 69%	> 64%
DLCO	30% - 90%	30% - 79%	> 30%
PaO2	None	None	> 54
6 MWT	> 150 m	None	None

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6 MWT	> 150 m	None	None

Measuring Agreement Among Observers

$$\text{Kappa} = \frac{\text{Actual Agreement Beyond Chance}}{\text{Potential Agreement Beyond Chance}}$$

Kappa Value	Strength of Agreement
< 0	Poor
0–0.2	Slight
0.2–0.4	Fair
0.4–0.6	Moderate
0.6–0.8	Substantial
0.8–1.0	Almost perfect

Clinically useful agreement

Sackett DL, et al. *Clinical Epidemiology: A basic science for clinical medicine*; 1991:29.
Landis JR, Koch GG. *Biometrics.* 1977;33:159-174.

The Problem with Pathology

The Problem with Pathology

Diagnosis	Lobar diagnosis (n = 98)	Final diagnosis (n = 48)
UIP	0.40 Moderate	0.49 Moderate
NSIP	0.32 Fair	0.32 Fair
OP	0.59	0.67
HP	0.39	0.35
Sarcoidosis	0.76	0.82
Normal	0.07	N/A
Overall	0.39 Fair	0.43 Moderate

Kappa coefficients (k) between lobar and final diagnoses in 48 patients

Nicholson AG et al, Thorax 2004

Inter-observer Variation among Radiologists

Pulmonary embolus Kappa = 0.72-0.96
Cystic lung disease Kappa = .77-1.0

	Median (range) kw coefficient of agreement
IPF	0.63 (0.48–0.78)
NSIP	0.51 (0.27–0.78)
Sarcoidosis	0.70 (0.58–0.84)
Extrinsic allergic alveolitis	0.60 (0.36–0.78)
Cryptogenic Organizing Pneumonia	0.49 (0.06–0.76)
Smoking related ILD	0.51 (0.20–0.73)

Aziz ZA et al, Thorax 2004

The Presence of Honeycombing on HRCT

Interpretation of Study-Site Radiologist	Interpretation of Core Radiologist*		
	Present	Absent	Total
Present	251 (79.9%)	12 (3.8%)	263
Absent	36 (11.5%)	15 (4.8%)	51
Total	287	27	314

Agreement among experts and study site κ = 0.31 (0.16-0.45)

Lynch et al, Am J Respir Crit Care Med 2005

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Absent	36 (11.5%)	15 (4.8%)	51
Total	287	27	314

Agreement among experts and study site κ = 0.31 (0.16-0.45)

Agreement among expert readers κ = 0.21 (0.09-0.32)

Lynch et al, Am J Respir Crit Care Med 2005

Agreement on the Presence of a UIP Pattern

	Diagnosis of the First Two Readers*	Consensus Diagnosis Based on Up to Three Reviews
Consistent with IPF	256 (81.3%)	283 (89.8%)
Inconsistent with IPF	15 (4.8%)	30 (9.5%)
Lack of agreement	44 (14.0%)	2 (0.6%)

Agreement among expert readers $\kappa = 0.33$ (0.18-0.48)

Lynch et al, Am J Respir Crit Care Med 2005

Agreement among readers for CT findings

Radiology Feature	κ Coefficient (95% CI)	*P* Value
UIP[a]	0.31 (0.21-0.42)	<.0001
Honeycombing[a]	0.49 (0.38-0.60)	<.0001
Ground-glass[a]	0.39 (0.27-0.52)	<.0001
Zonal distribution[b]	0.24 (0.14-0.35)	<.0001
Axial distribution[b]	0.25 (0.15-0.35)	<.0001

Chung et al. Chest 2015

Eur Respir J 2008; 31: 585–591
DOI: 10.1183/09031936.00063706

Multidisciplinary interobserver agreement in the diagnosis of idiopathic pulmonary fibrosis

