

SACRO CUORE
DON CALABRIA

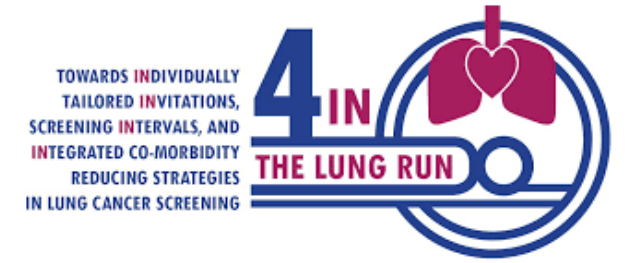


LO SCREENING DEL TUMORE POLMONARE
Giovanni Foti
Negrar 20 maggio 2022





SCREENING TUMORE POLMONARE



Consiste nel sottoporre **soggetti asintomatici, ad alto rischio**, ad un **test** mirato alla ricerca **del tumore polmonare**.

CARATTERISTICHE IDEALI DI UN TEST DI SCREENING

- Sensibile e specifico
- Elevata incidenza della patologia target
- Test non invasivo (costo sostenibile)
- Possibilità concreta di curare la patologia target

SCREENING TUMORE POLMONARE

Elevata incidenza nella patologia target

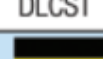
- Tumore del polmone causa 1 morte per cancro su 5
- Rappresenta 11% di tutte le diagnosi di tumore (470.000 nuove diagnosi all'anno)
- Ha una bassa sopravvivenza a 5 anni (15-20%, in Italia del 16%).
- 70% dei tumori al polmone viene diagnosticato in uno stadio clinico avanzato



SCREENING POLMONARE

Possibilità di intervento: condizioni

- Studi NLST, NELSON e MILD
- LDCT = low dose computed tomography
- forti fumatori
- **Riduzione della mortalità per cancro polmonare**
- 8-26% per gli uomini e del 26- 61% nelle

Trial Name	Study Design	Number Recruited	Characteristics of Participants				Year Started	Report Date	LC Baseline Rate (LDCT)	Stage I Cancer at Baseline/Mortality Reduction
			Age	Sex	Smoker (Pack yrs)	Ex-Smoker (yrs)				
 NLST	LDCT vs. CXR	53,454	55-74	M/F	≥30	<15	2002	2011	1%	63% / 20%
 NELSON	LDCT vs. UC	15,822	50-75	M/F	≥15	<10	2003	2016	0.9%	63.9%
 MILD	LDCT vs. UC	4,099	≥49	M/F	>20	<10	2005	2011	0.6%	63%
 DANTE	LDCT vs. UC	2,811	60-74	M	≥20	<10	2001	2007	2.2%	57%
 DEPISCAN	LDCT vs. CXR	765	50-75	M/F	≥15	<15	2002	2006	2.4%	0.9%
 ITALUNG	LDCT vs. UC	3,206	55-69	M/F	≥20	<10	2004	N/A	1.5%	47.6%
 DLCST	LDCT vs. UC	4,104	50-70	M/F	≥20	<10	2004	2016	0.8%	58.8%
 LUSI	LDCT vs. CXR	4,052	50-69	M/F	>15	<10	2007	2012	1.1%	78.2%
 UKLS	LDCT vs. UC	32,000 planned	50-75	M/F	N/A	N/A	2012	N/A	N/A	N/A

LDCT = Low-Dose Computed Tomography; CXR = Chest Radiograph; LC = Lung Cancer; UC = Usual Care

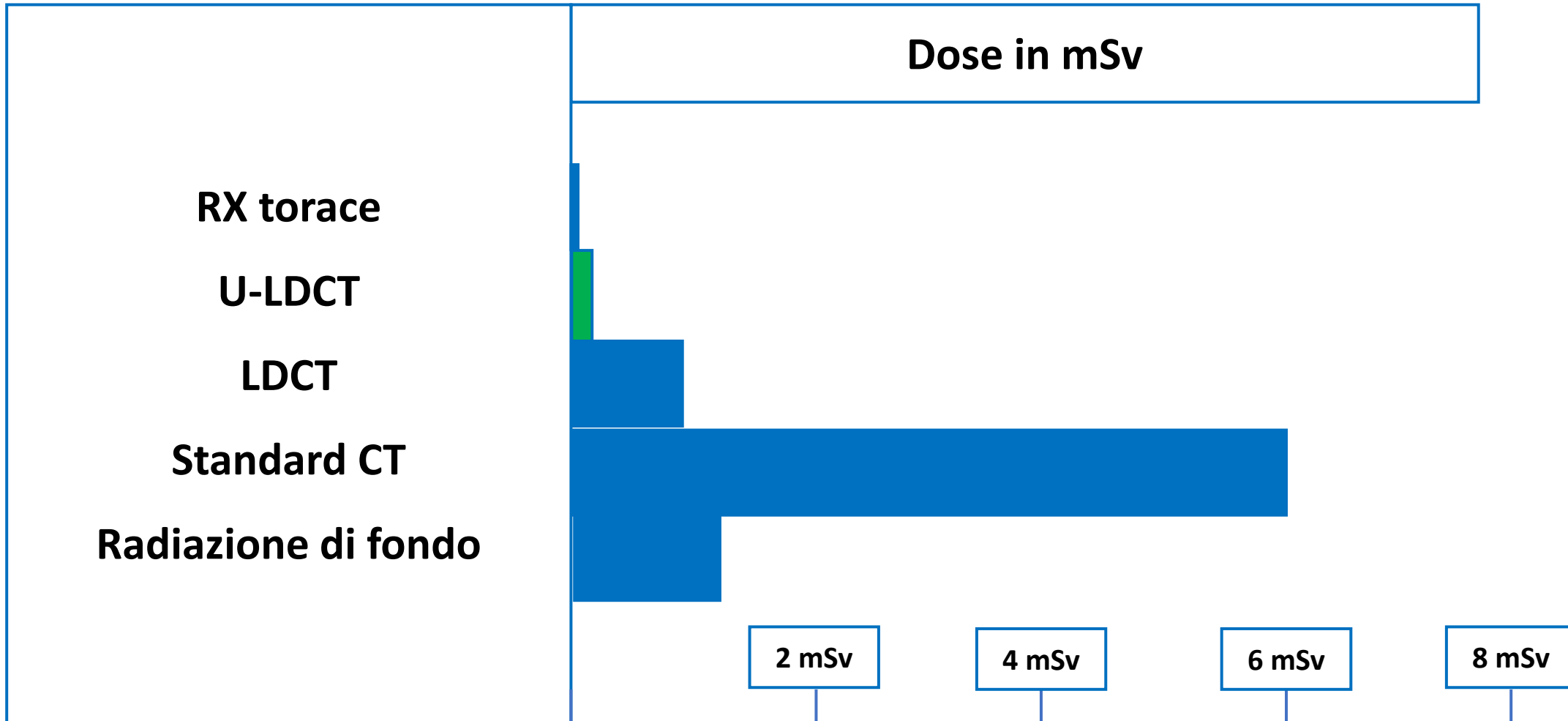
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Non invasività del test

- Ultra Low dose CT = Dose di radiazioni 20 volte inferiore a quella di una TC standard del torace
- Nettamente inferiore alla radiazione di fondo

Parameter	Standard-Dose CT Scan	Ultra-Low-Dose CT Scan	P Value
kVp	100: 48 (45.7) 120: 57 (54.3)	100: 3 (2.9) 120: 50 (47.6) 135: 52 (49.5)	< .0001
CT dose index, mGy	6.0 (2.7-12.5)	0.3 (0.2-0.5)	< .0001
Dose-length-product, mGy·cm	232.6 (100.7-508.0)	10.2 (7.2-14.1)	< .0001
Exposure time, s	3.5 (3.0-3.8)	3.9 (3.3-4.1)	< .0001
Range, mm	360 (300-390)	360 (300-390)	...
Body size anterior-posterior, cm	21.6 (18.5-28.6)	21.6 (18.5-28.6)	...
Body size lateral, cm	28.5 (23.3-35.8)	28.5 (23.3-35.8)	...

