

Anatomia Radiológica do Tórax

1702105 – Sistema Respiratório

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Objetivos de Aprendizagem / Resultados esperados

Aprender aspectos básicos da anatomia
radiológica torácica

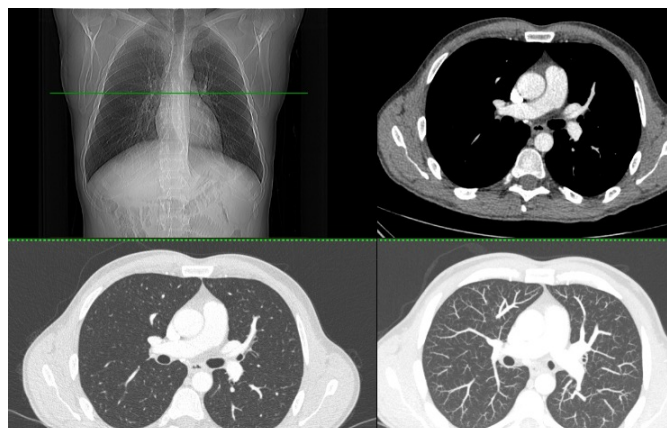
Introdução à interpretação radiológica na prática clínica!

- 1) Reconhecer qual o exame – método, técnica, qualidade
- 2) Reconhecer a anatomia normal
- 3) Identificar alterações da normalidade, achados
- 4) Interpretar os achados – correlação clínica

Métodos de imagem para avaliação torácica



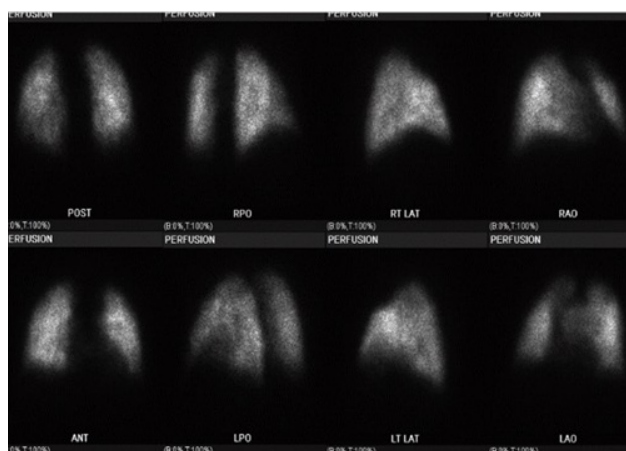
Radiografia simples



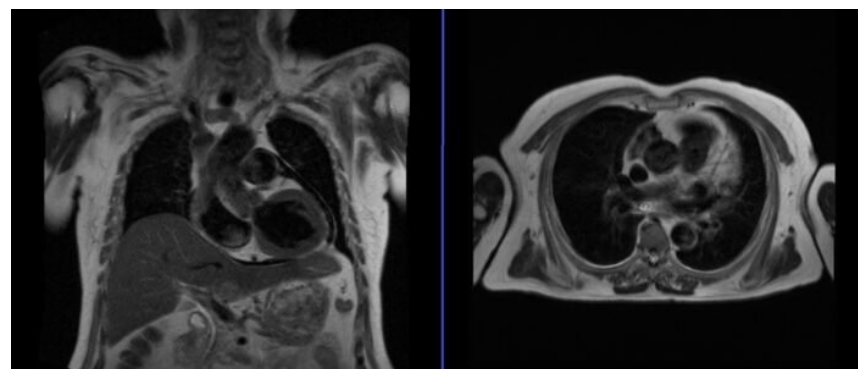
Tomografia computadorizada



Ultrassonografia



Cintilografia



Ressonância magnética

Questionário 1

Questionário 1

Devolutiva, dúvidas e comentários

Considerando os métodos de imagem para a avaliação torácica associe o método à característica

Associe o método de imagem à característica predominante de cada um

Ressonância magnética
Ultrassonografia
Cintilografia pulmonar (estudo de ventilação e perfusão)
Radiografia simples
Tomografia computadorizada



Quantas são as densidades radiológicas básicas na radiografia simples?

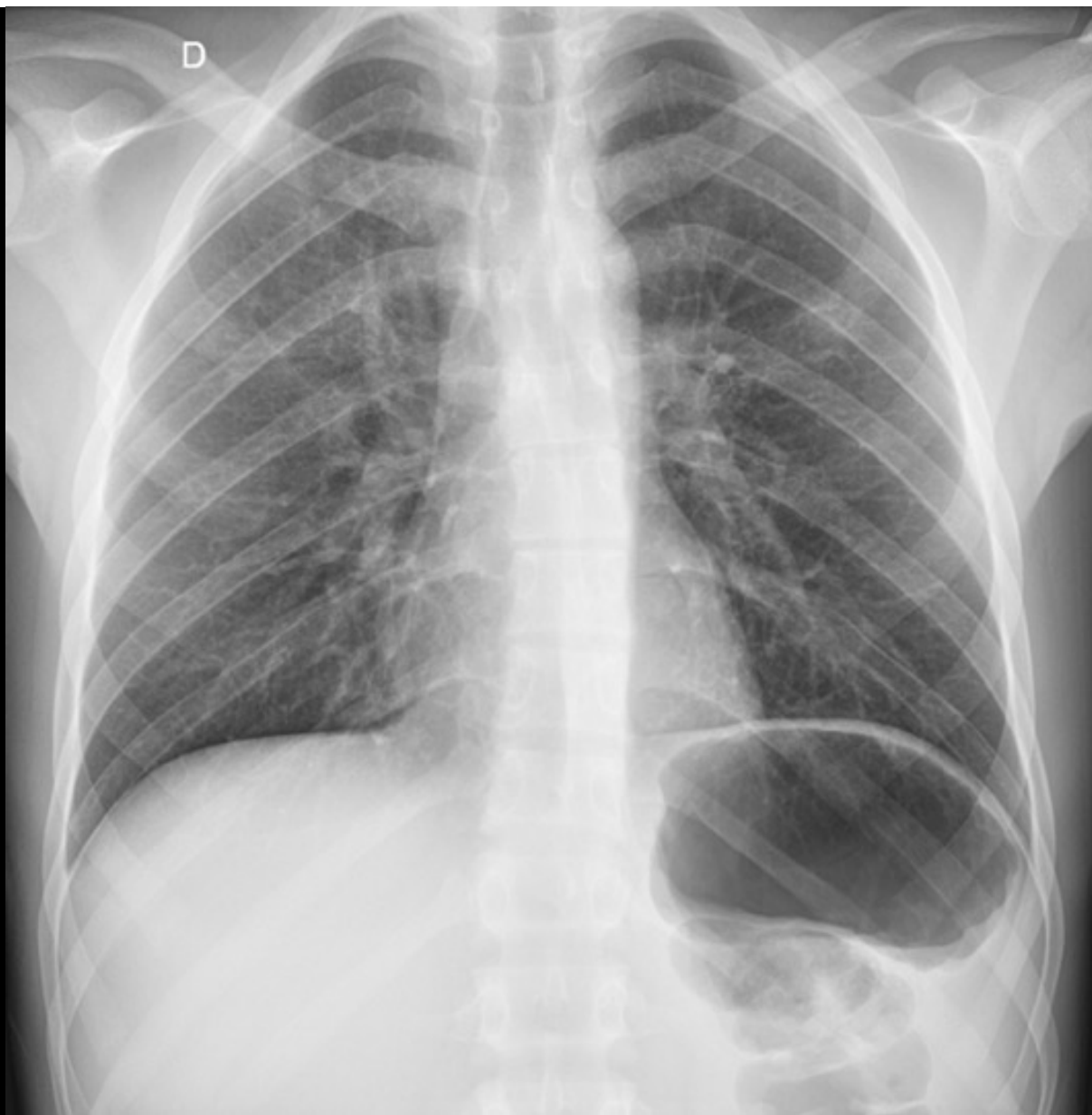
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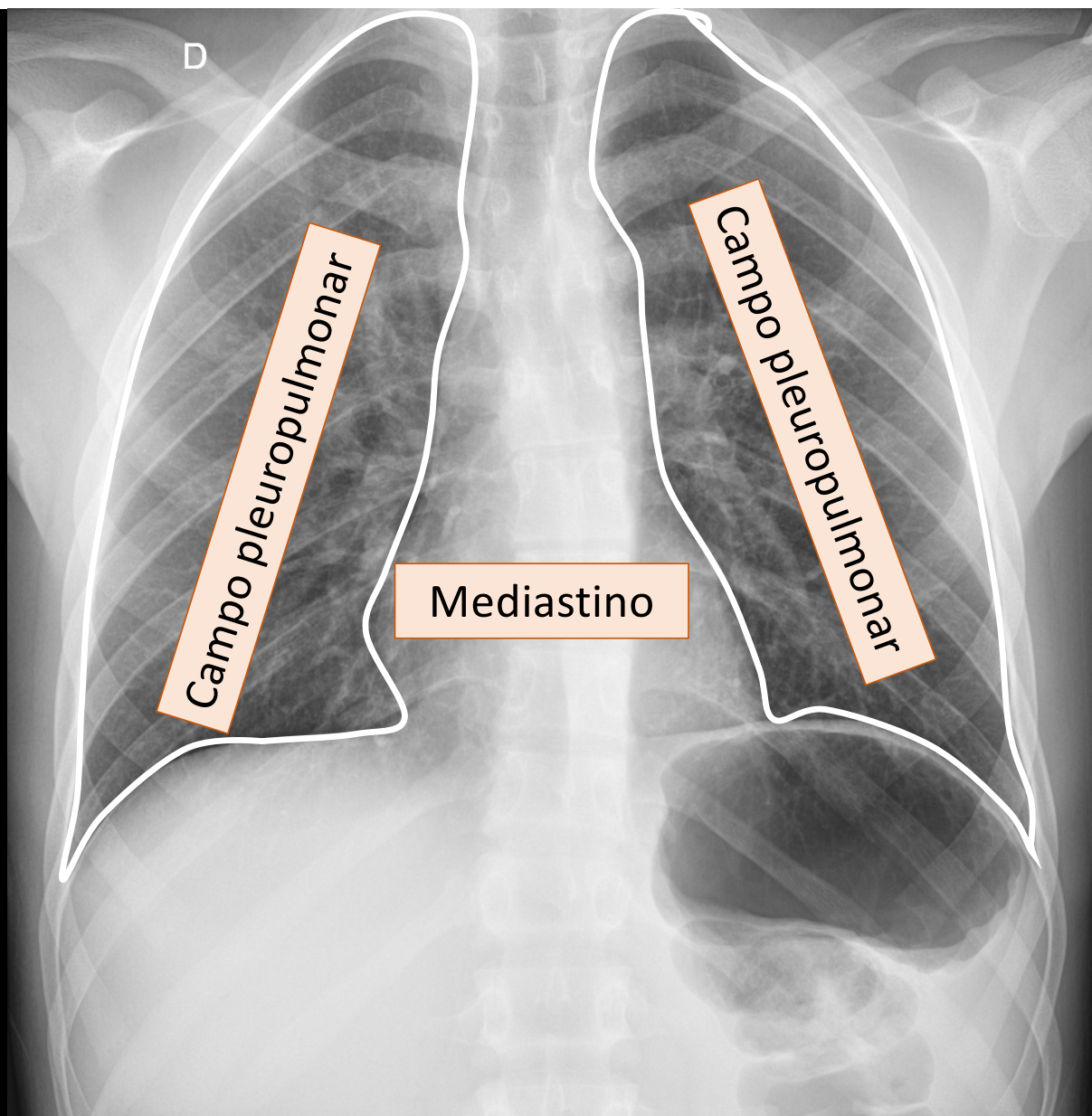
- ☐ 6
- ☐ 3
- ☐ 5
- ☐ 4

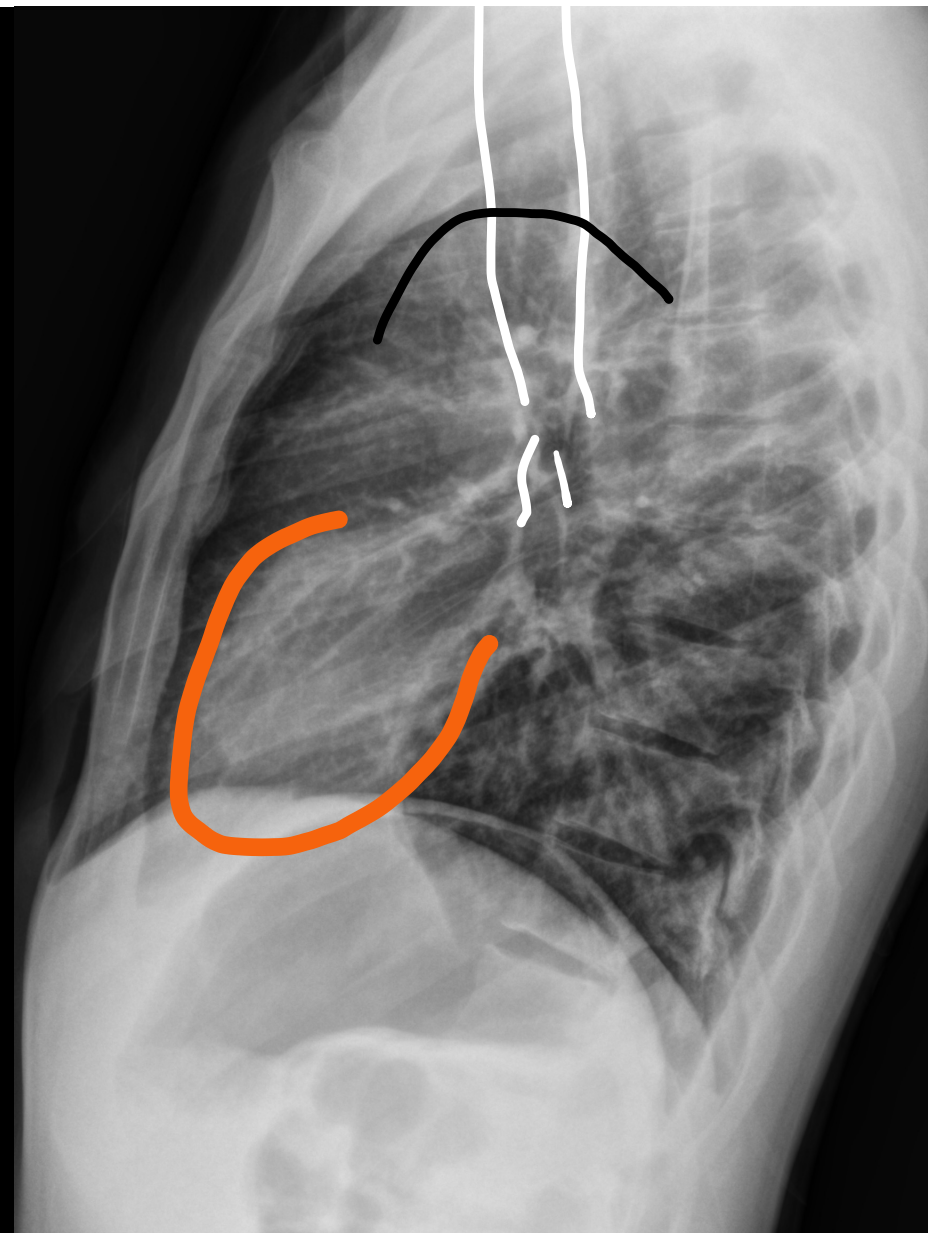
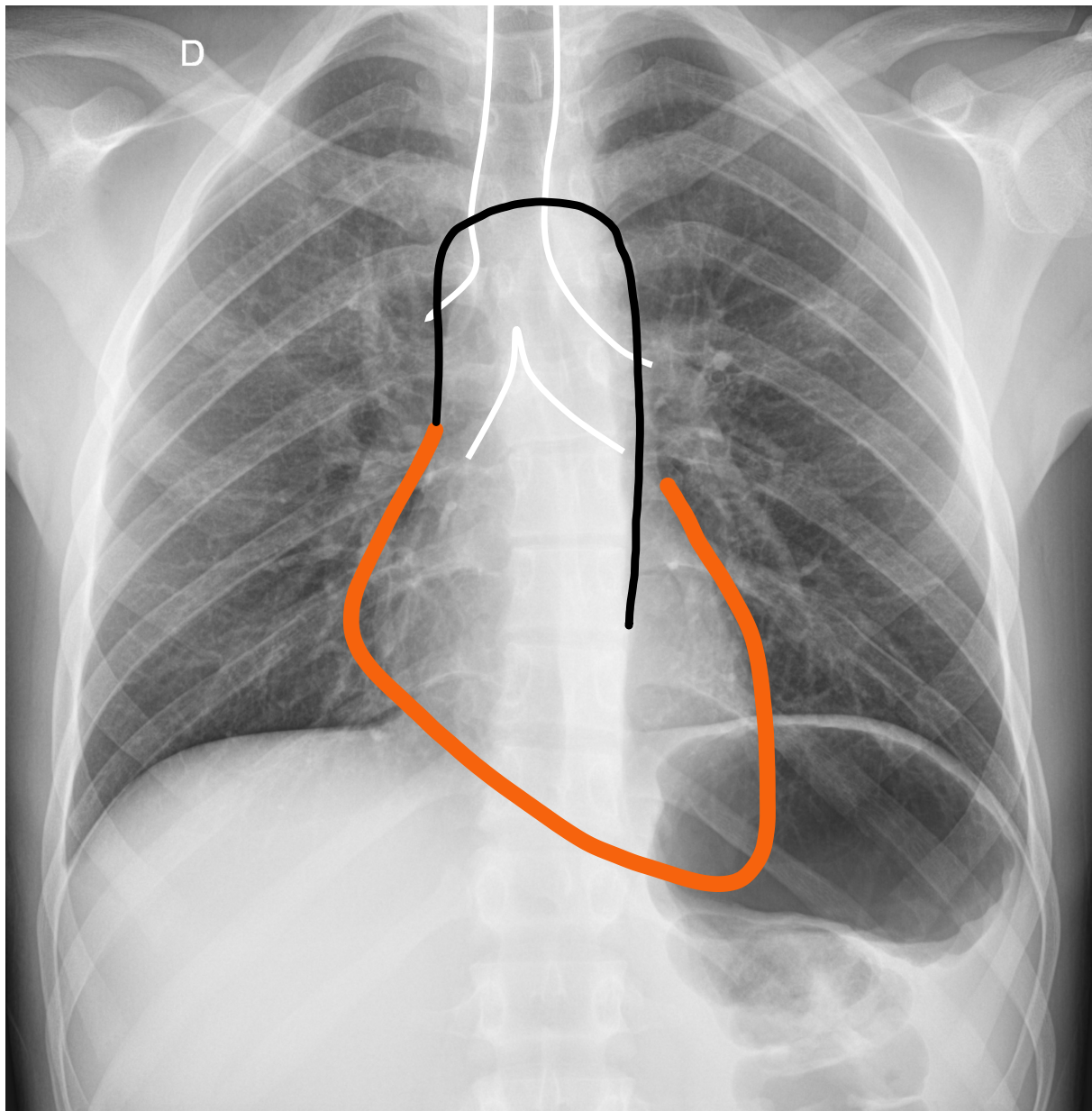
Assinale verdadeiro ou falso para a seguinte afirmação: "A radiografia simples disponibilizada mostra pneumonia bilateral"