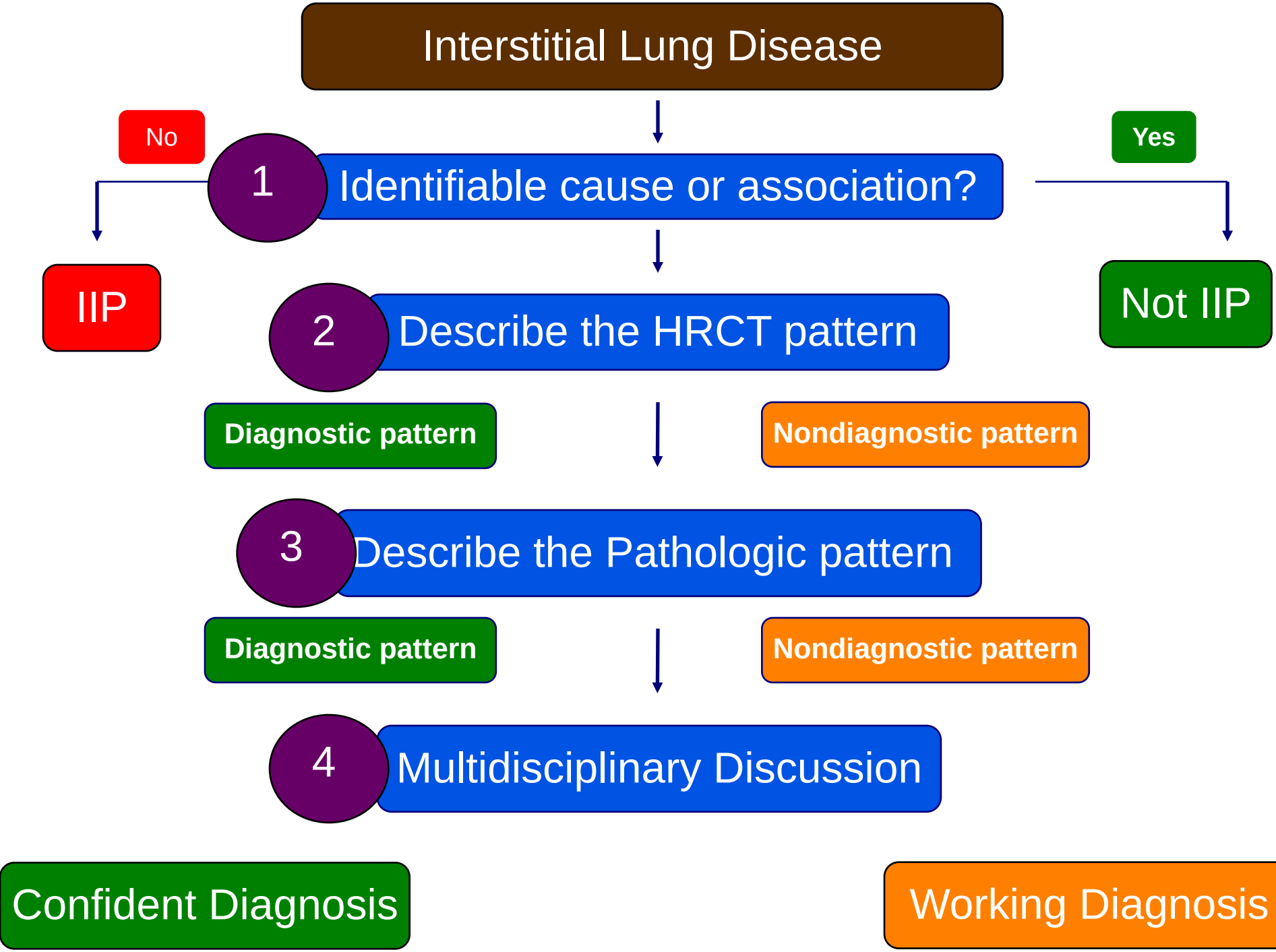
M. Thomeer*,#, M. Demedts*, J. Behr¶, R. Buhl+, U. Costabel§, C.D.R. Flowerƒ, J. Verschakelen*, F. Laurent, A.G. Nicholson##, E.K. Verbeken*, F. Capron¶¶, M. Sardina++, G. Corvasce++ and I. Lankhorst++, and the Idiopathic Pulmonary Fibrosis International Group Exploring *N*-Acetylcysteine I Annual (IFIGENIA) study group**

Thomeer M et al, Eur Respir J 2008

Weighted Kappa Among HRCT Reviewers

First author [Ref.]	Year	Interobserver agreement κ coefficient	Study population	Subjects n
GRENIER [10]	1991	0.64–0.78	Sarcoidosis	53
			Pulmonary fibrosis	33
			Histiocytosis X	17
			Other ILD	37
WELLS [19]	1993	0.58–0.76	Systemic sclerosis	35
			IPF	21
COLLINS [8]	1994	0.48	Systemic sclerosis	63
			IPF	63
KAZEROONI [20]	1997	0.51–0.83	UIP; DIP	24; 1
MACDONALD [9]	2001	0.40	NSIP	21
			UIP	32
HUNNINGHAKE [7]	2001	0.54	IPF	54
			Non-IPF	37
FLAHERTY [3]	2003	0.43	NSIP	23
			UIP	73
AZIZ [21]	2004	0.50	DPLD	131
Present study		0.40	UIP	156
			Non-UIP	23