Confronto dose radiante: ultra low dose CT





National Comprehensive
Cancer Network®

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®)

Lung Cancer Screening

Version 1.2022 — October 26, 2021

NCCN.org

NCCN Guidelines for Patients® available at www.nccn.org/patients



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Lung Cancer Screening

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RISKS/BENEFITS OF LUNG CANCER SCREENING¹

RISKS

- Futile detection of small aggressive tumors or indolent disease
- Quality of life
 - Anxiety about test findings
- Physical complications from diagnostic workup
- False-positive results
- False-negative results
- Unnecessary testing and procedures
- Radiation exposure
- Cost
- Incidental lesions

BENEFITS

- Decreased lung cancer mortality²⁻⁴
- Quality of life
 - Reduction in disease-related morbidity
 - Reduction in treatment-related morbidity
 - Improvement in healthy lifestyles
 - Reduction in anxiety/psychosocial burden
- Discovery of other significant occult health risks (eg, thyroid nodule, severe but silent coronary artery disease, early renal cancer in upper pole of kidney, aortic aneurysm, breast cancer)

SCREENING TUMORE POLMONARE

- Ansia del PZ
- Falsi positivi
- Work up inutili
- Costi
- Rischi di over-treatment



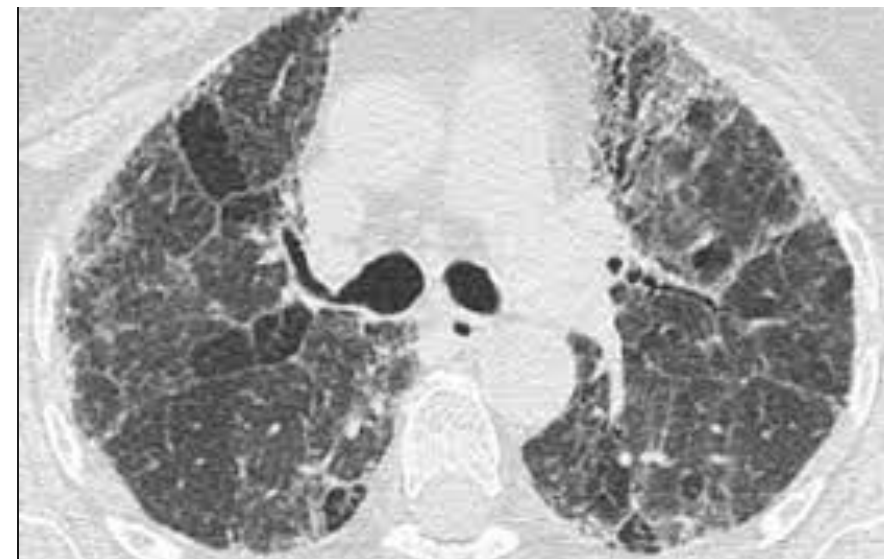
- Ridotta mortalità
- Aumento qualità di vita
- Incremento altre diagnosi incidentali significative

RISK ASSESSMENT^{a,b,c}

RISK STATUS

SCREENING

- Smoking history^d
- Radon exposure^e
- Occupational exposure^f
- Cancer history^g
- Family history of lung cancer in first-degree relatives
- Disease history (COPD or pulmonary fibrosis)
- Smoking exposure^h (second-hand smoke)





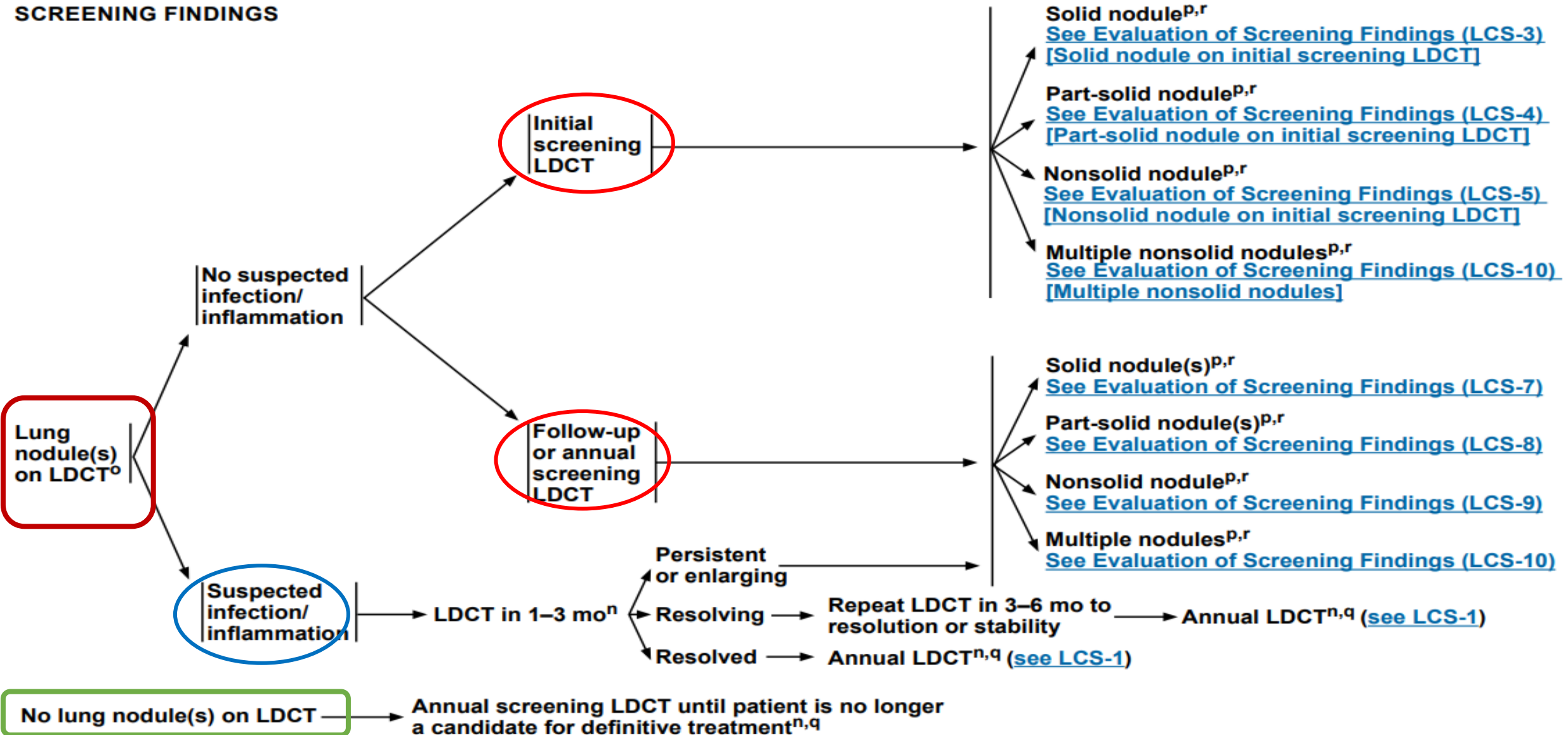
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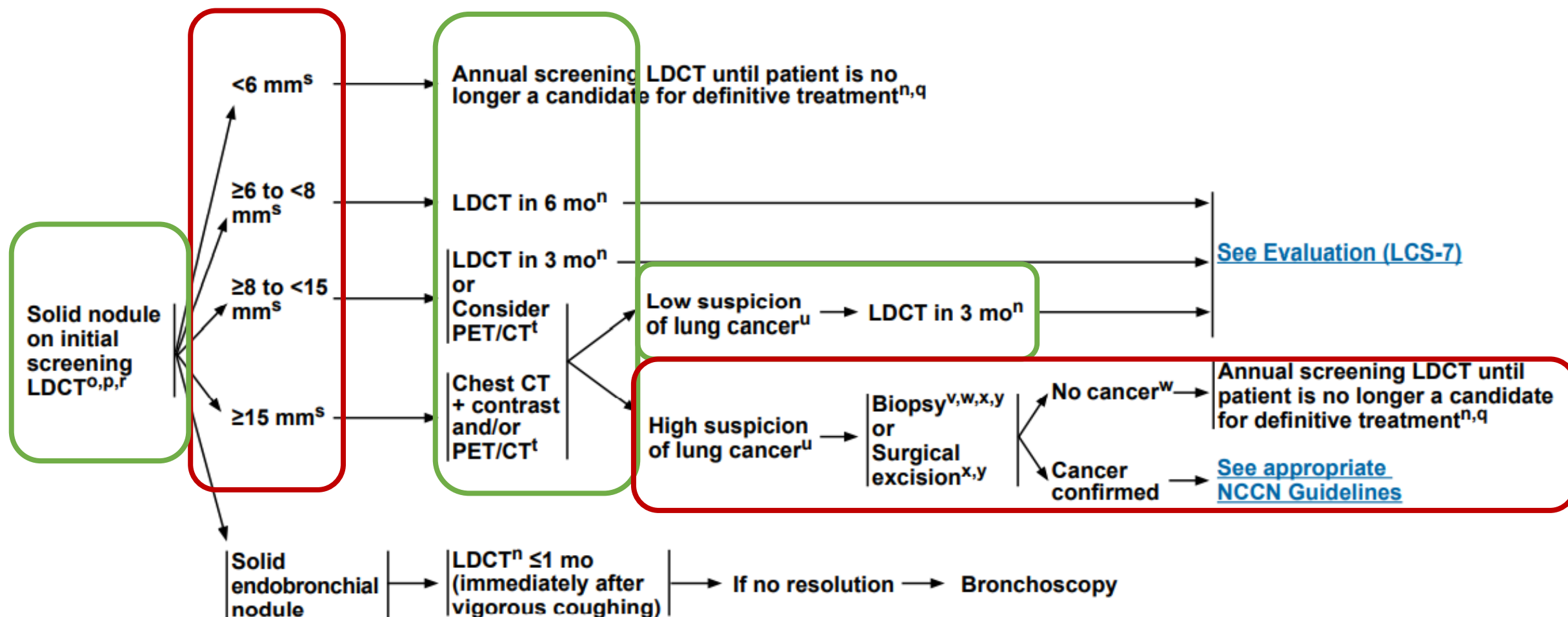
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SCREENING FINDINGS