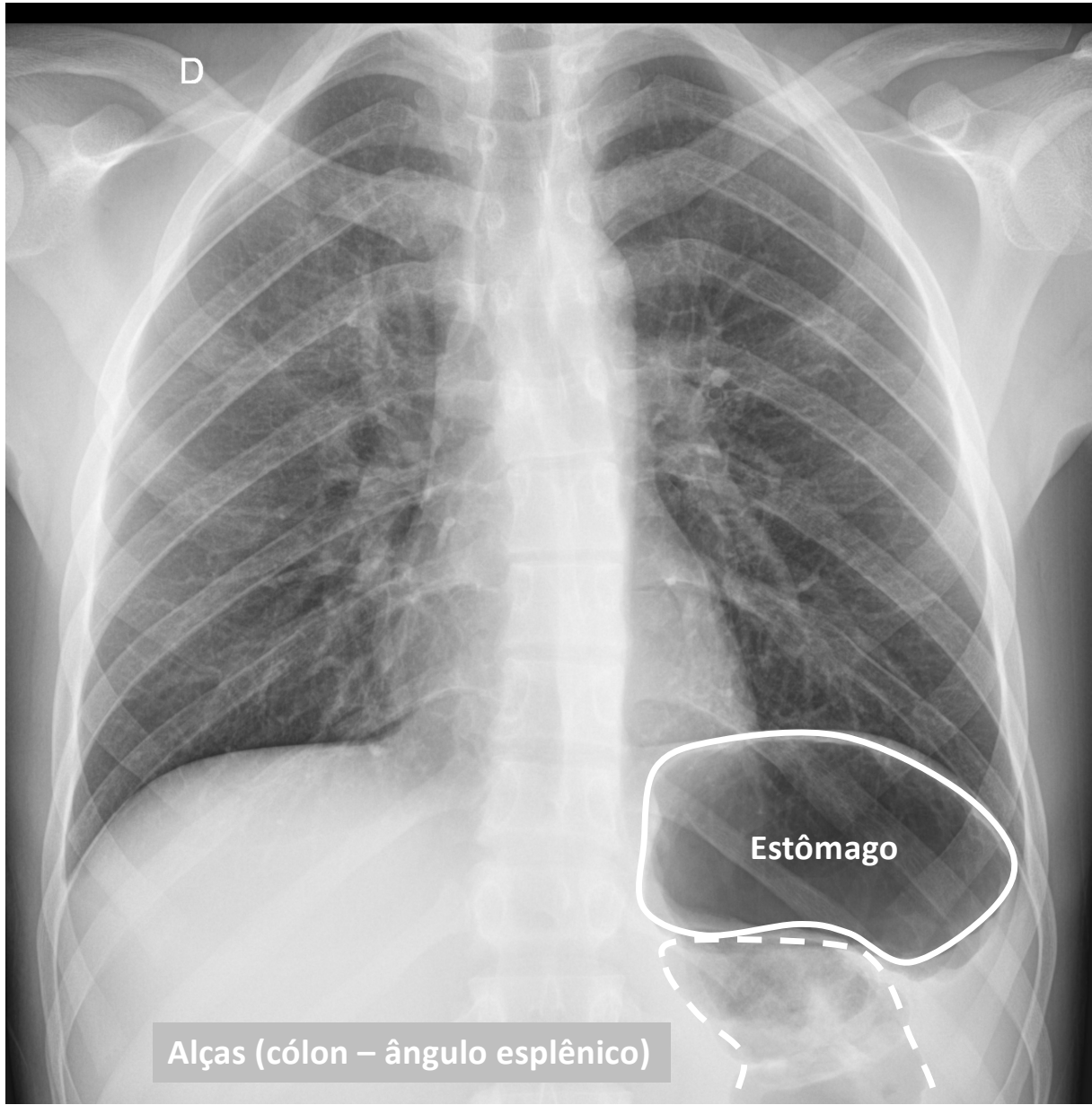


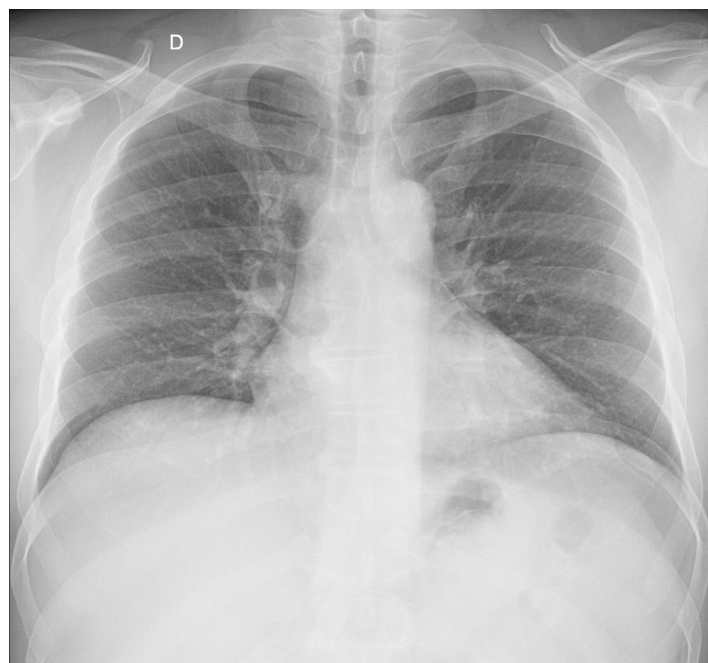
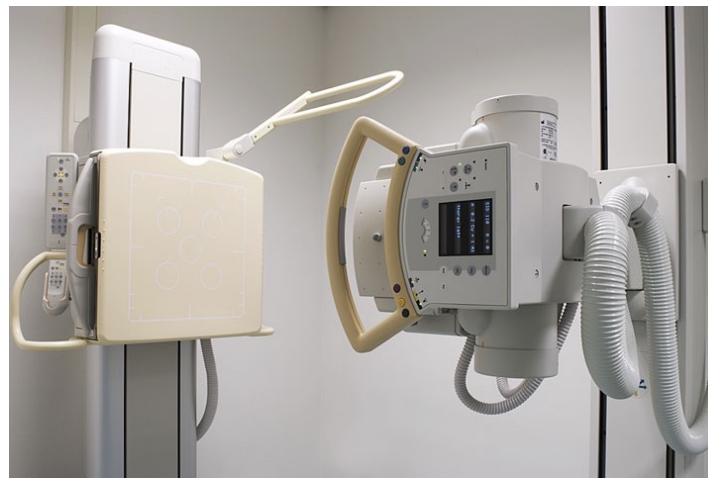
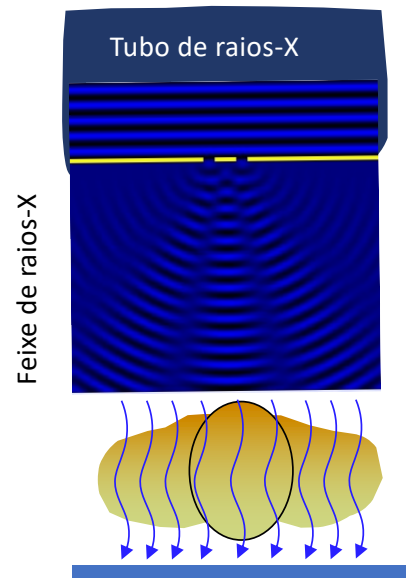




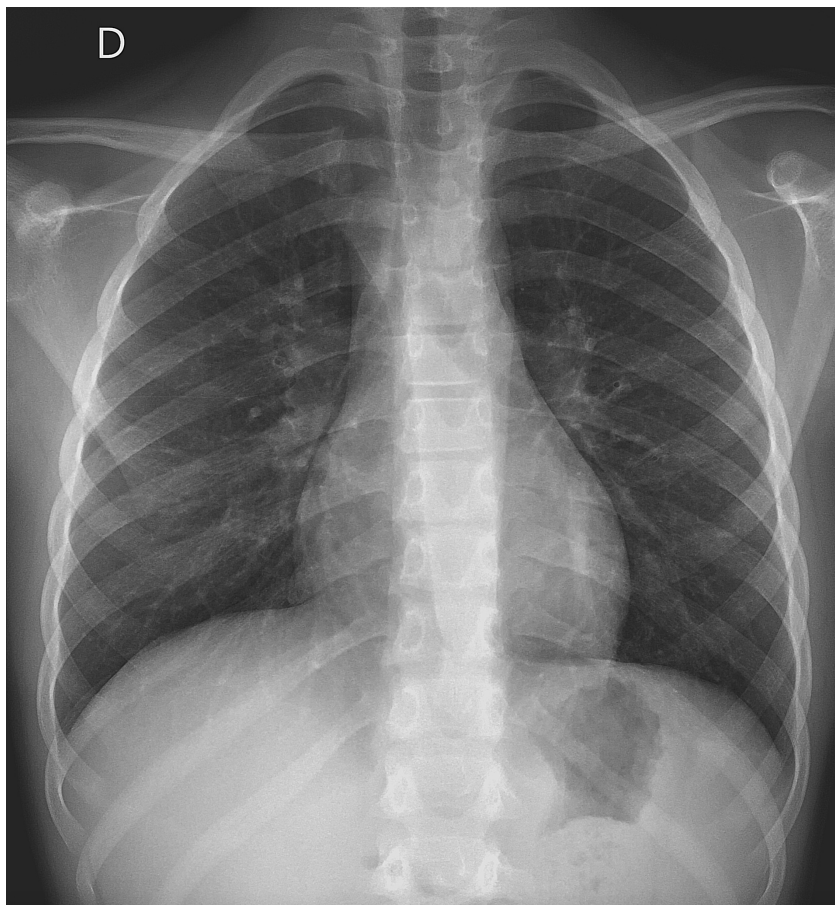






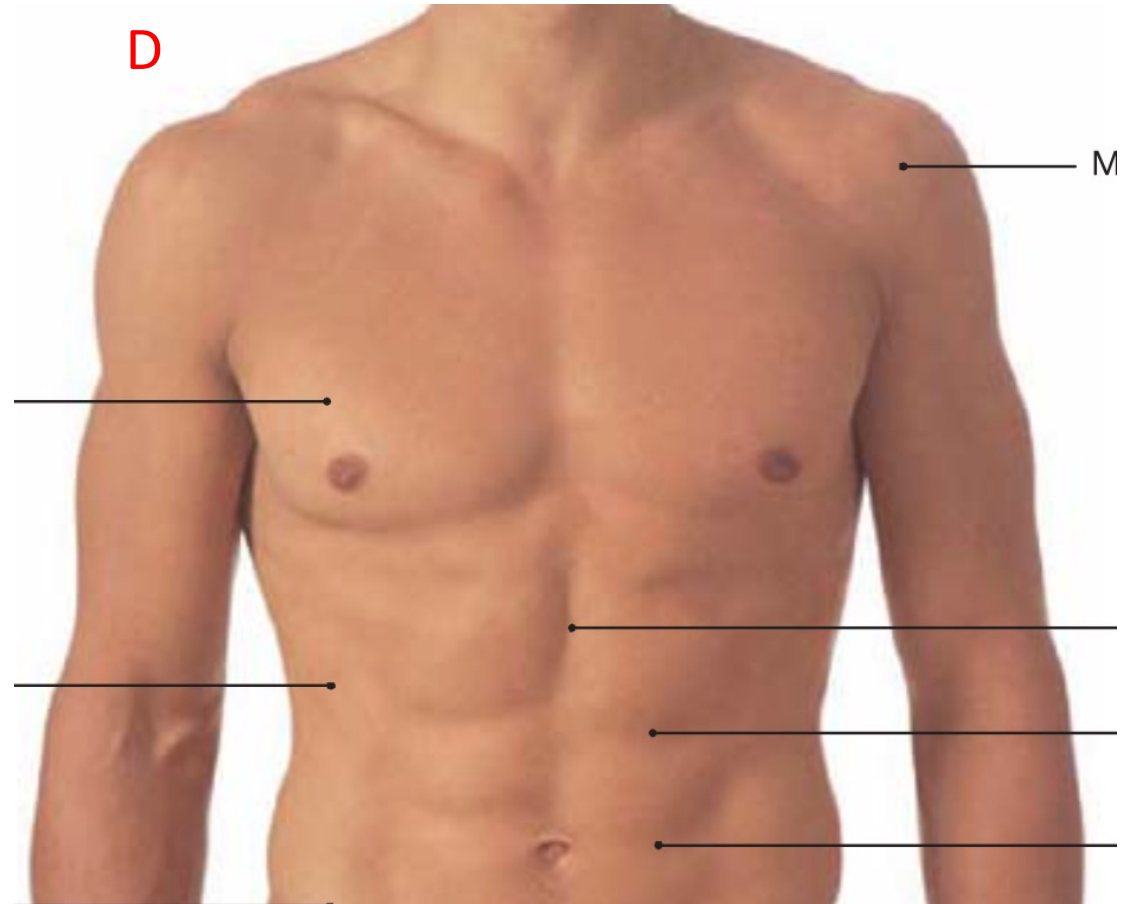
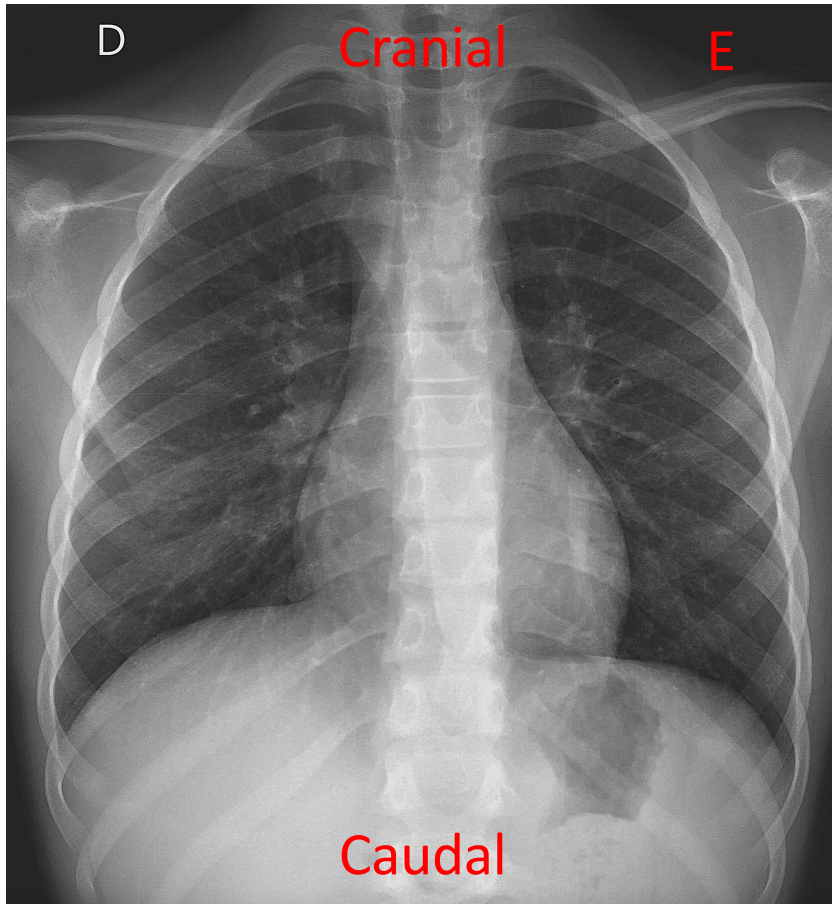