Thomeer M et al, Eur Respir J 2008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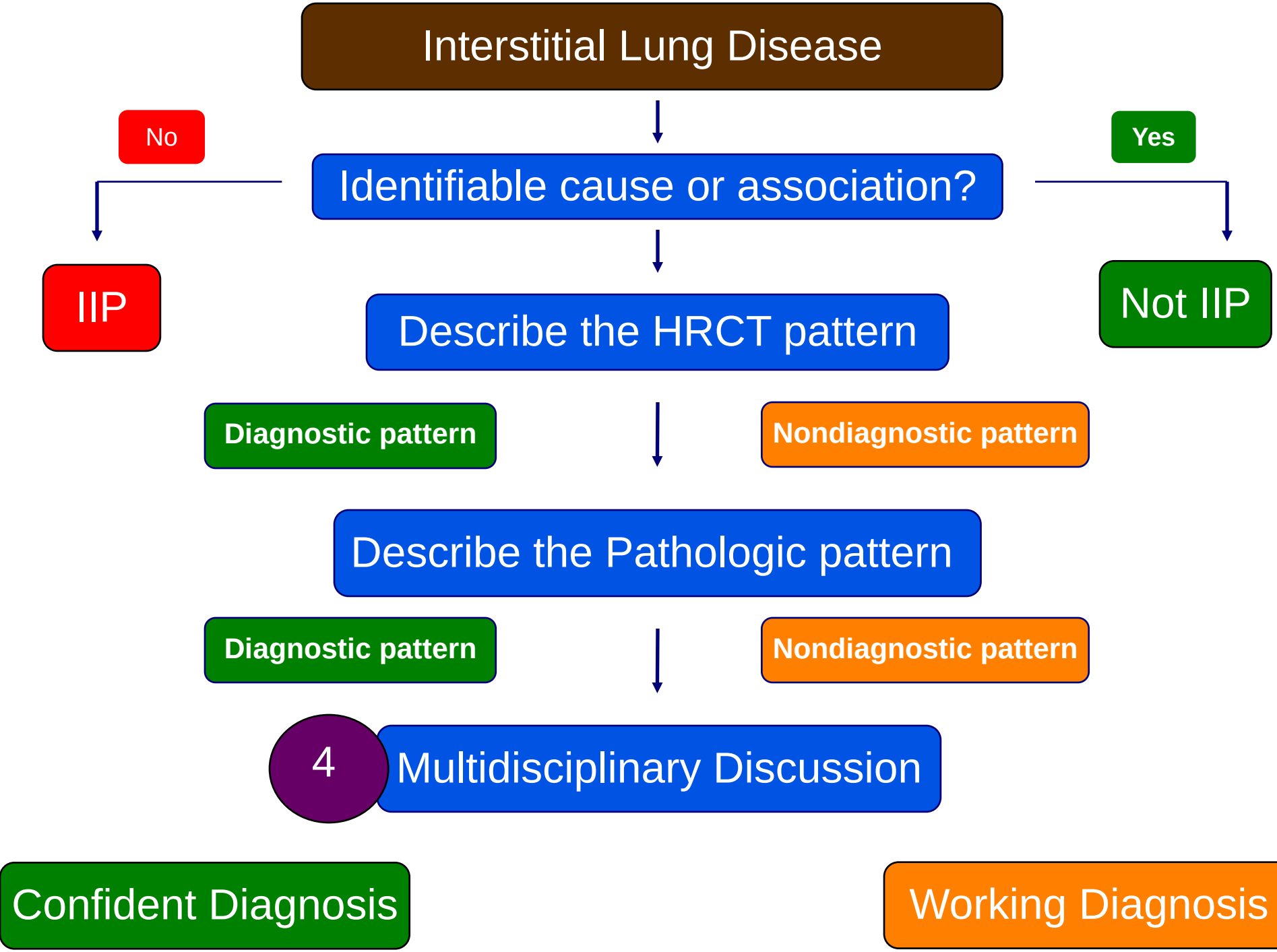
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MDD Improves Diagnostic Agreement

	Clinician κ	Radiologist κ

Flaherty K, et al. Am J Respir Crit Care Med 2004

MDD Improves Diagnostic Agreement

	Clinician κ	**Radiologist κ**
HRCT alone	0.42	0.72

Flaherty K, et al. Am J Respir Crit Care Med 2004

MDD Improves Diagnostic Agreement

	Clinician κ	**Radiologist κ**
HRCT alone	0.42	0.72
History + Clinical	0.49	0.80

Flaherty K, et al. Am J Respir Crit Care Med 2004

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Clinician/Radiologist Discussion	0.67	0.78
Clinician/ Radiologist/ Pathologist Discussion	0.71	0.81

Flaherty K, et al. Am J Respir Crit Care Med 2004

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HRCT alone	0.42	0.72
History + Clinical	0.49	0.80
Clinician/Radiologist Discussion	0.67	0.78
Clinician/ Radiologist/ Pathologist Discussion	0.71	0.81
Consensus	0.84	0.84

Flaherty K, et al. Am J Respir Crit Care Med 2004

Summary

- ILD consists of a variety of disorders with divergent outcomes
- The clinical context separates idiopathic from non-idiopathic disease and provides the background for interpretation of both the chest images and lung pathology
- The combination of the appropriate clinical context and a confident HRCT pattern diagnosis may be diagnostic
- A multidisciplinary discussion of the relevant data increases diagnostic confidence