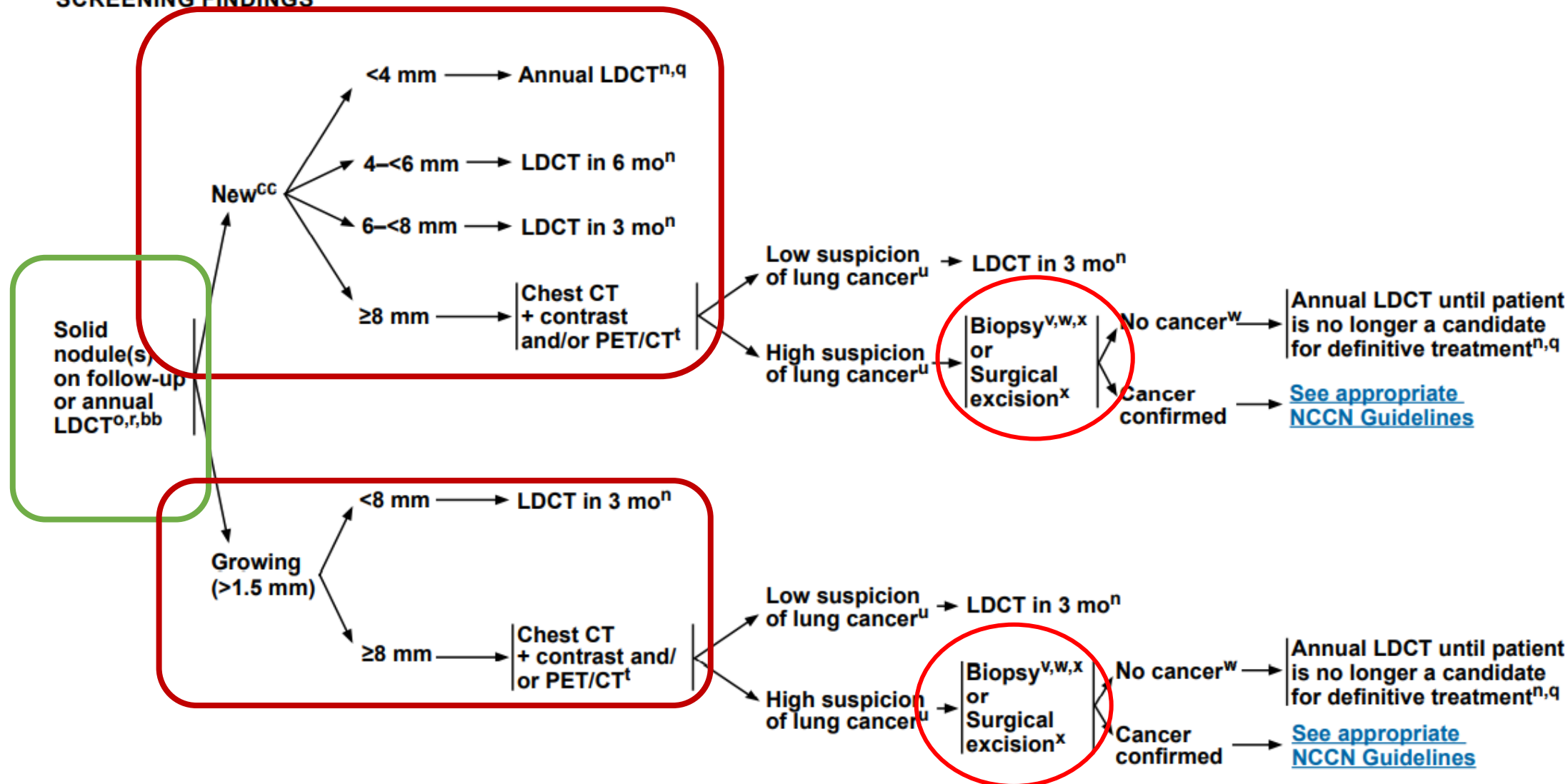
EVALUATION OF SCREENING FINDINGS

FOLLOW-UP OF SCREENING FINDINGS



**EVALUATION OF
SCREENING FINDINGS**

FOLLOW-UP OF SCREENING FINDINGS





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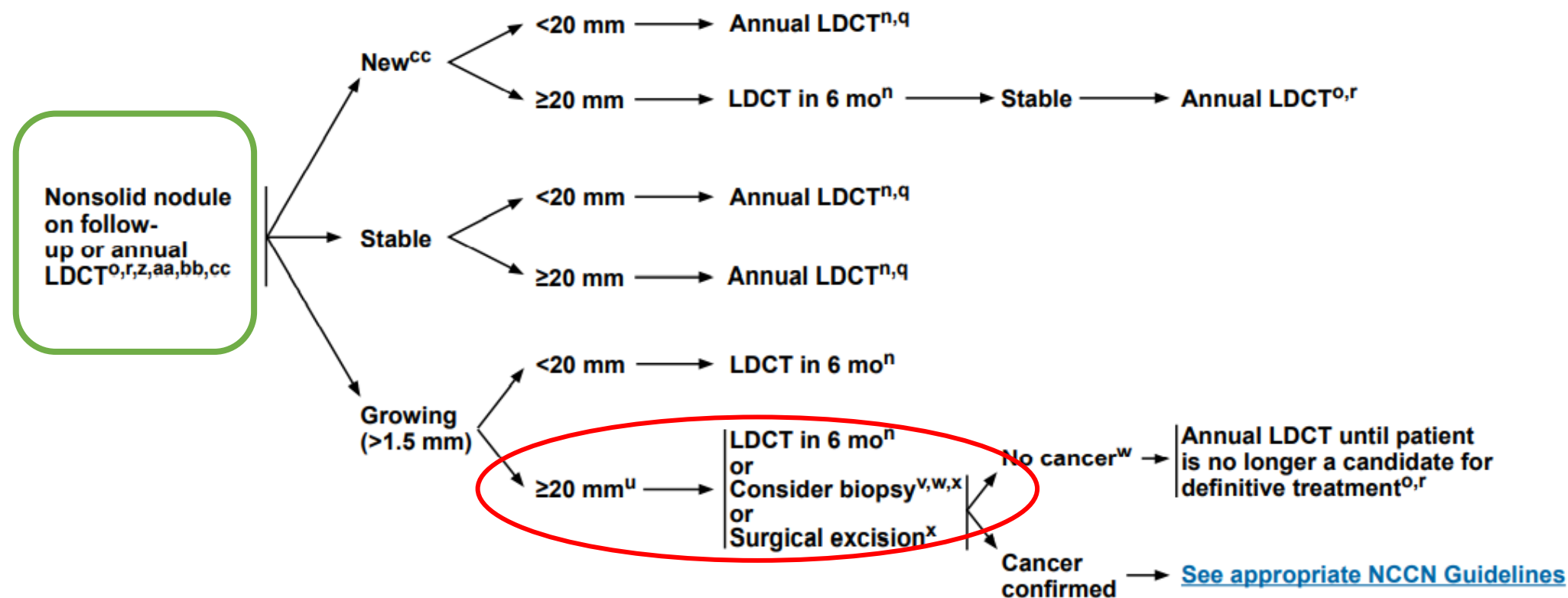
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EVALUATION OF SCREENING FINDINGS

FOLLOW-UP OF SCREENING FINDINGS



SCREENING TUMORE POLMONARE

LUNG-RADS 1.1

- Rappresenta uno standard per i referti strutturati usati per lo screening
- Permette di catalogare le lesioni identificate in base al coefficiente di rischio
- Valuta dimensioni, numero, densità ed evoluzione delle lesioni identificate
- Verrà a breve aggiornato con l'introduzione delle lesioni cistiche



Lung-RADS® Version 1.1
Assessment Categories Release date: 2019

Category Descriptor	Lung-RADS Score	Findings	Management	Risk of Malignancy	Est. Population Prevalence
Incomplete	0	Prior chest CT examination(s) being located for comparison Part or all of lungs cannot be evaluated	Additional lung cancer screening CT images and/or comparison to prior chest CT examinations is needed	n/a	1%
Negative No nodules and definitely benign nodules	1	No lung nodules Nodule(s) with specific calcifications: complete, central, popcorn, concentric rings and fat containing nodules			
Benign Appearance or Behavior Nodules with a very low likelihood of becoming a clinically active cancer due to size or lack of growth	2	Perifissural nodule(s) (See Footnote 1f) ≤ 10 mm (524 mm ³) Solid nodule(s): < 6 mm (< 113 mm ³) new < 4 mm (< 34 mm ³) Part solid nodule(s): < 6 mm total diameter (< 113 mm ³) on baseline screening Non solid nodule(s) (GGN): < 30 mm (< 14137 mm ³) OR ≥ 30 mm (≥ 14137 mm ³) and unchanged or slowly growing Category 3 or 4 nodules unchanged for ≥ 3 months	Continue annual screening with LDCT in 12 months	$< 1\%$	90%