Padronização radiológica



Como se estivéssemos examinando o paciente

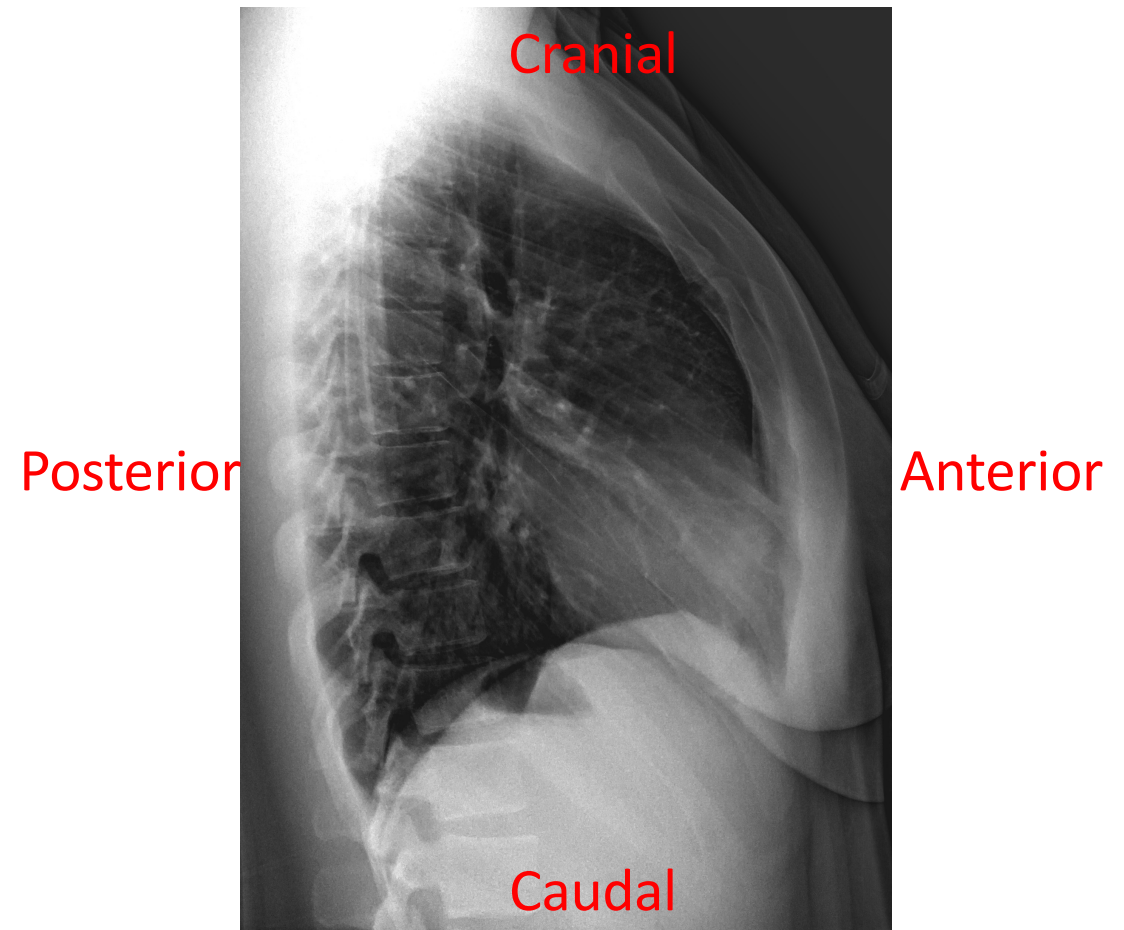
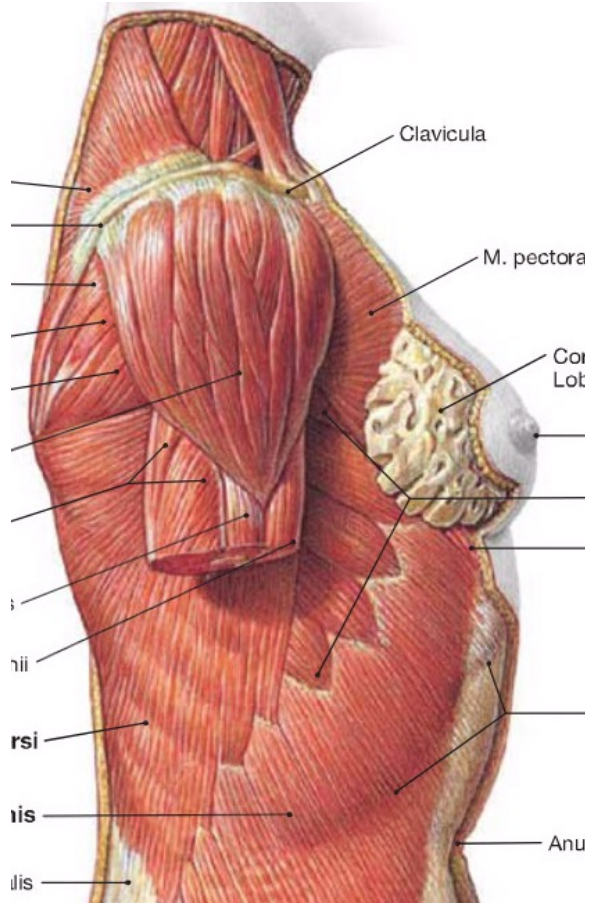
Padronização radiológica



Como se estivéssemos examinando o paciente

Paulsen Friedrich and J Waschke. 2011. Sobotta Atlas of Human Anatomy 15th edition English version. Munich: Elsevier.

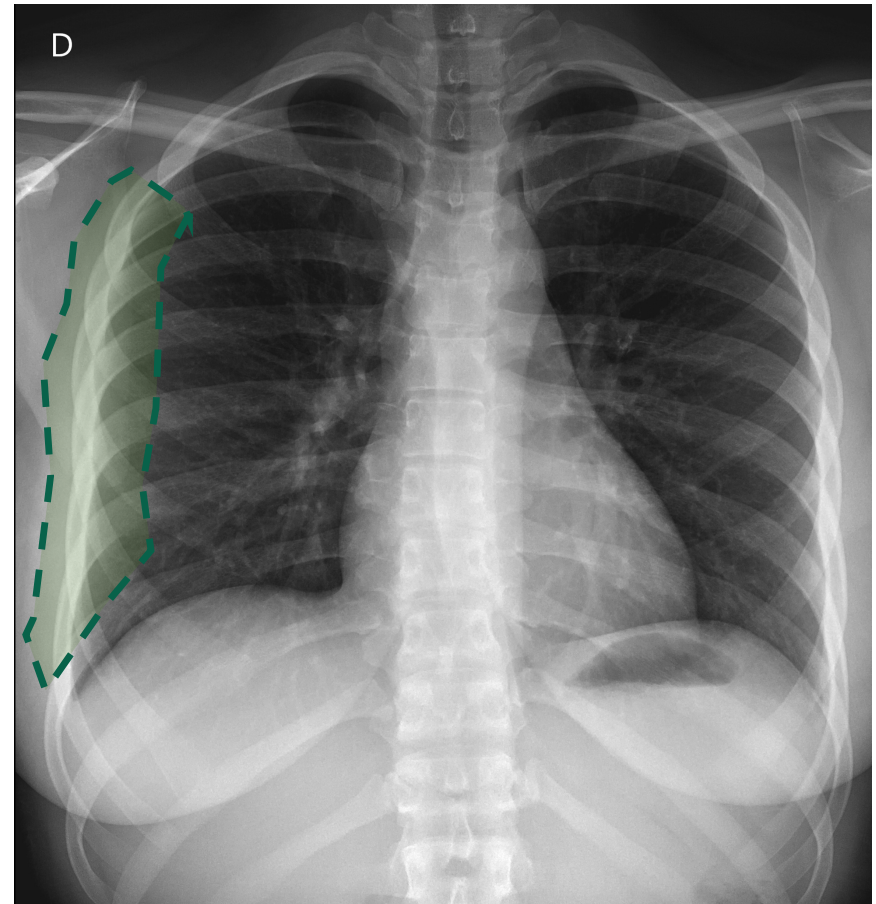
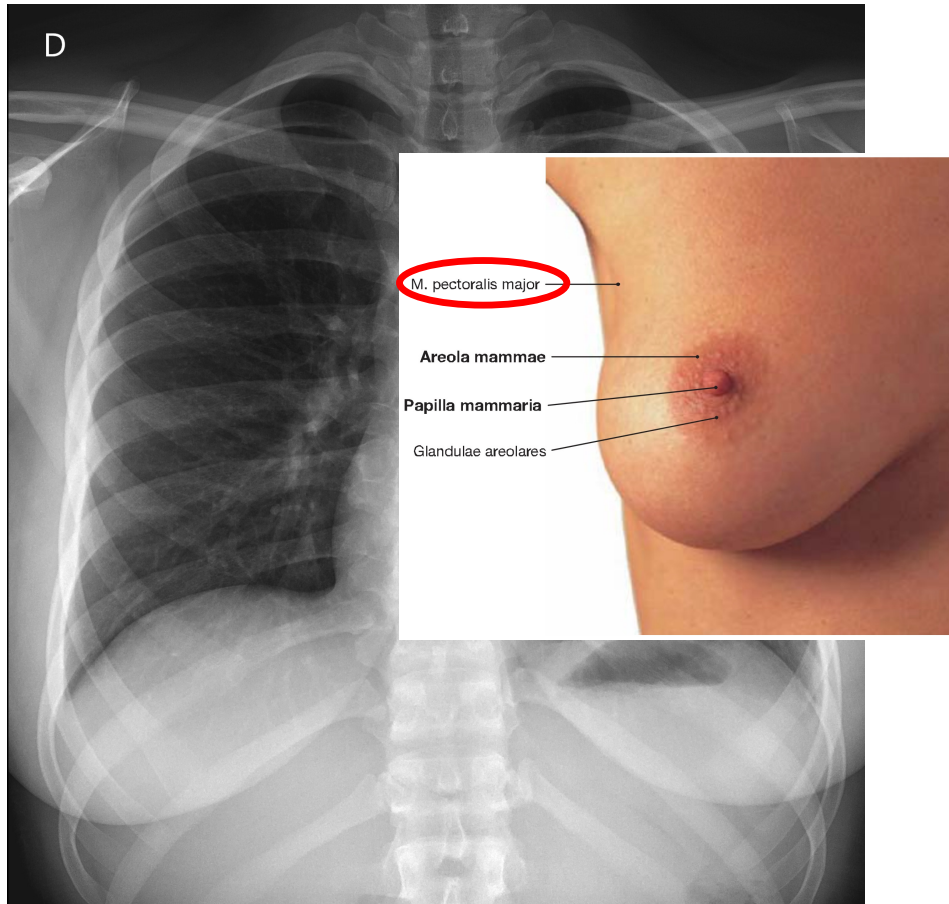
Padronização radiológica



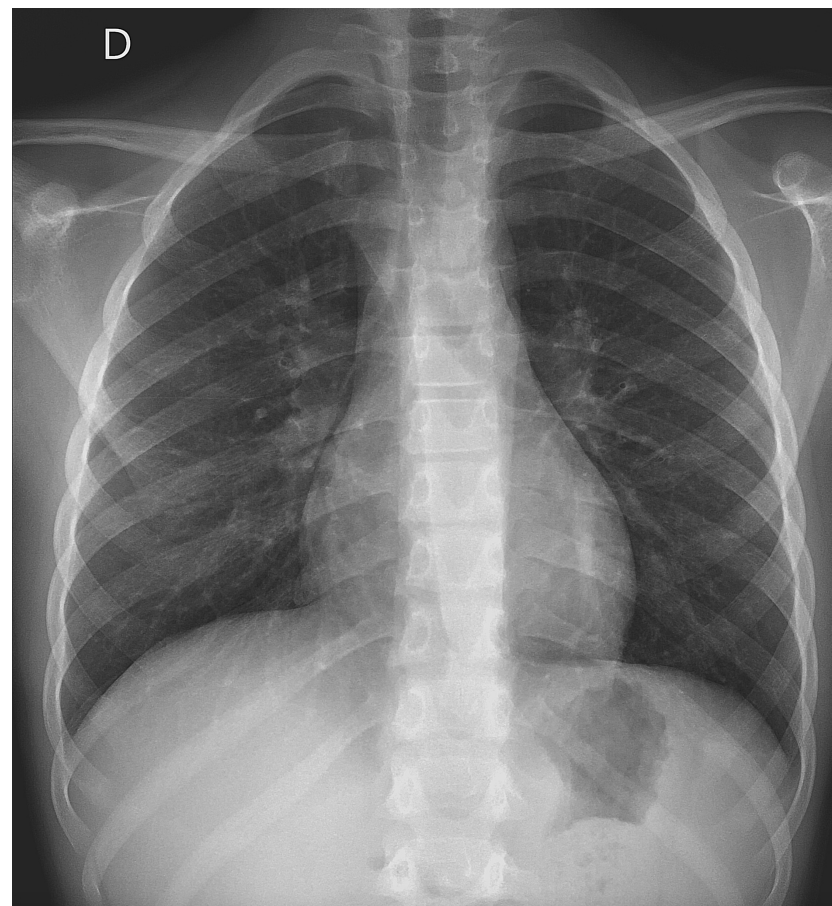
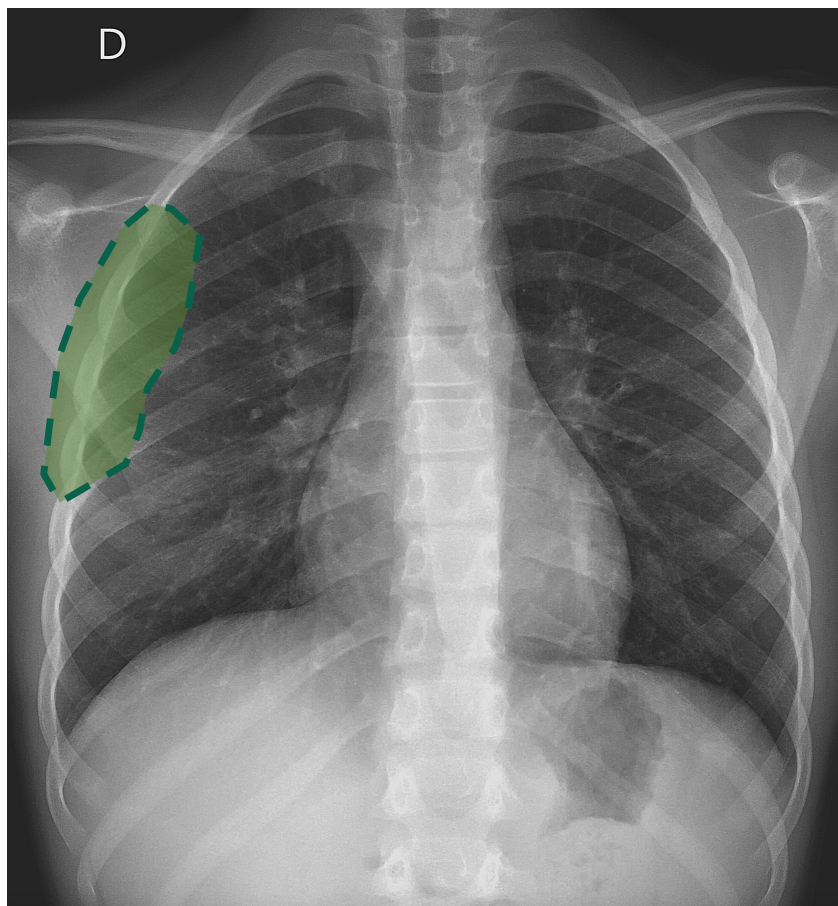
Perfil: lateral esquerdo (lado esquerdo do paciente em contato com filme/detector)
Menor sobreposição da área cardíaca

Partes moles e parede torácica

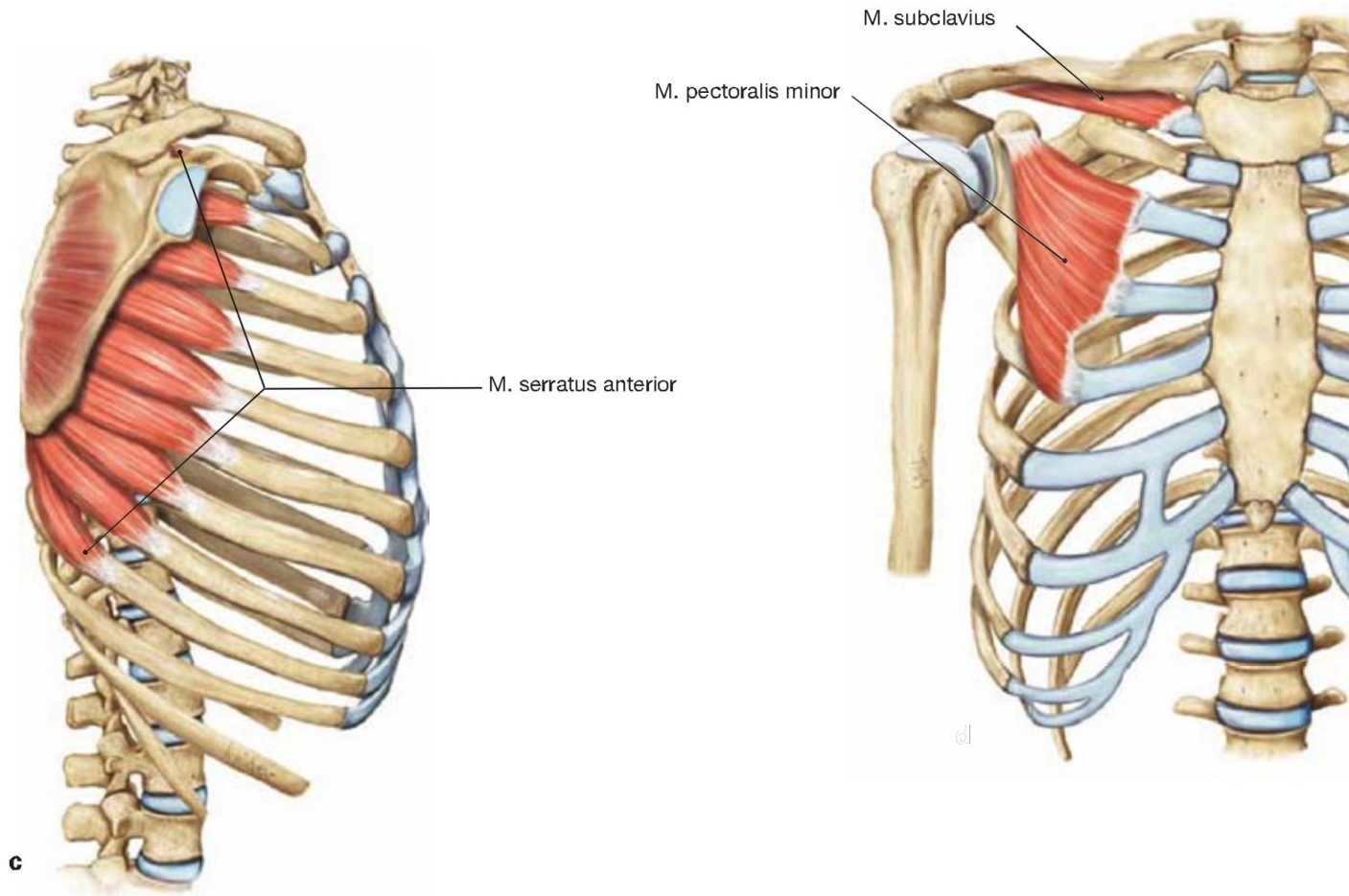
Patológico?