Probably Benign Probably benign finding(s) - short term follow up suggested; includes nodules with a low likelihood of becoming a clinically active cancer	3	Solid nodule(s): ≥ 6 to < 8 mm (≥ 113 to < 268 mm ³) at baseline OR new 4 mm to < 6 mm (34 to < 113 mm ³) Part solid nodule(s): ≥ 6 mm total diameter (≥ 113 mm ³) with solid component < 6 mm (< 113 mm ³) OR new < 6 mm total diameter (< 113 mm ³) Non solid nodule(s) (GGN): ≥ 30 mm (≥ 14137 mm ³) on baseline CT or new	6 month LDCT	1-2%	5%
Suspicious Findings for which additional diagnostic testing is recommended	4A	Solid nodule(s): ≥ 8 to < 15 mm (≥ 268 to < 1767 mm ³) at baseline OR growing < 8 mm (< 268 mm ³) OR new 6 to < 8 mm (113 to < 268 mm ³) Part solid nodule(s): ≥ 6 mm (≥ 113 mm ³) with solid component ≥ 6 mm to < 8 mm (≥ 113 to < 268 mm ³) OR with a new or growing < 4 mm (< 34 mm ³) solid component Endobronchial nodule	3 month LDCT; PET/CT may be used when there is a ≥ 8 mm (≥ 268 mm ³) solid component	5-15%	2%
Very Suspicious Findings for which additional diagnostic testing and/or tissue sampling is recommended	4B	Solid nodule(s): ≥ 15 mm (≥ 1767 mm ³) OR new or growing, and ≥ 8 mm (≥ 268 mm ³) Part solid nodule(s) with: a solid component ≥ 8 mm (≥ 268 mm ³) OR a new or growing ≥ 4 mm (≥ 34 mm ³) solid component	Chest CT with or without contrast, PET/CT and/or tissue sampling depending on the "probability of malignancy and comorbidities. PET/CT may be used when there is a ≥ 8 mm (≥ 268 mm ³) solid component. For new large nodules that develop on an annual repeat screening CT, a 1 month LDCT may be recommended to address potentially infectious or inflammatory conditions	$> 15\%$	2%
Other Clinically Significant or Potentially Clinically Significant Findings (non lung cancer)	5	Modifier - may add on to category 0-4 coding	As appropriate to the specific finding	n/a	10%

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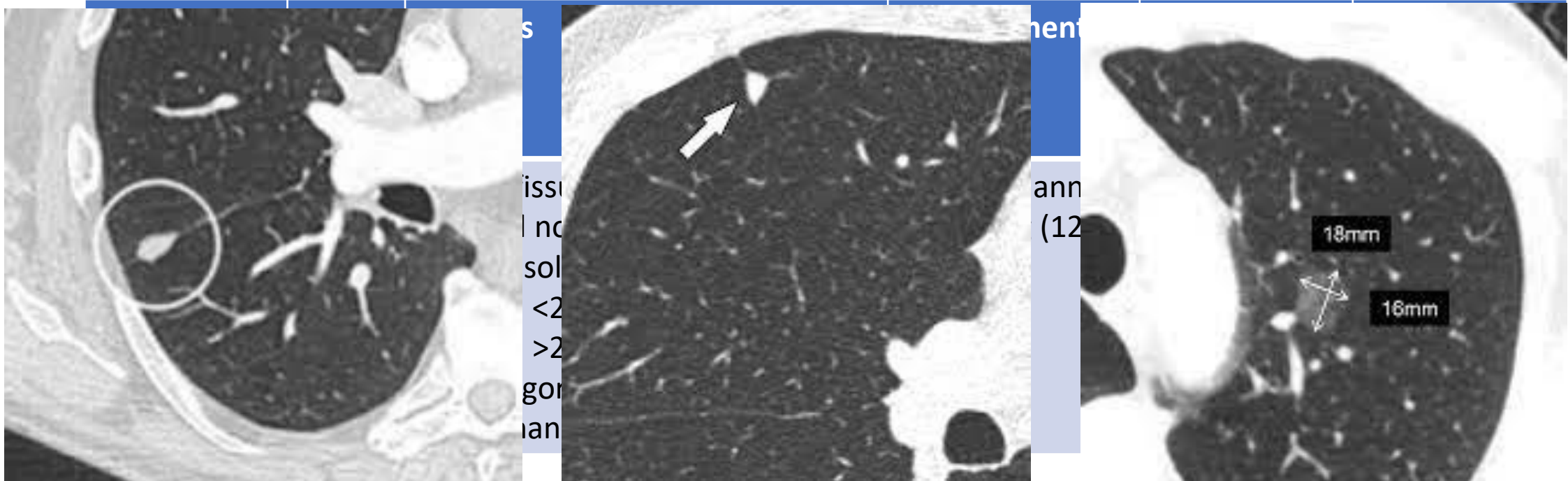
LUNG RADS 1



Category	Score	Findings	Management	Risk of malignancy	Estimated prevalence
Negative	1	-No lung nodules -Benign nodules (specific calcifications, fat)	Continue screening as scheduled (12 months)	<1%	90% (cat 1 and 2)

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LUNG RADS 2





SCREENING TUMORE POLMONARE

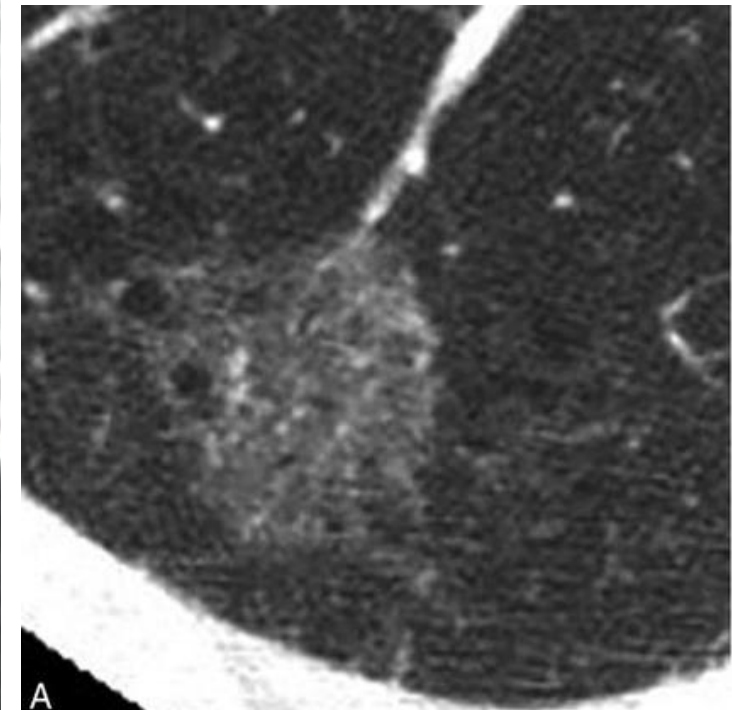
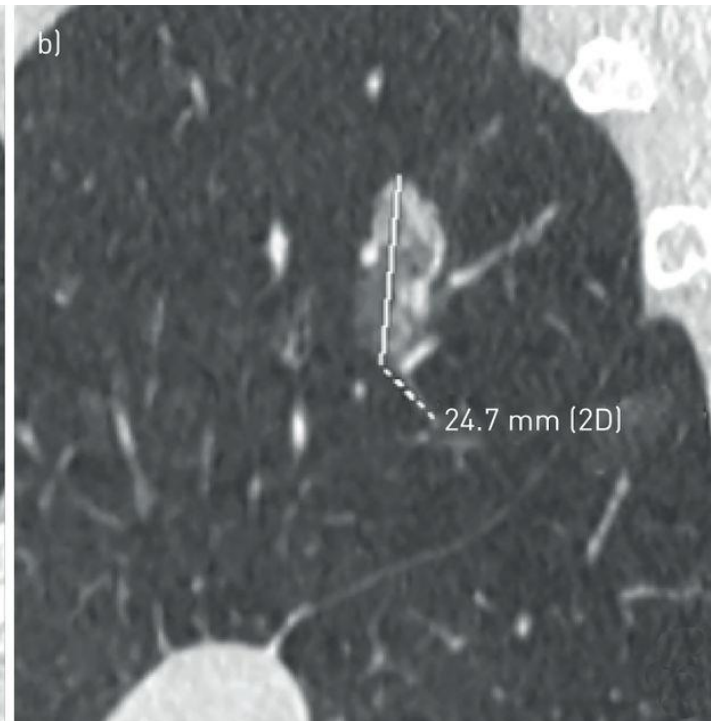
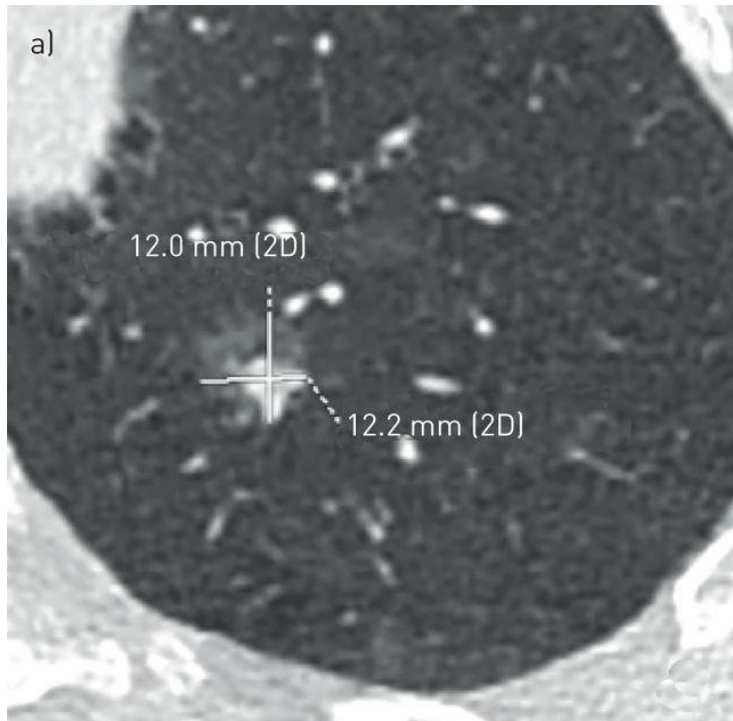


LUNG RADS 3

Category	Score	Findings	Management	Risk of malignancy	Estimated Prevalence
Probably benign Possible likelihood to become cancer	3	Solid nodules >6 and <8mm Part-solid nodules >6 and <8mm New Solide nodules >4 and <6mm GGN > 20 mm New GGN at follow up	6 months LDCT	1-2%	5%

SCREENING TUMORE POLMONARE

LUNG RADS SCORE 3



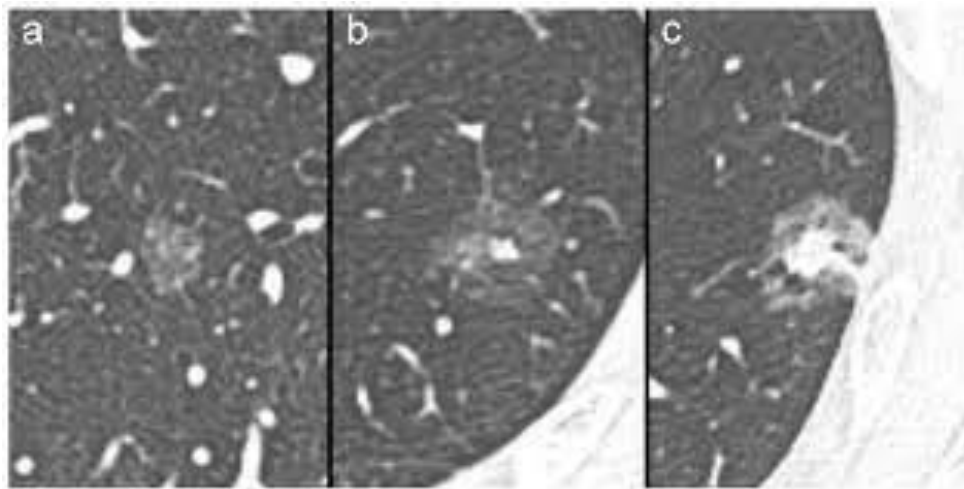
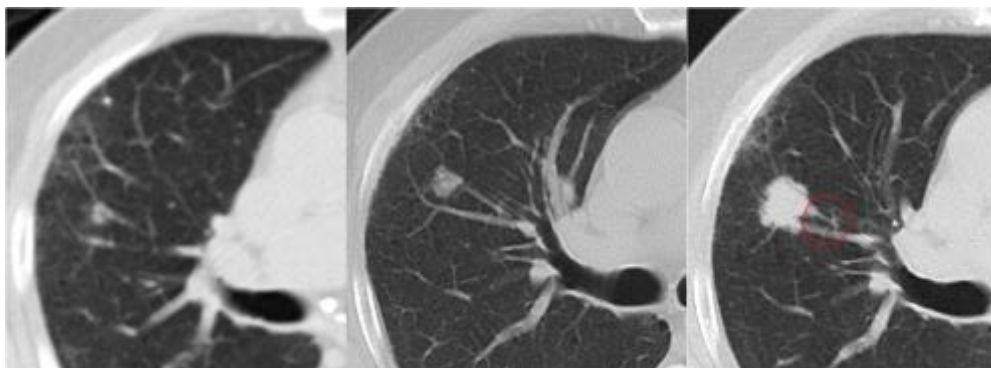
SCREENING TUMORE POLMONARE