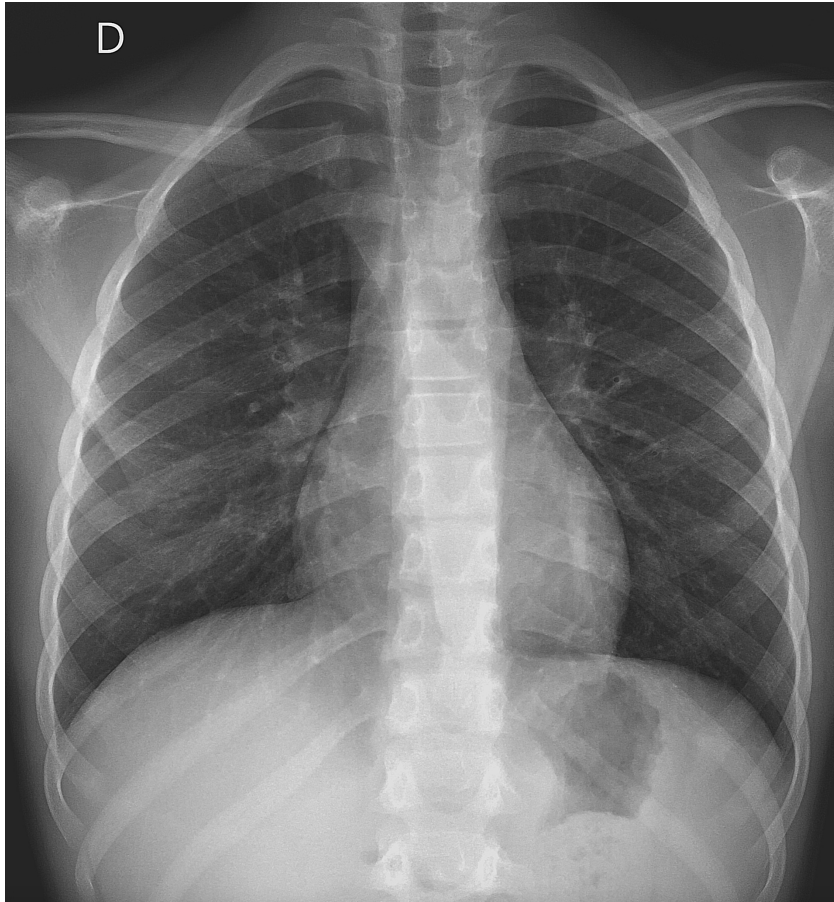




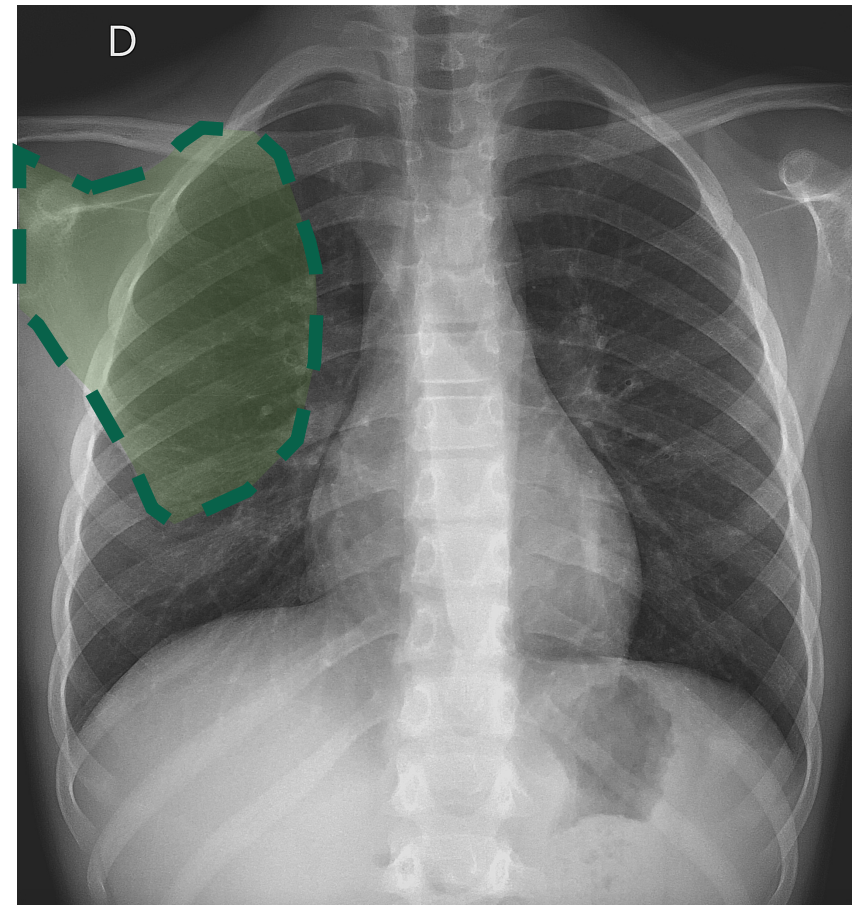
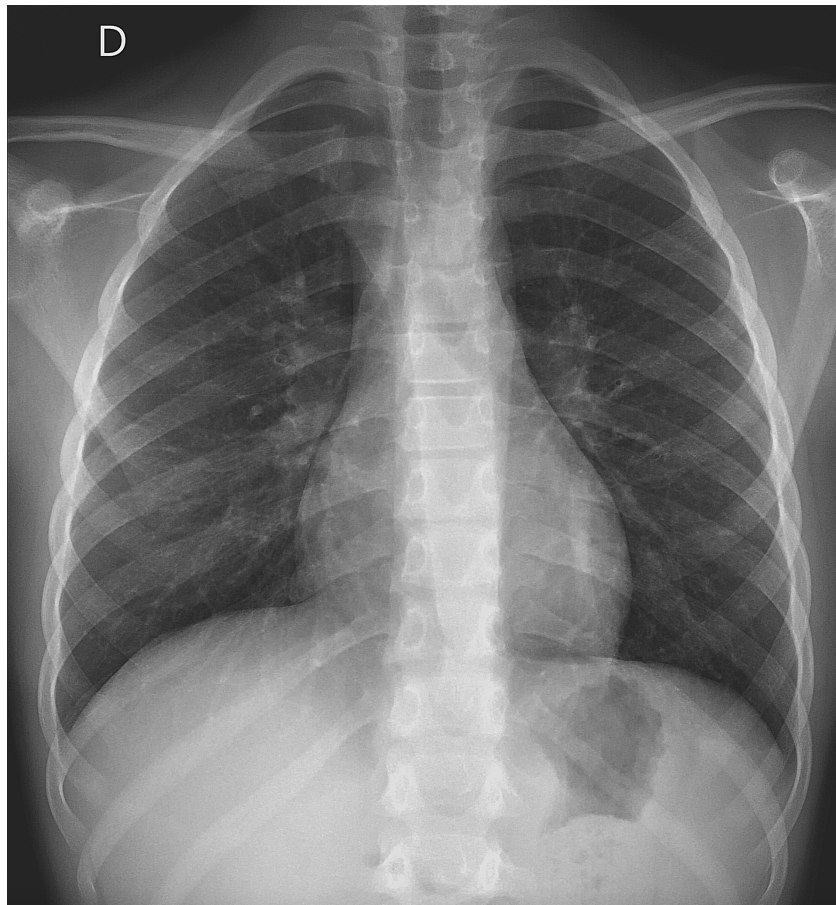
Parede torácica



Que estrutura é?

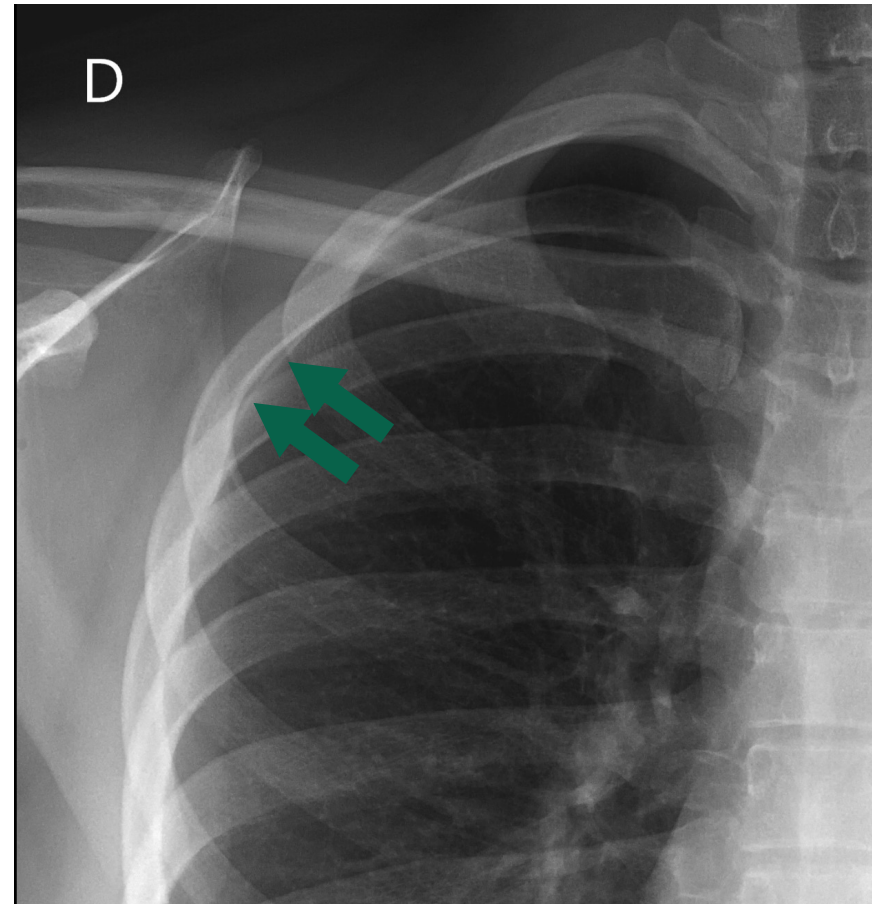
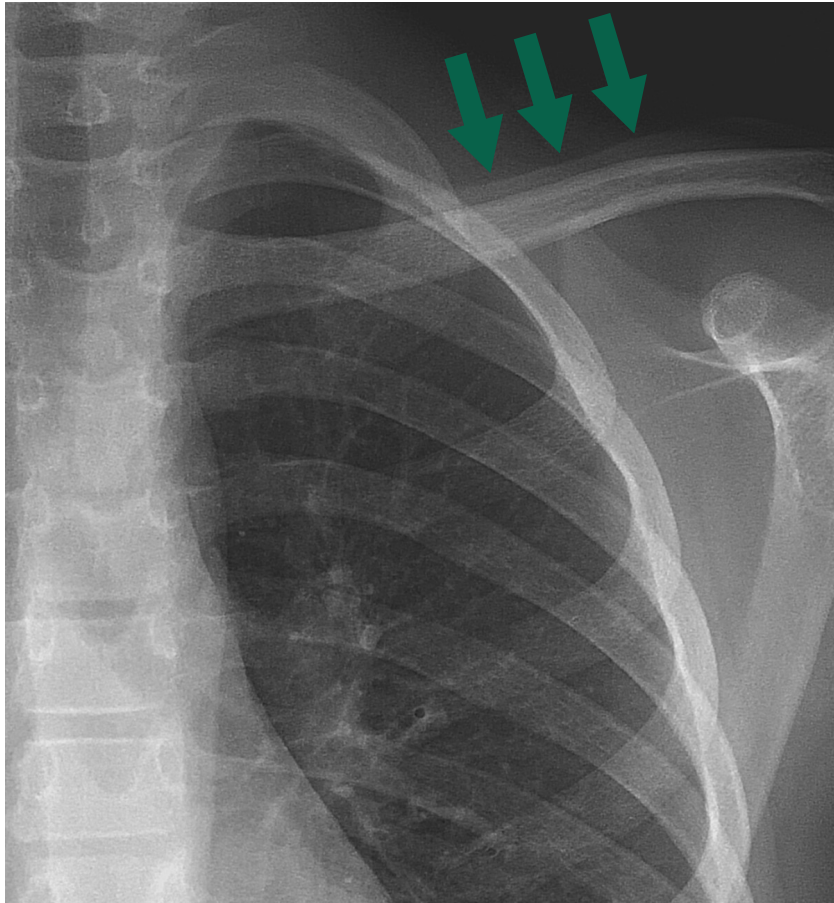


Que estrutura é?

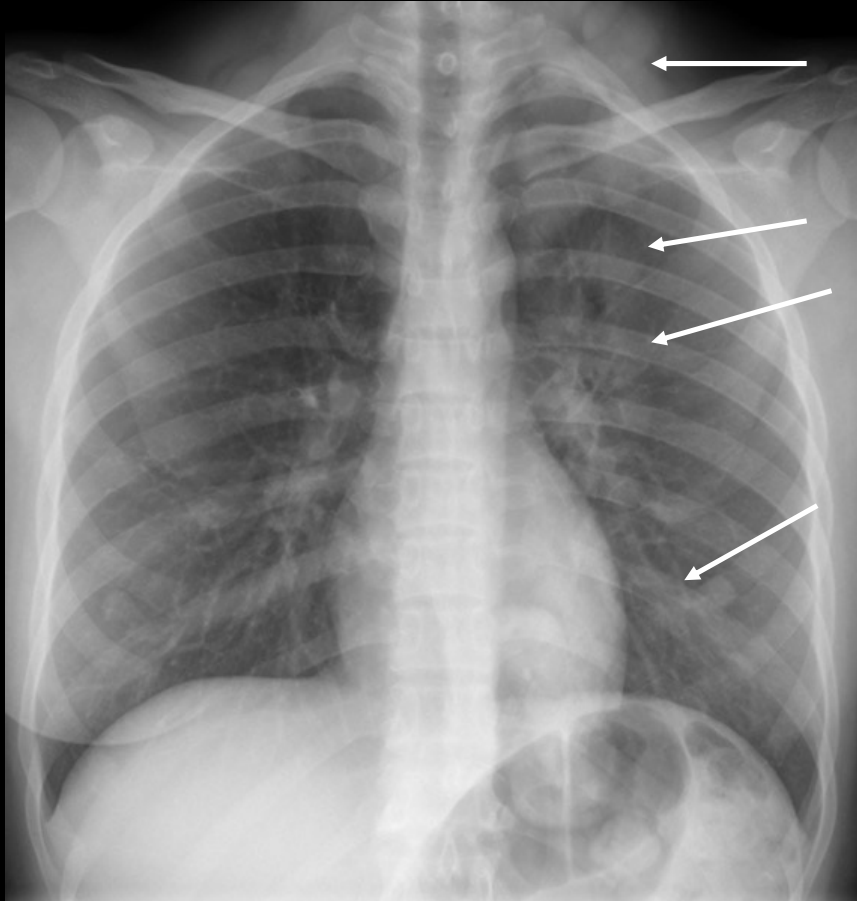


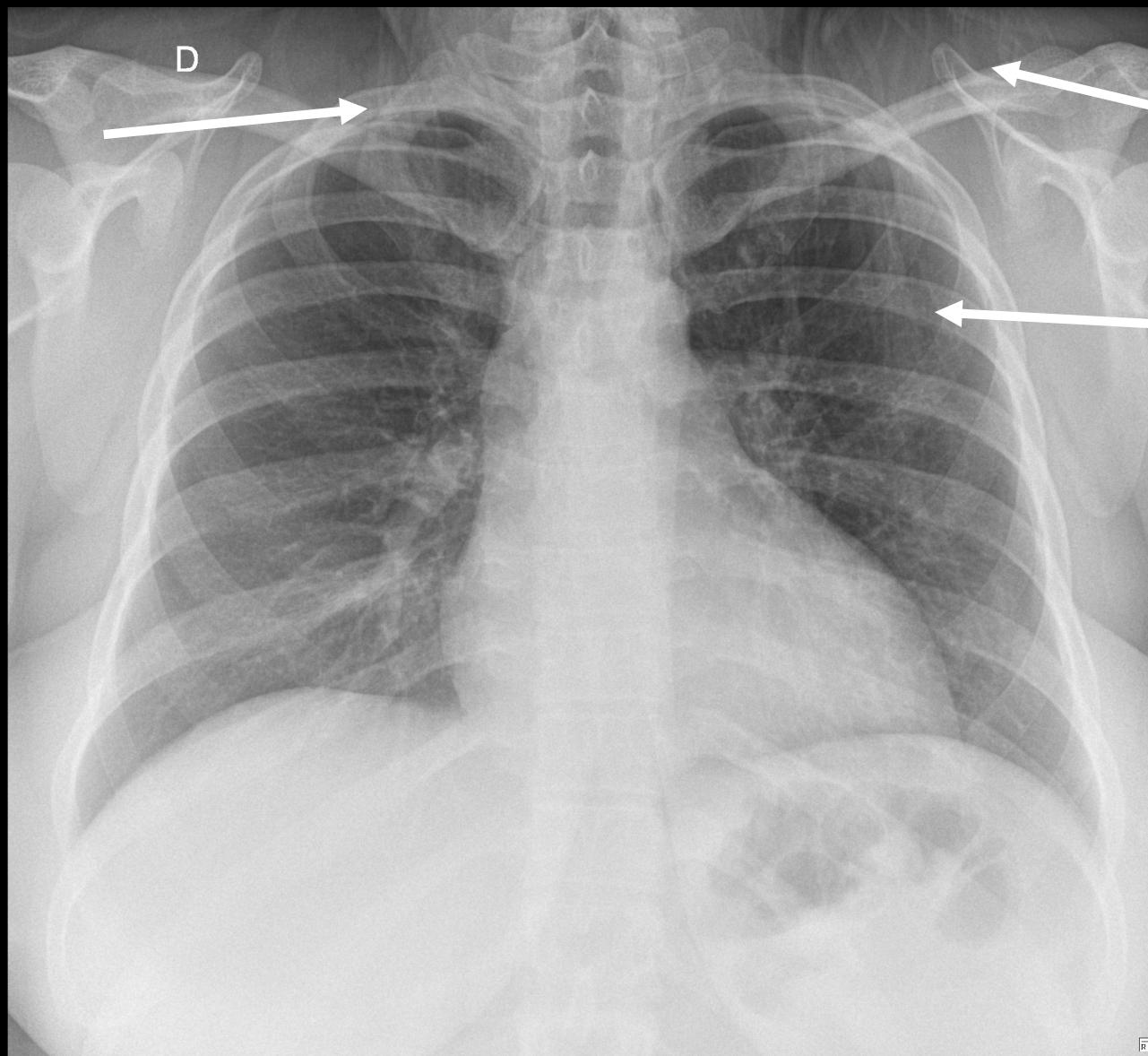
Escápula

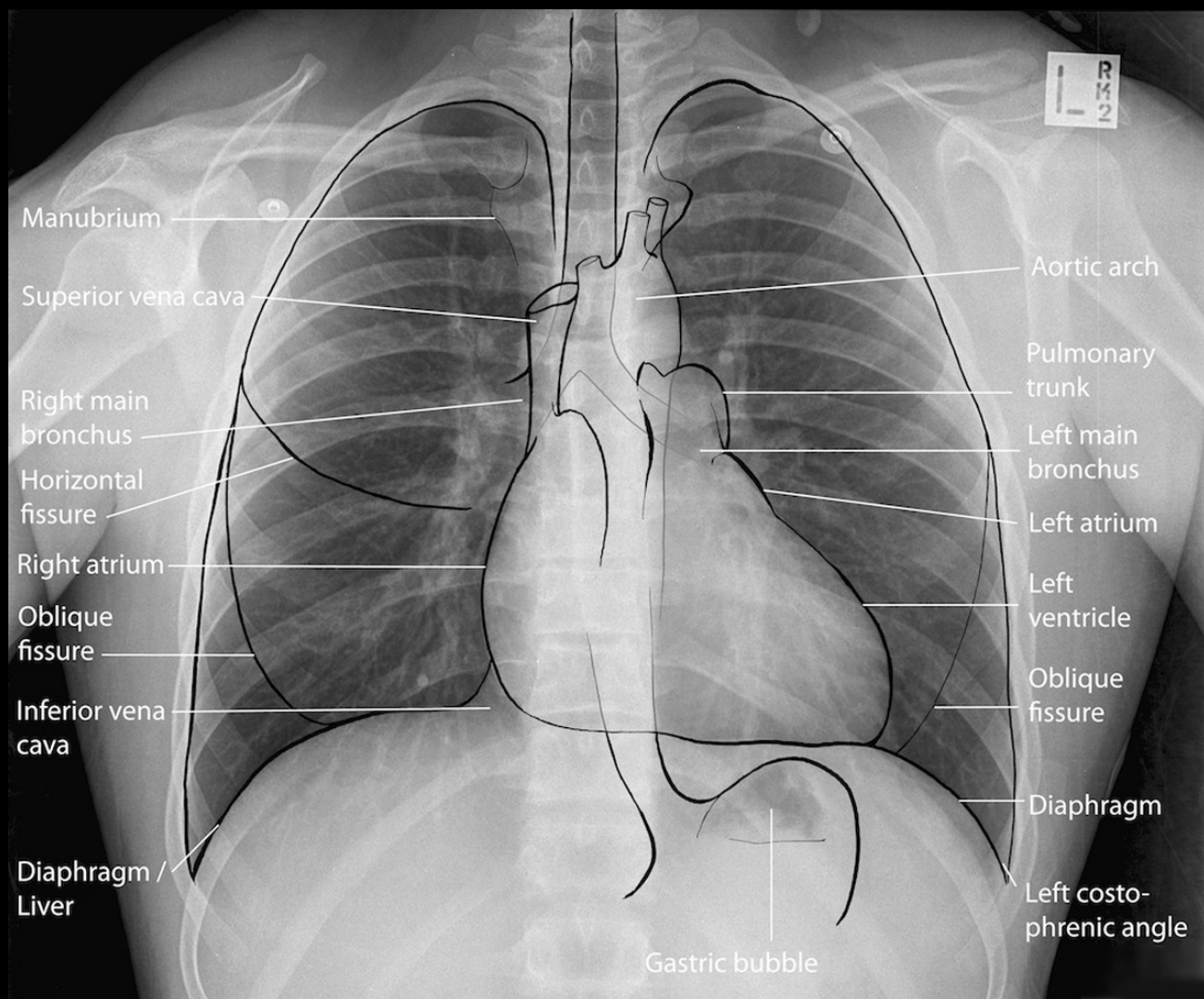
Sombra acompanhante

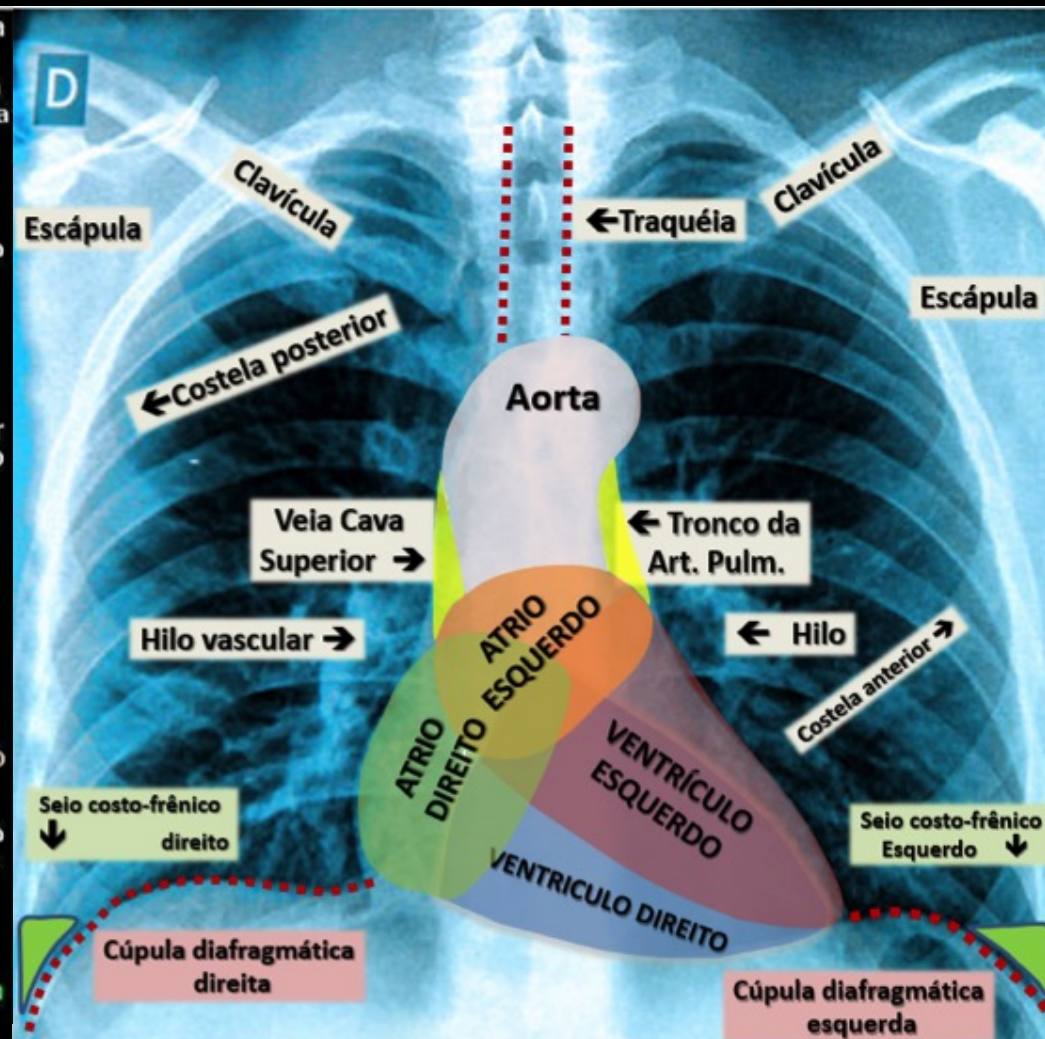
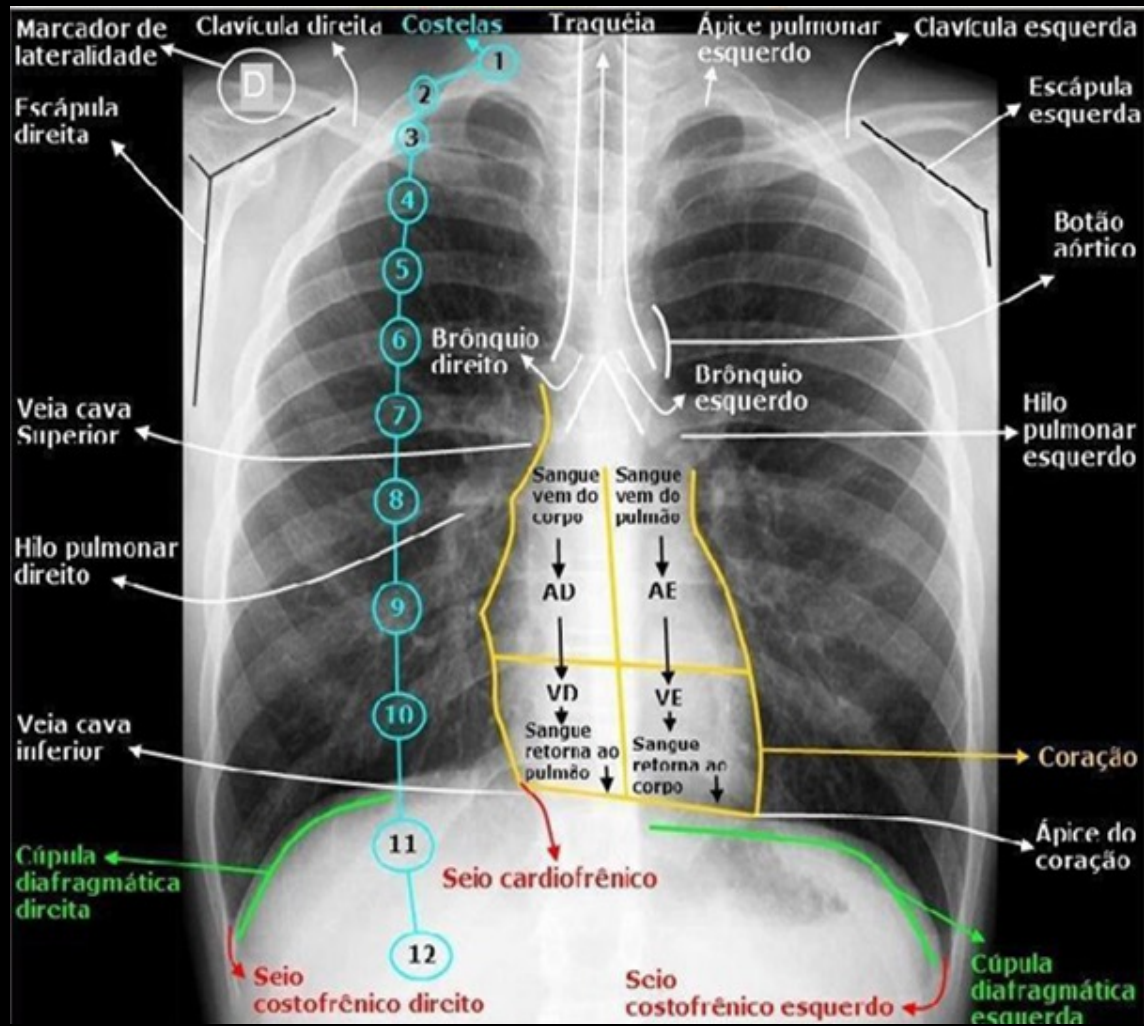


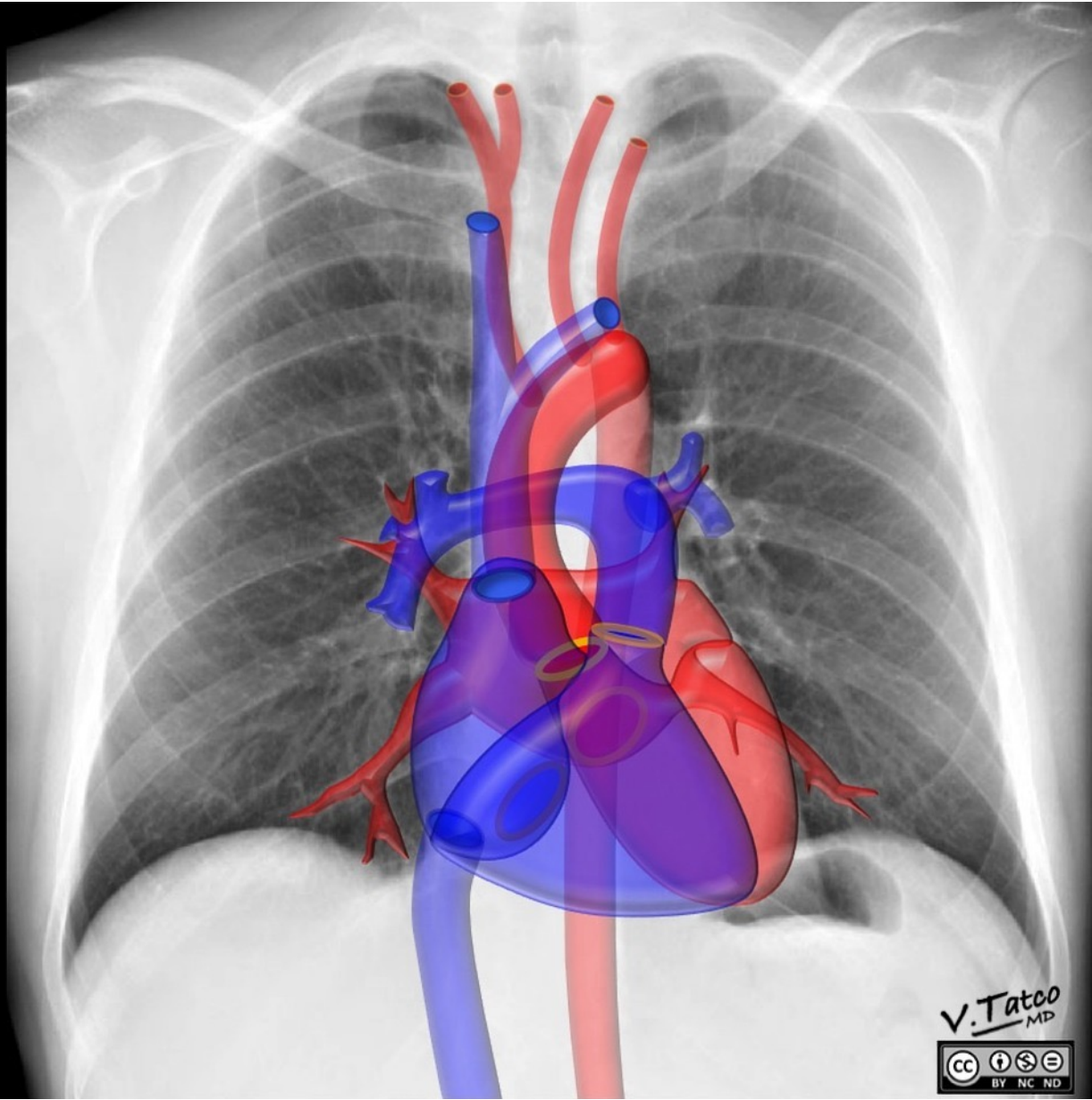
Regra: interface entre tecidos com atenuações diferentes criam sombras (ex.: sombras acompanhantes)

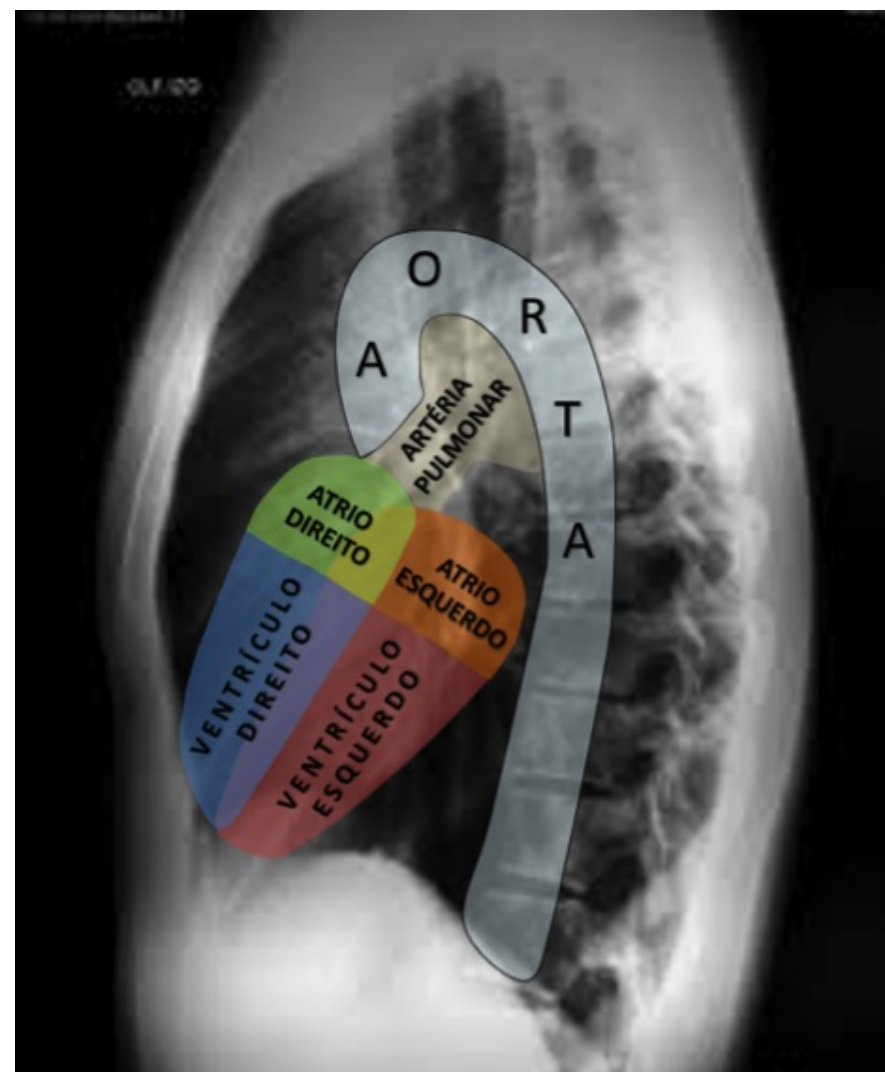
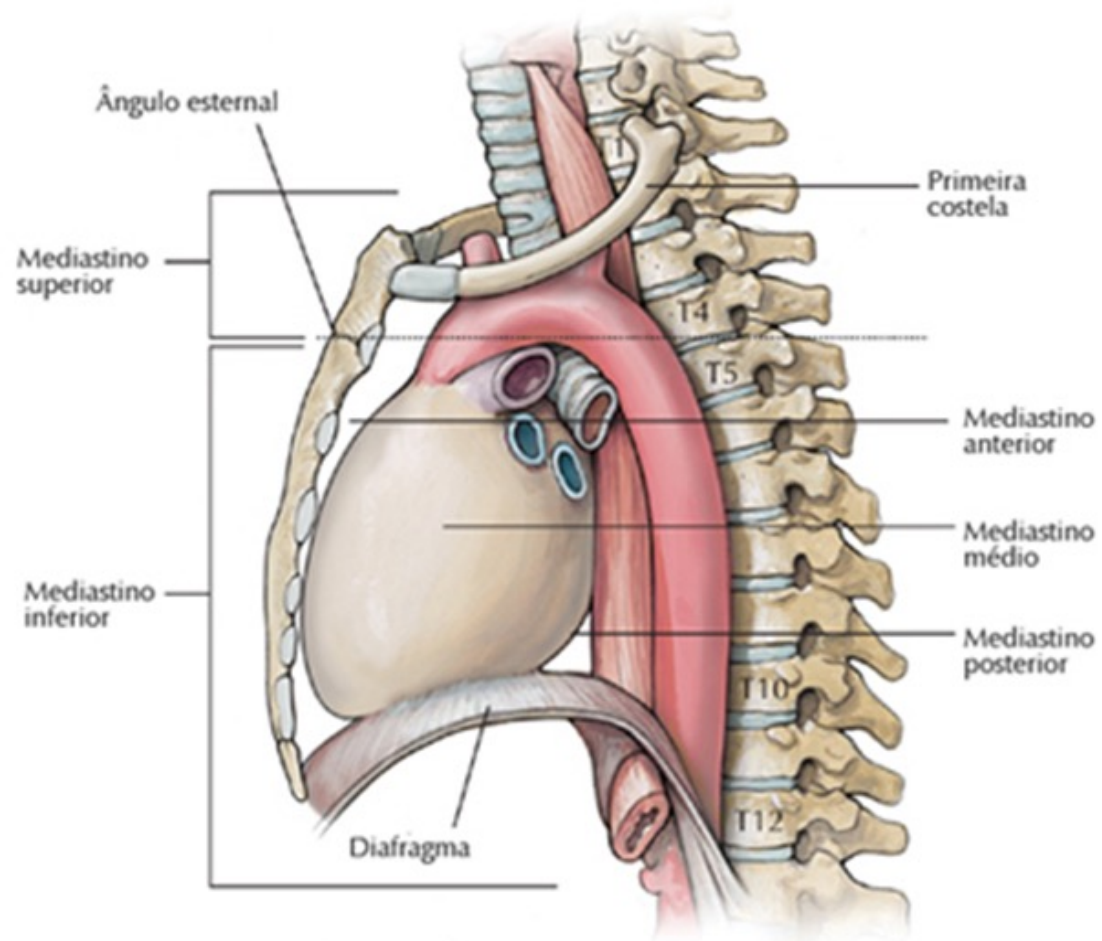