LUNG RADS 4

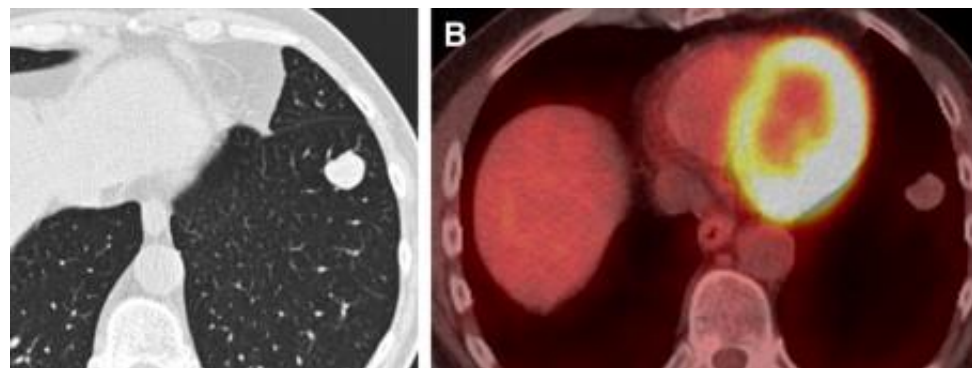
Category	Score	Findings	Management	Risk of Malign.	Estimated Prevalence
Suspicious Additional diagnostic test	4A	Solid nodules >8 and <15mm New Solide nodules >6 and <8mm Solid nodule growing <8mm Part-solid nodules >6mm < 8 mm of solid component	3 months LDCT PET CT for solid component >8mm	5-15%	2%
Category	Score	Findings	Management	Risk of Malign.	Estimated Prevalence
Very Suspicious Additional diagnostic or sampling suggested	4B	Solid nodules > 15mm New Solide nodules >8mm Part-solid nodules >8 mm of solid component Cat. 3 and 4 nodules with additional suspicious findings	Contrast enh. CT biopsy PET CT for solid component >8mm 1 month LDCT (inflammatory?)	>15%	2%

SCREENING TUMORE POLMONARE

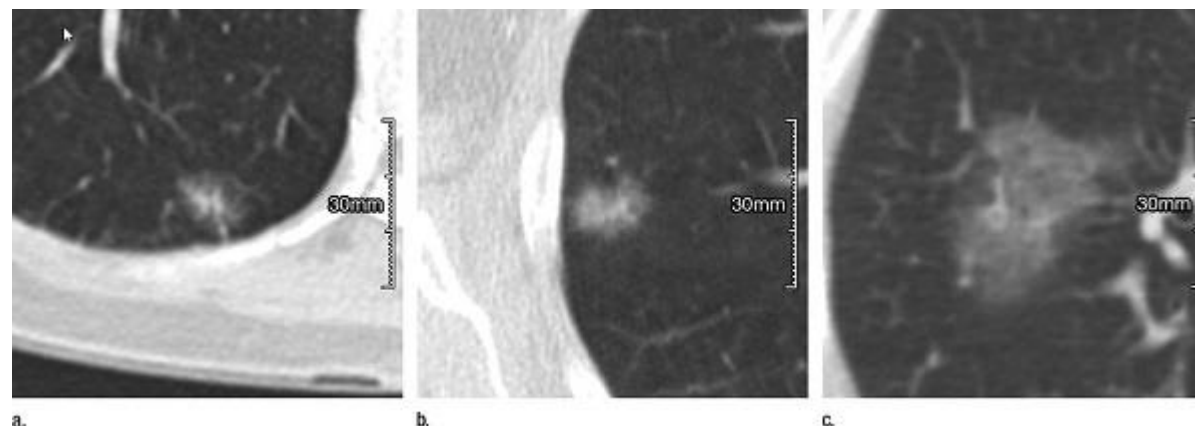
LUNG RADS 4A



LUNG RADS 4B



LUNG RADS 4C





SCREENING TUMORE POLMONARE

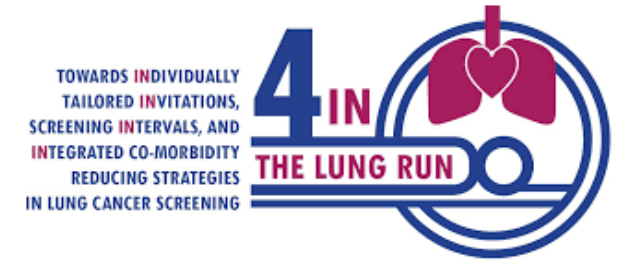


LUNG RADS 5

Category	Score	Findings	Management	Risk of malignancy	Estimated prevalence
Rilievi extra polmonari significativi	5	Possono modificare la valutazione dei rilievi polmonari	Da gestire in base alla sede e tipo di rilievo nel singolo Paziente	n/a	10%



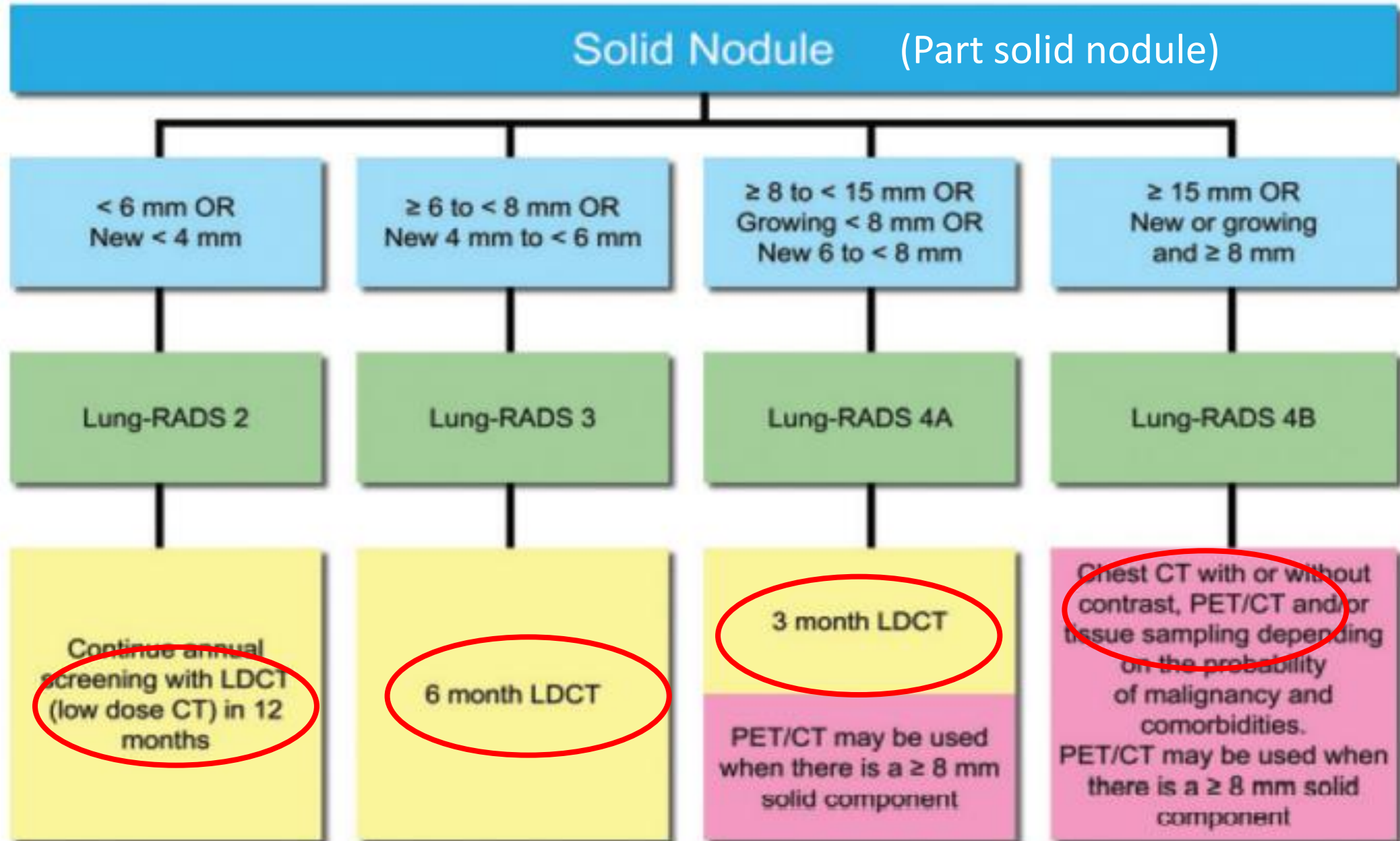
SCREENING TUMORE POLMONARE



REPERTI COLLATERALI

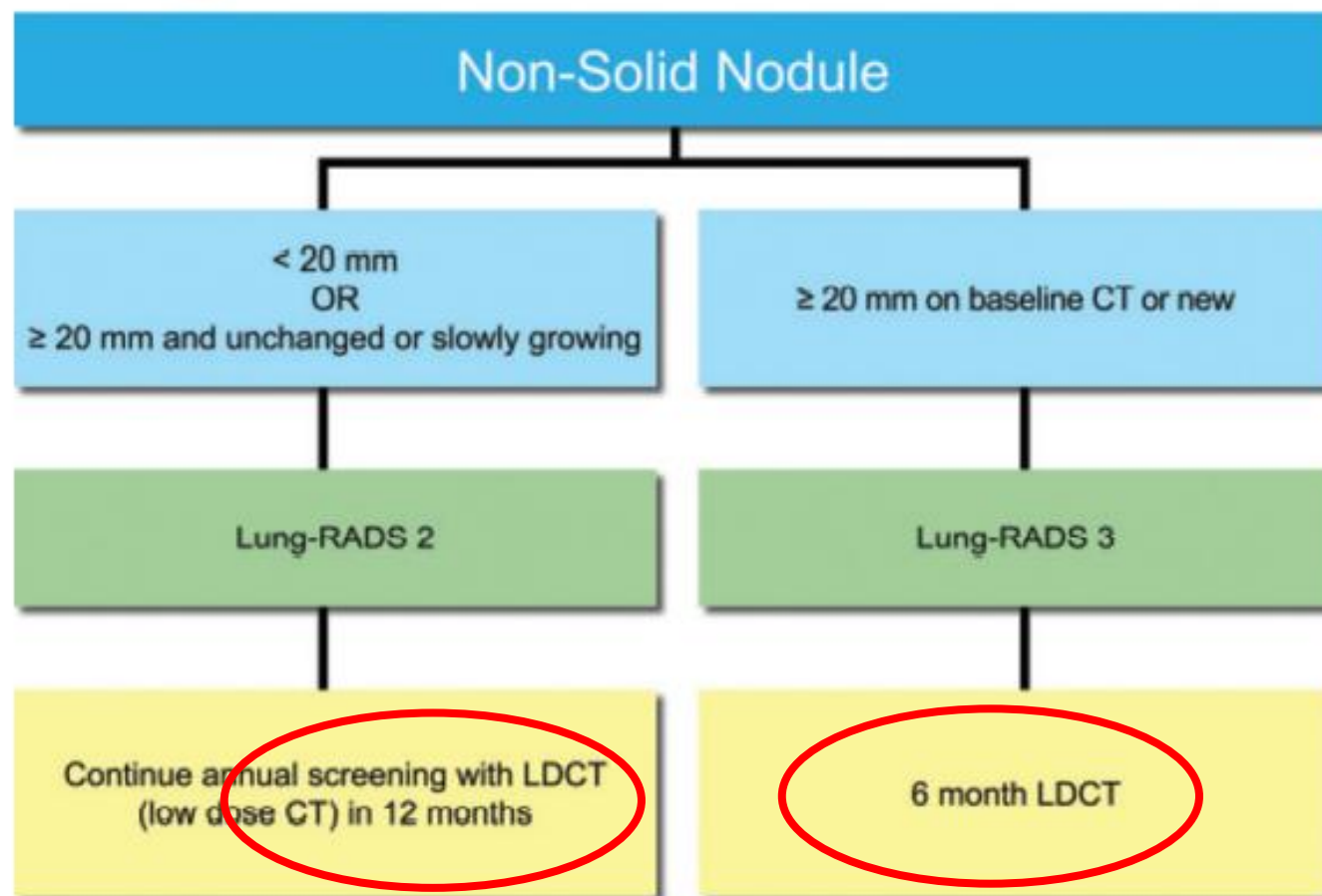
- **Pneumopatie**
- Fibrosi polmonare
- Patologie infiammatorie
- sarcoidosi
- Tumore esofago/mediastino
- Linfomi e linfadenomegalie
- Lesioni tiroidee
- **Calcificazioni coronariche**
- Lesioni surrenaliche
- Lesioni epatiche/pancreatiche
- Ernia iatale
- Fratture vertebrali su osteoporosi
- Metastasi ossee e fratture patologiche
- Aneurismi

Management of Screen Detected Solid Nodule



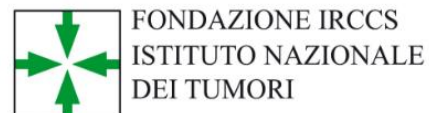
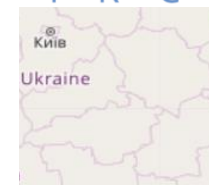
SCREENING TUMORE POLMONARE

Management of Screen Detected Non-Solid Nodule





SCREENING TUMORE POLMONARE



SCREENING TUMORE POLMONARE

NUOVI OBIETTIVI

- Definizione del profilo di rischio dei singoli soggetti (calcium score coronariche, BPCO, enfisema, stato infiammatorio)
- Miglioramento della performance globale dello screening
- Identificazione del timing ottimale per il follow up per ogni singolo soggetto, in base ai fattori di rischio individuali (2 anni versus 1 anno), con conseguente riduzione dei costi

SCREENING DEL TUMORE POLMONARE MEDIANTE U-LDCT: OSPEDALE SACROCUORE DON CALABRIA

Criteri di inclusione

Età compresa tra **60 e 79 anni**

Forte consumo di sigarette (≥ 30 pacchetti/anno)

Fumatore attivo o ex- da ≤ 10 anni (≥ 30 pacchetti/anno)

Assenza di tumori da almeno 5 anni

Firma del consenso informato per l'arruolamento in studio e il trattamento dei dati personali

Criteri di esclusione

Patologia cronica severa (ad esempio: grave insufficienza respiratoria e/o renale e/o epatica e/o cardiaca)