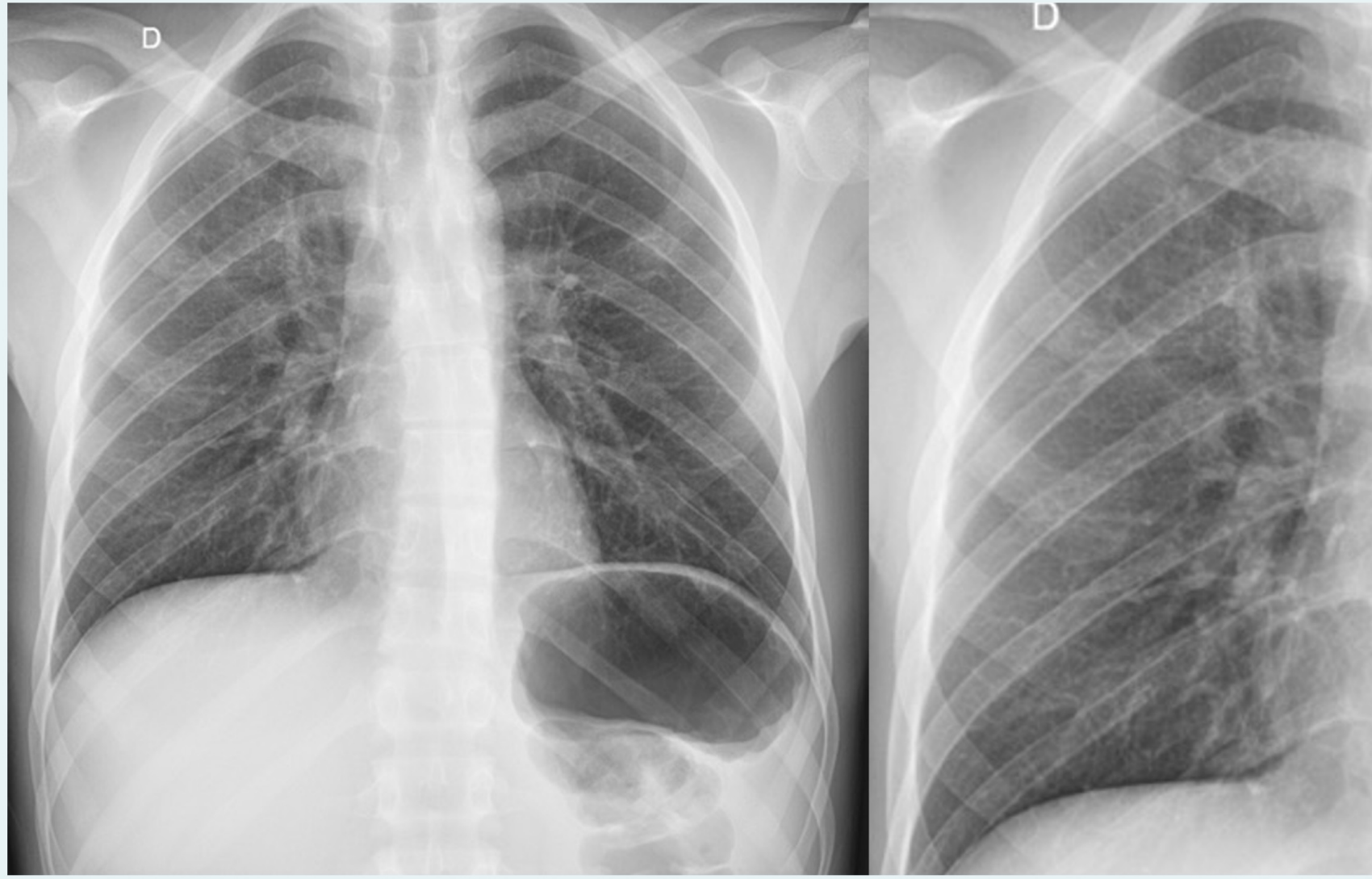


Questionário 2

Questionário 2

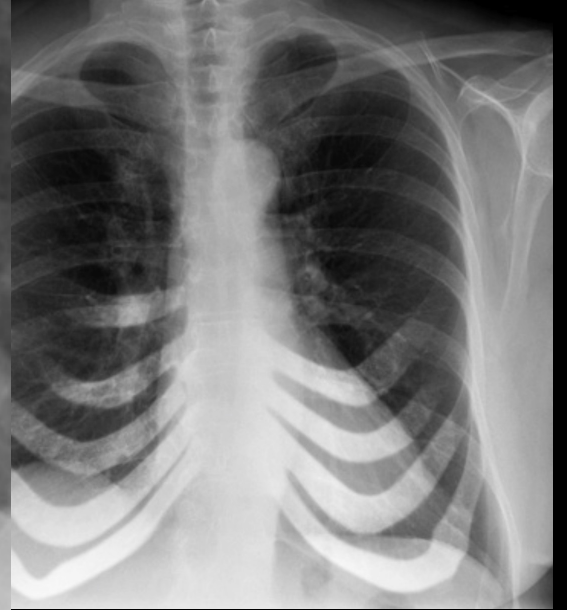
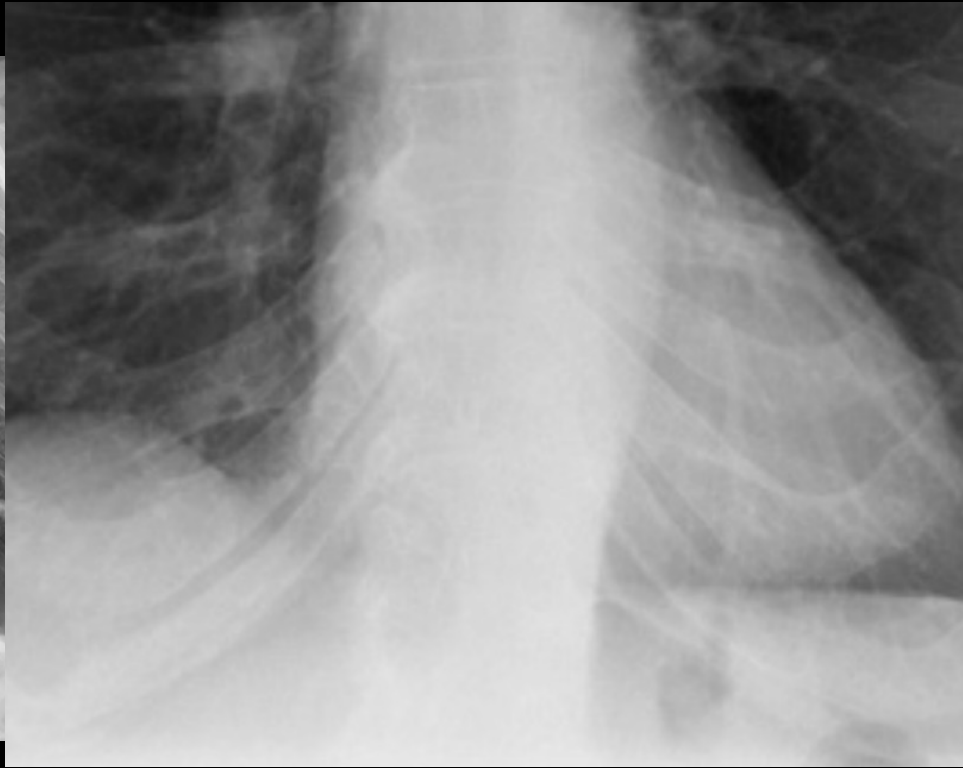
Devolutiva, dúvidas e comentários

Quais as estruturas anatômicas passíveis de visualização na radiografia simples de tórax?



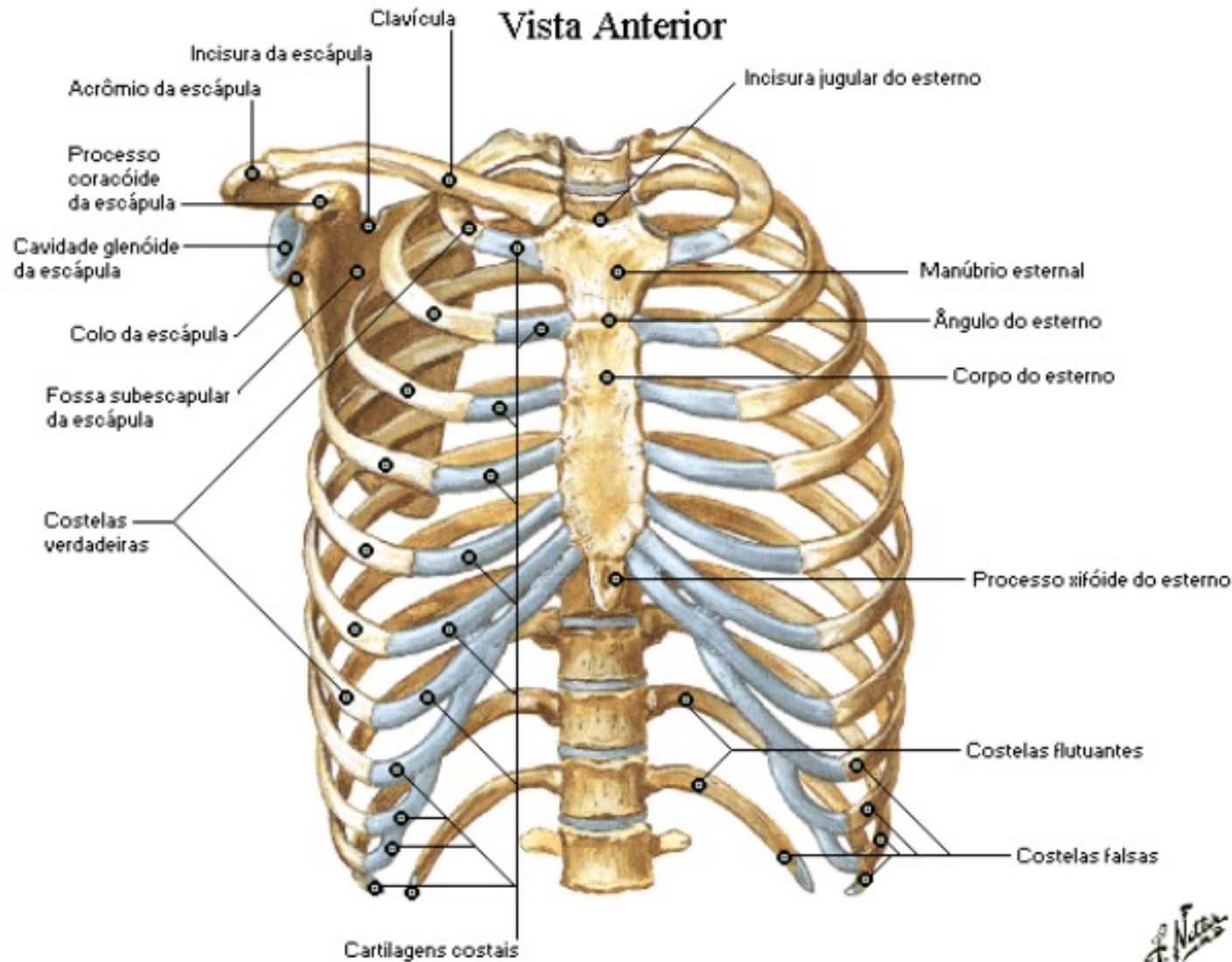
Assinale verdadeiro ou falso para a afirmação: "A radiografia simples disponibilizada certamente não é de uma criança"



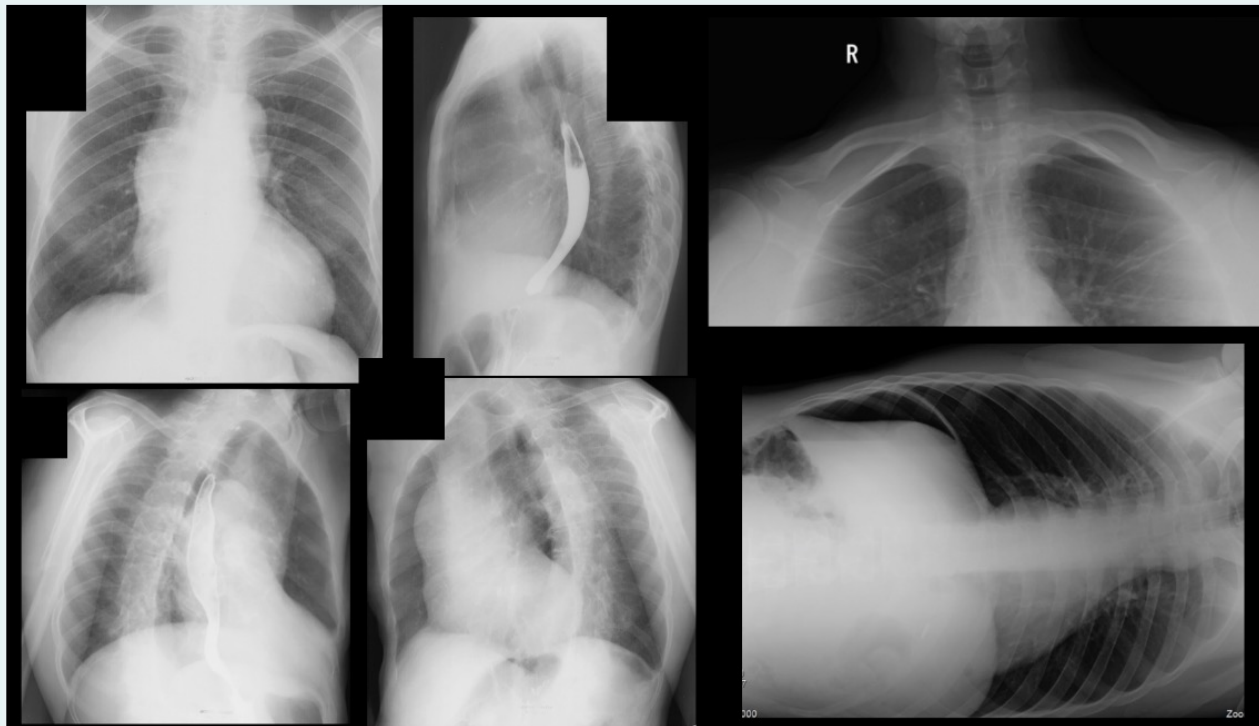


Arcabouço Ósseo do Tórax

Vista Anterior

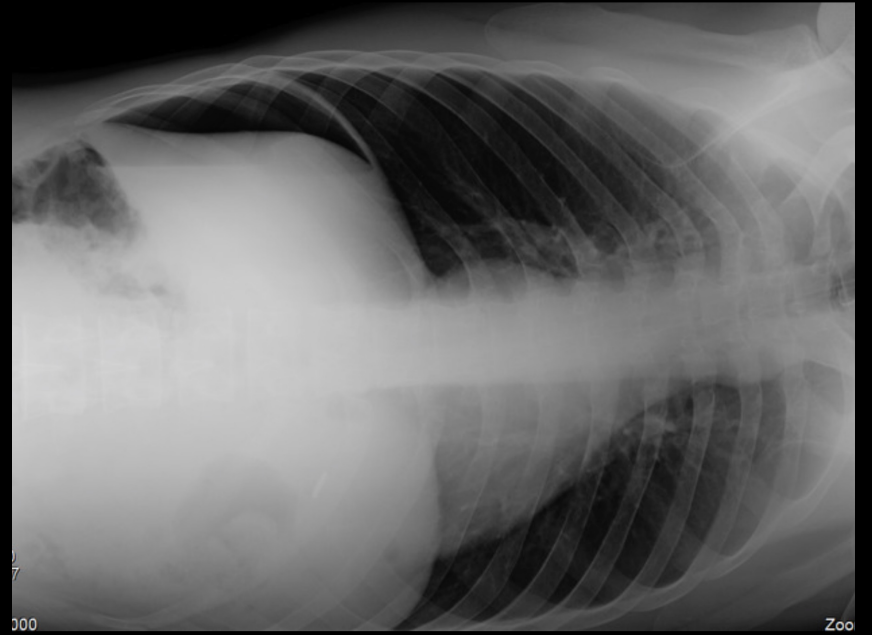
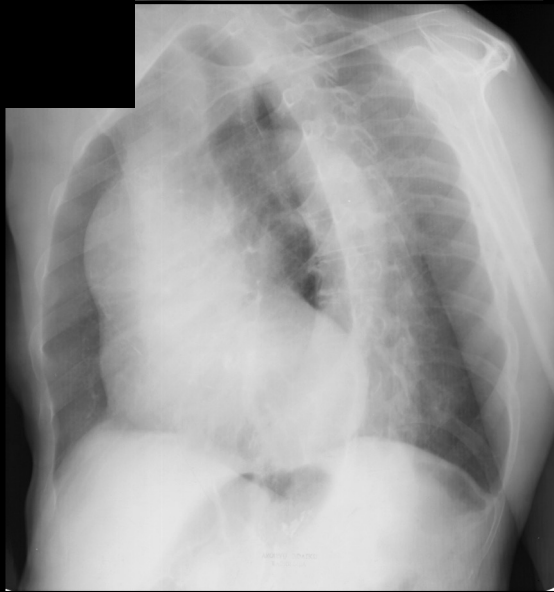
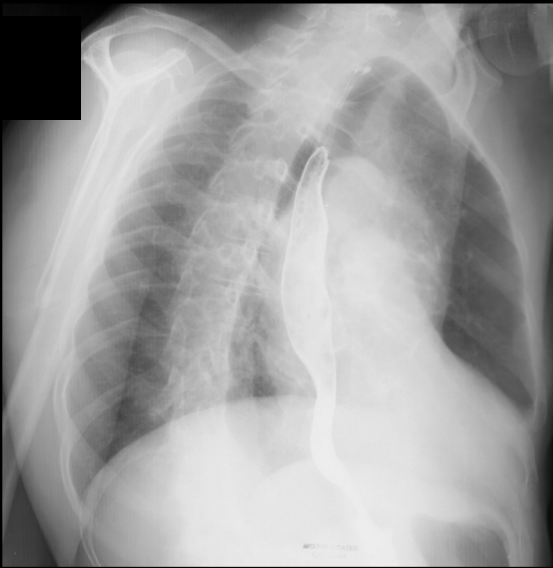
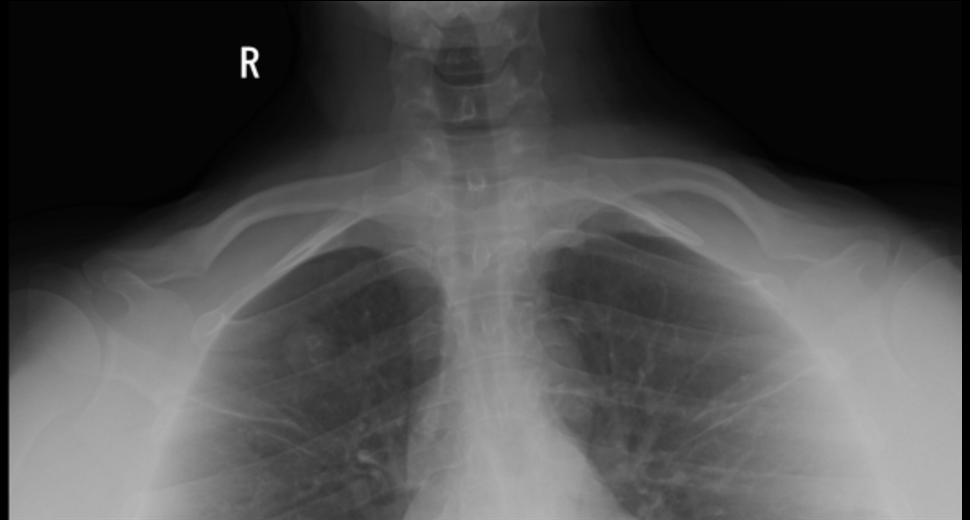
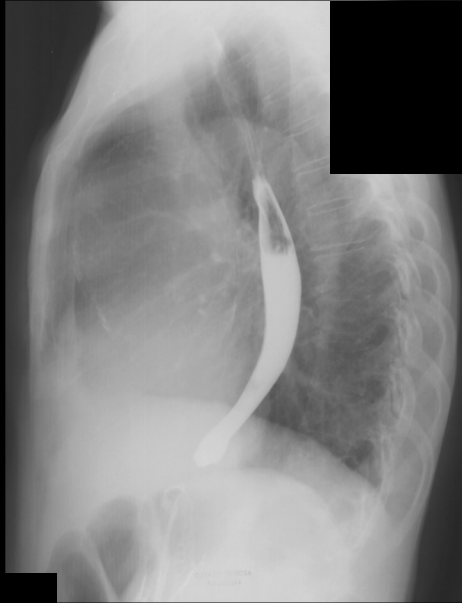
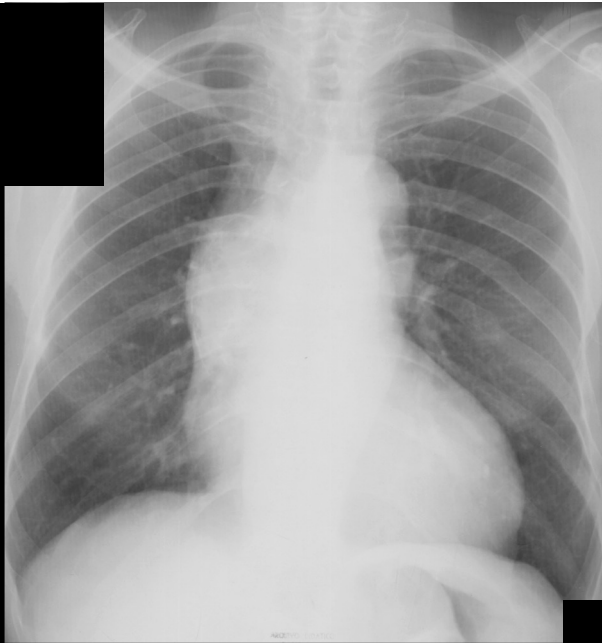


Qual a principal diferença entre estas radiografias de tórax?



Escolha uma opção:

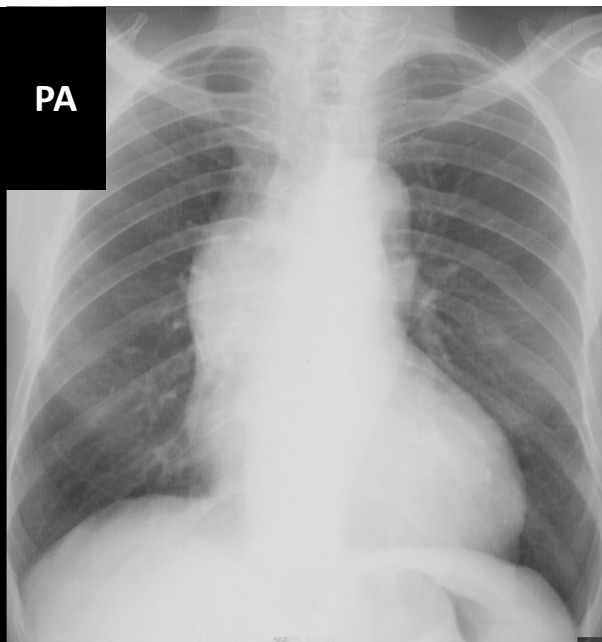
- ☐ Idade dos indivíduos
- ☐ Penetração (quantidade de raios X utilizada)
- ☐ Sexo dos indivíduos
- ☐ Incidência



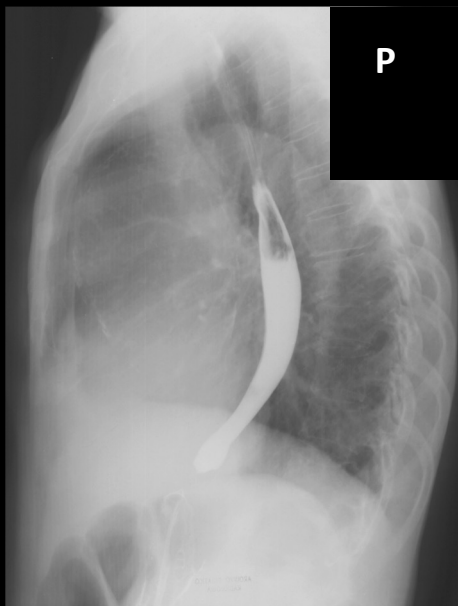
000

Zoo

PA

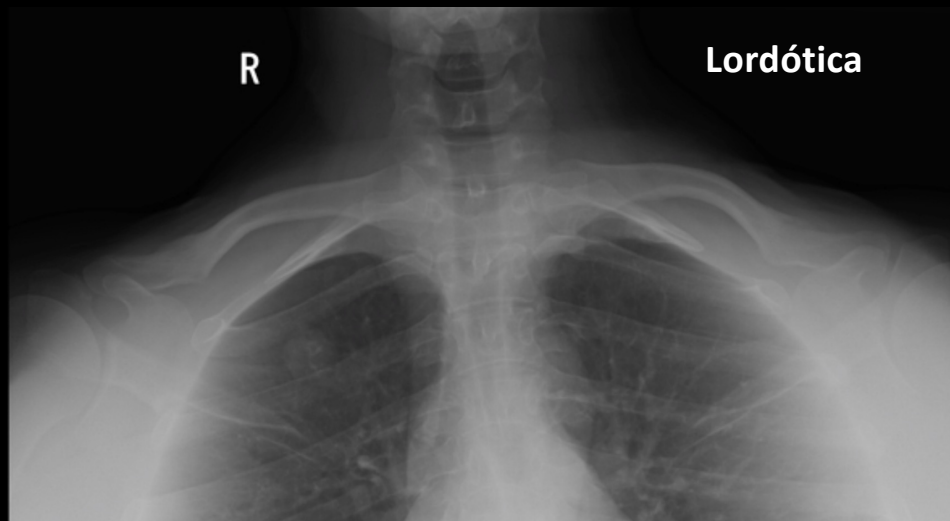


P

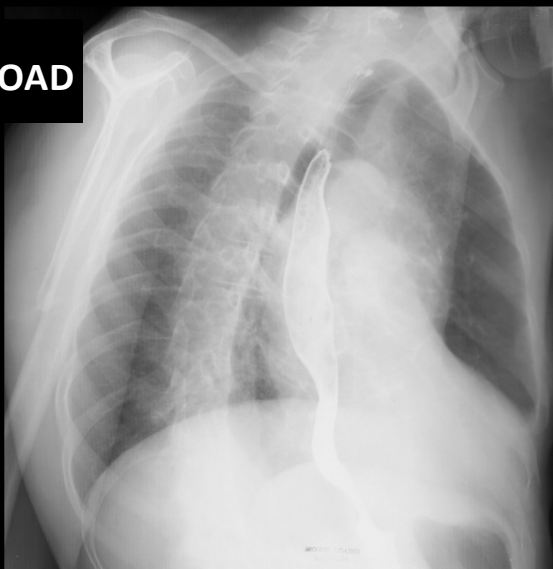


R

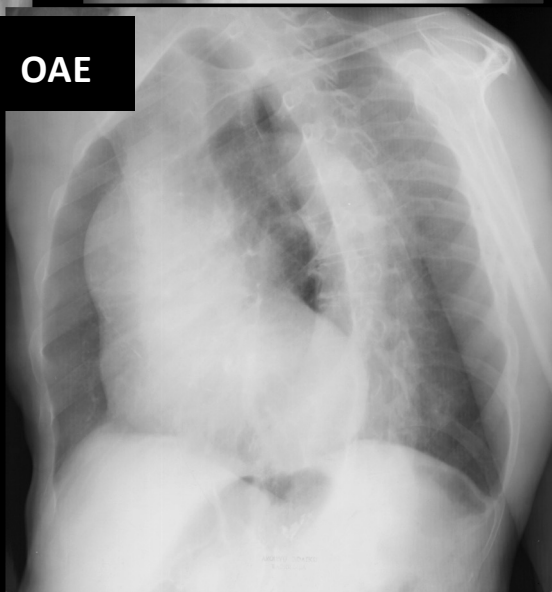
Lordótica



OAD



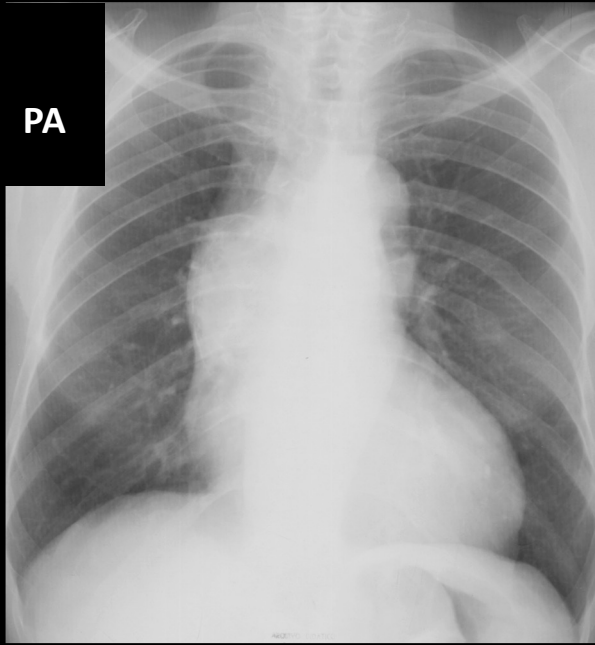
OAE



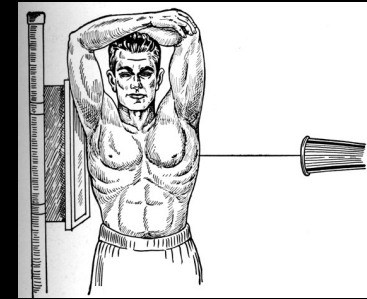
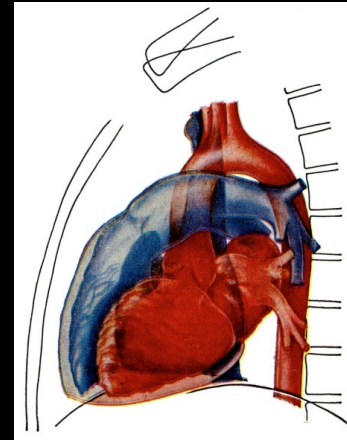
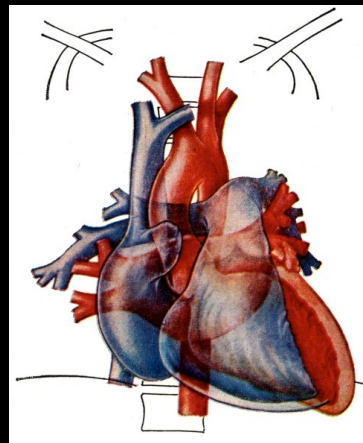
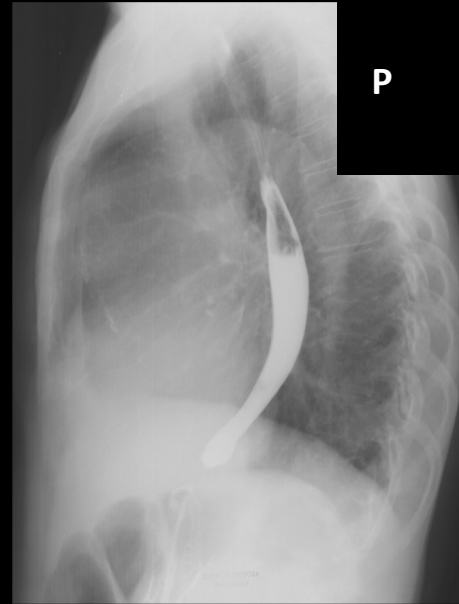
DLE com raios horizontais



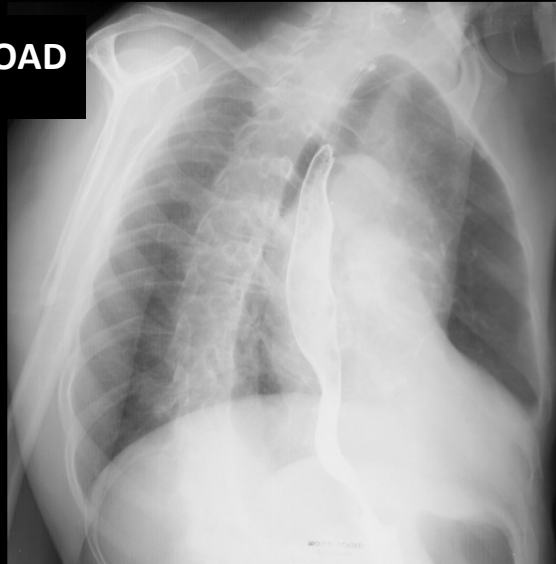
PA



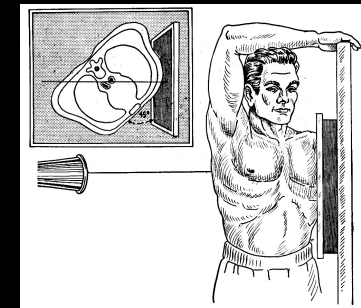
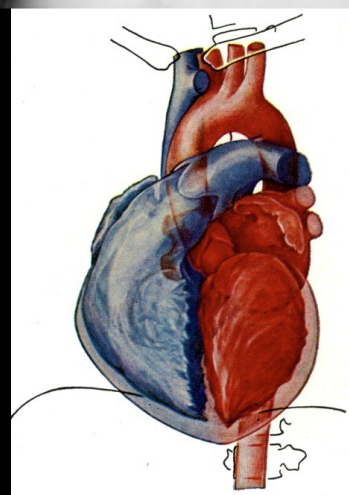
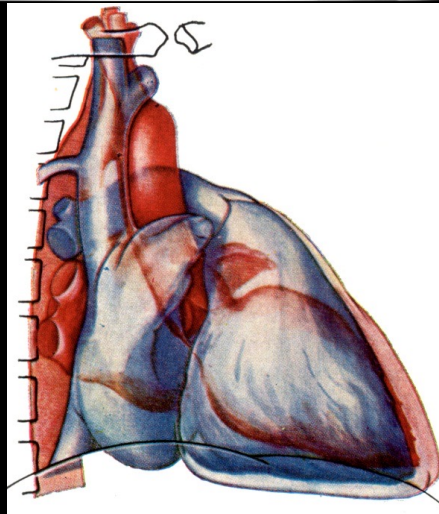
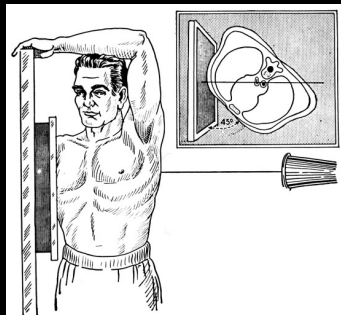
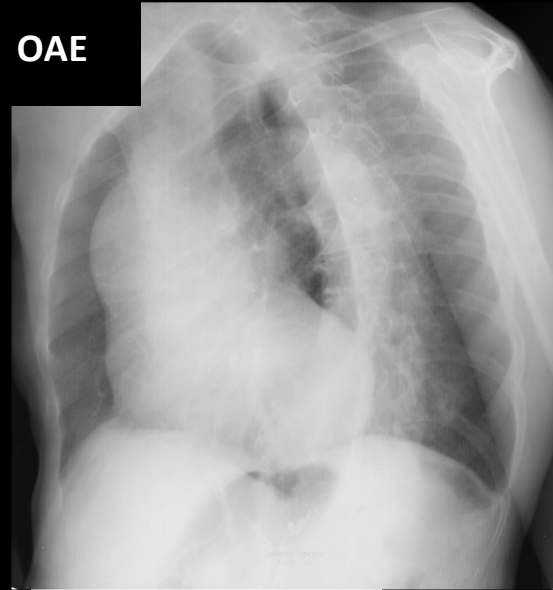
P



OAD



OAE



Radiografia simples de tórax – relatório

Partes moles sem alterações.