Gravi problemi psichiatrici

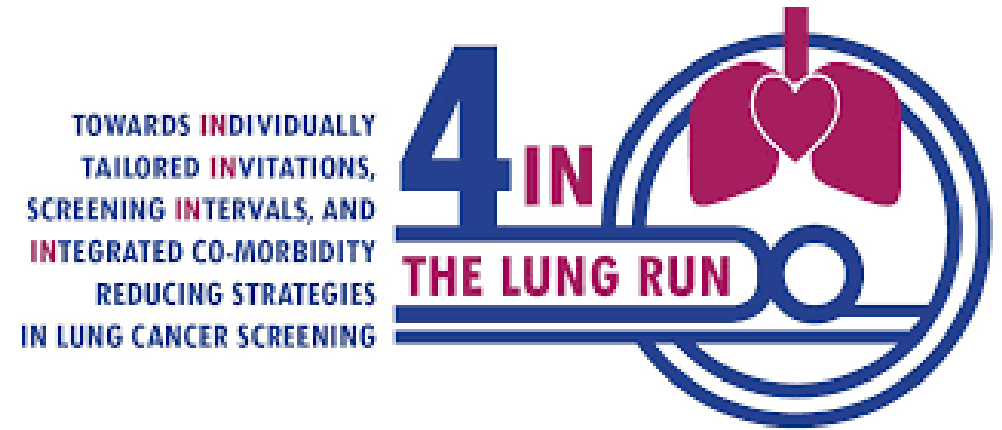
Abuso di alcool o altre sostanze (anche pregresso)



NUOVO STUDIO SULLO SCREENING DEL TUMORE POLMONARE MEDIANTE U-LDCT

SCREENING SACRO CUORE

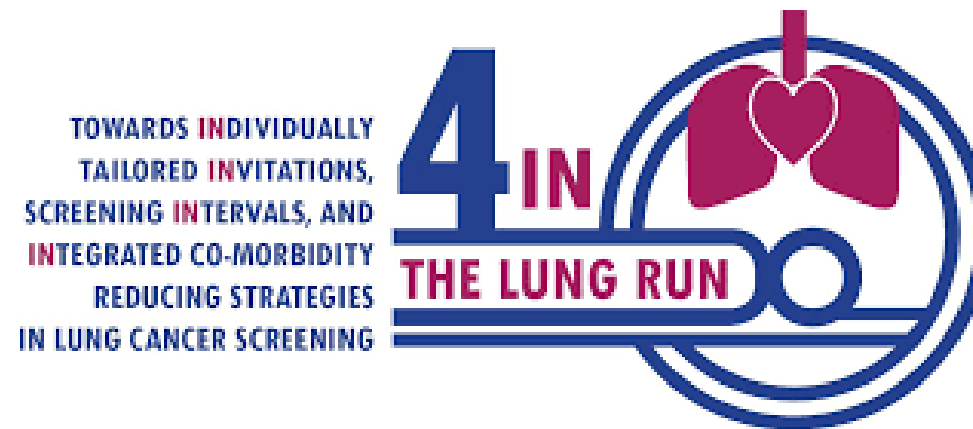
- Inizio Settembre 2022
- Recruitment multi-canale (numero verde; mail; sito internet; MMG; reparti e DH; centro antifumo)
- Percorso semplice con ampia disponibilità (LUN-VEN + SAB mattina)
- Ridurre il fumo di sigaretta - centro antifumo (Citisina)





NUOVO STUDIO SULLO SCREENING DEL TUMORE POLMONARE MEDIANTE U-LDCT

SCREENING SACRO CUORE



- TC di ultima generazione capace di eseguire una scansione del torace in 2s
- Dose radiante ultra bassa
- Ottimizzazione dei percorsi (10 minuti dall'accettazione all'esecuzione dell'esame)
- Risposta strutturata (Doppia lettura centralizzata), integrata da lettera per il MMG
- Percorsi dedicati per reperti positivi extra-polmonari

SCREENING TUMORE POLMONARE

LO SCREENING POLMONARE mediante ULDCT

DX precoce

< fumo sigaretta

> Intervallo
screening
(24 mesi)

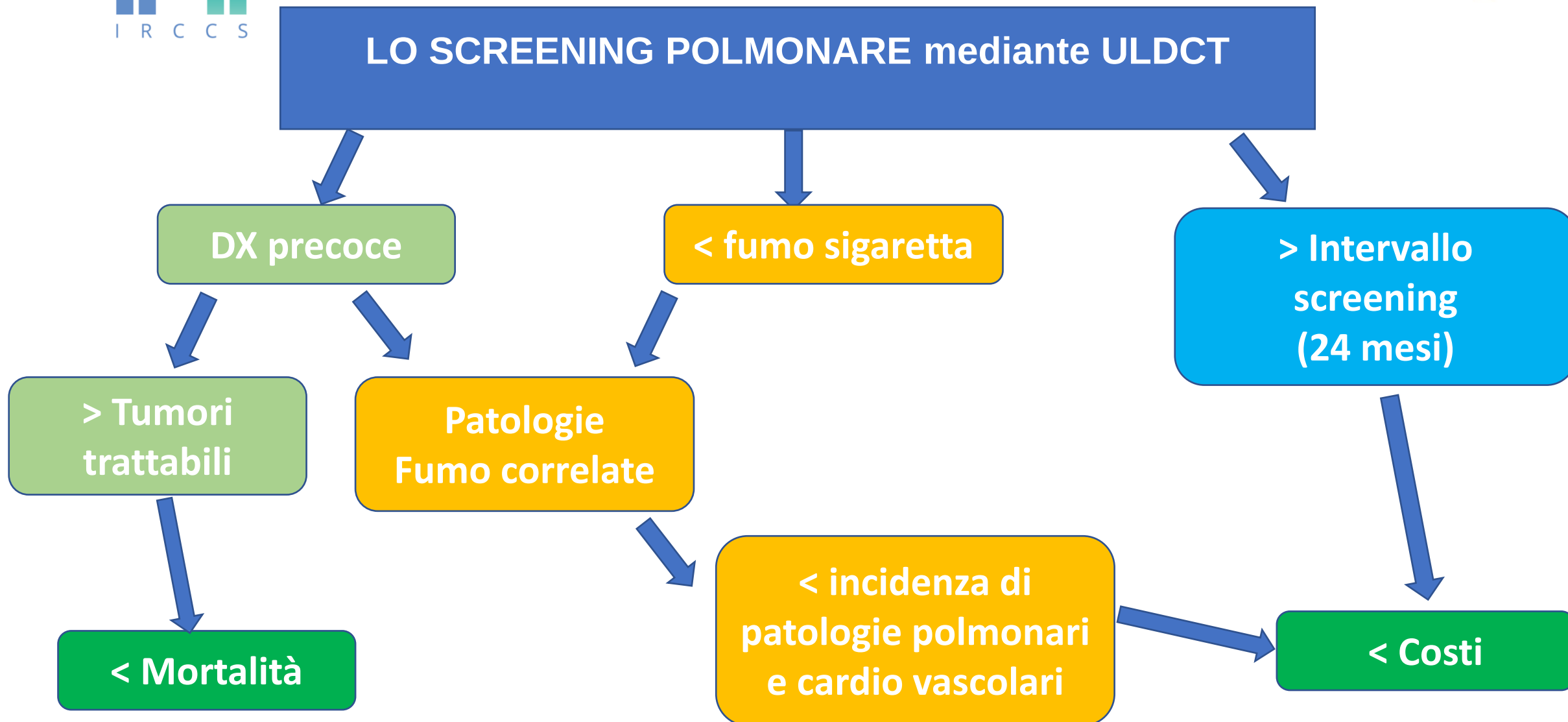
> Tumori
trattabili

Patologie
Fumo correlate

< incidenza di
patologie polmonari
e cardio vascolari

< Mortalità

< Costi



SCREENING TUMORE POLMONARE

GRAZIE PER L'ATTENZIONE