Arcabouço ósseo íntegro.

Mediastino centrado.

Hilos e trama vascular pulmonar normais.

Sem evidências de opacidades no parênquima pulmonar.

Cúpulas e seios costofrênicos livres.

Área cardíaca dentro dos limites normais.

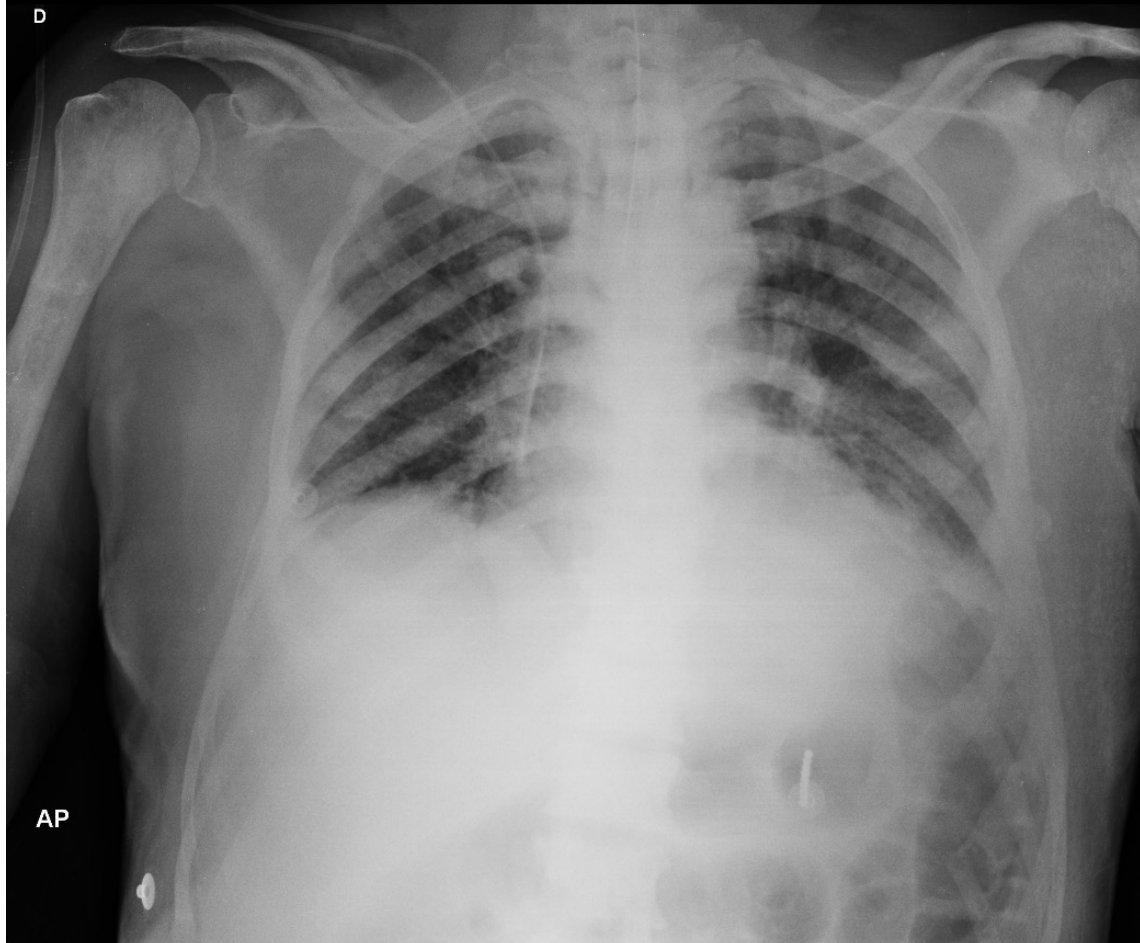
Conclusão:

Exame dentro dos limites da normalidade.

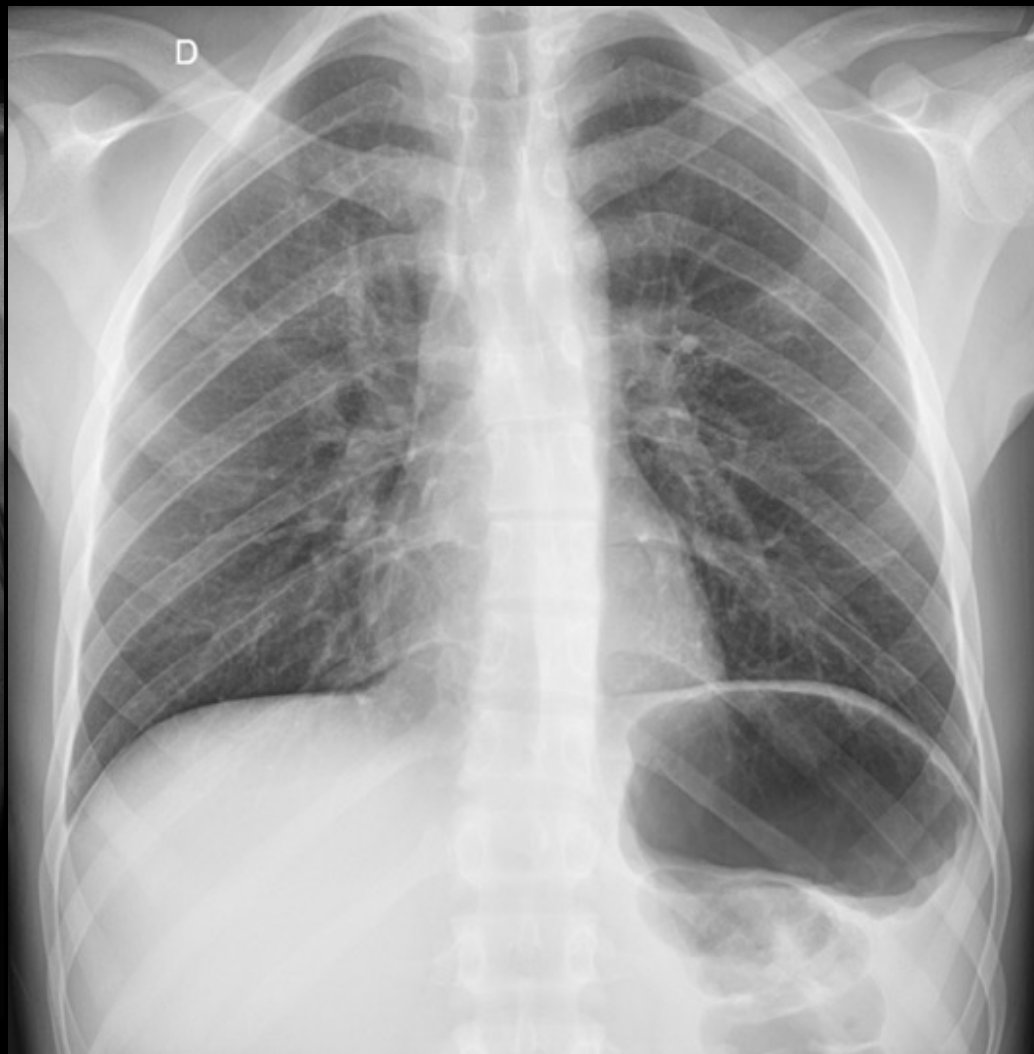
Normal?

D

AP

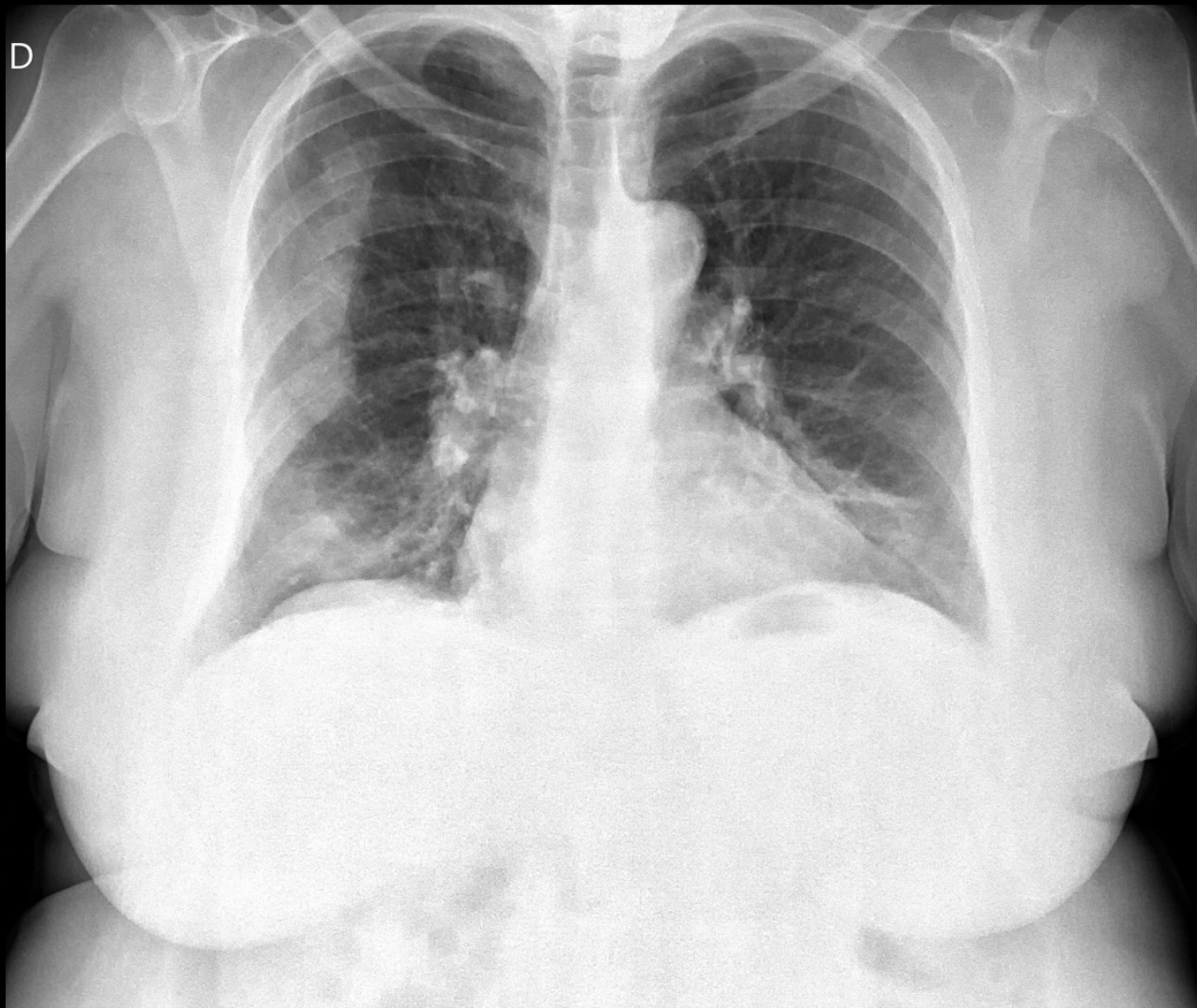


D

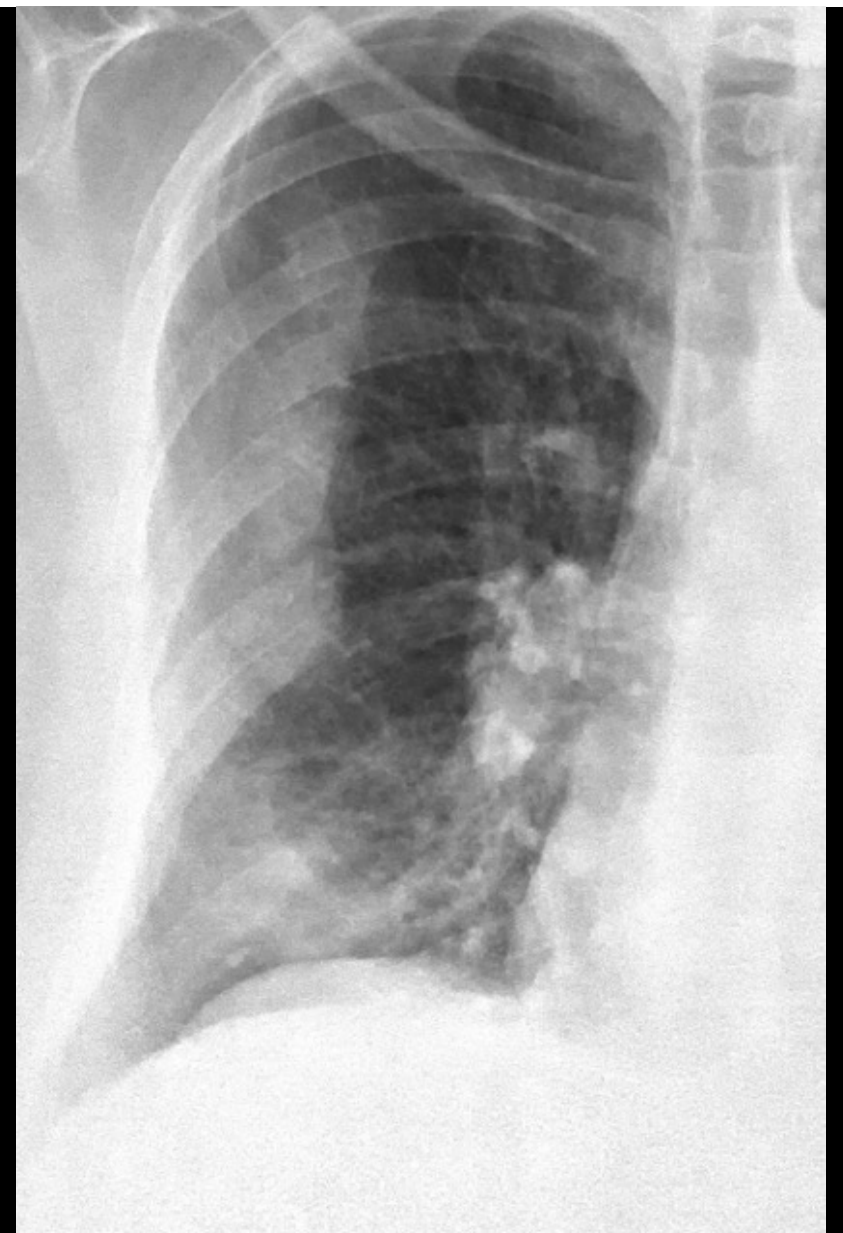


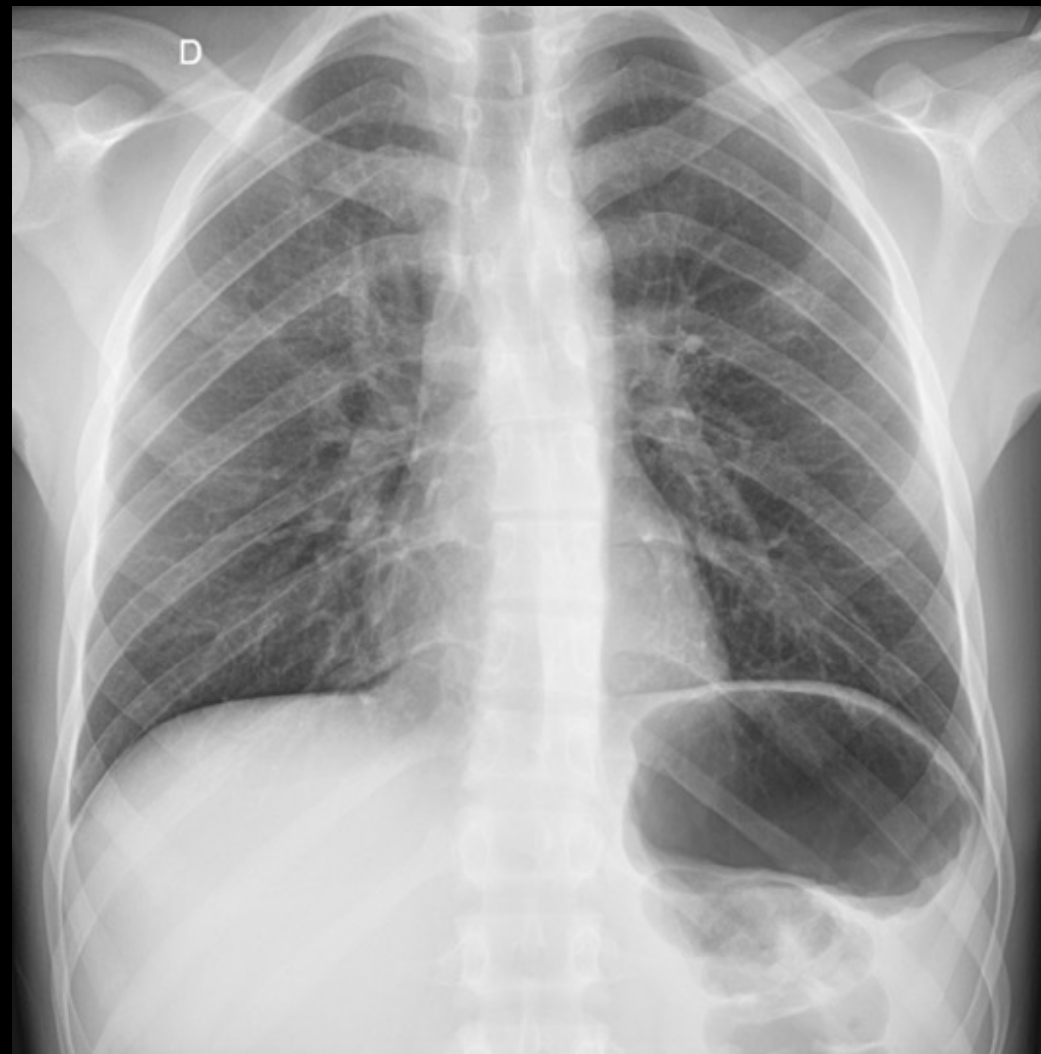
Disseminação óssea de tumor de próstata com alteração difusa osteosclerótica

D



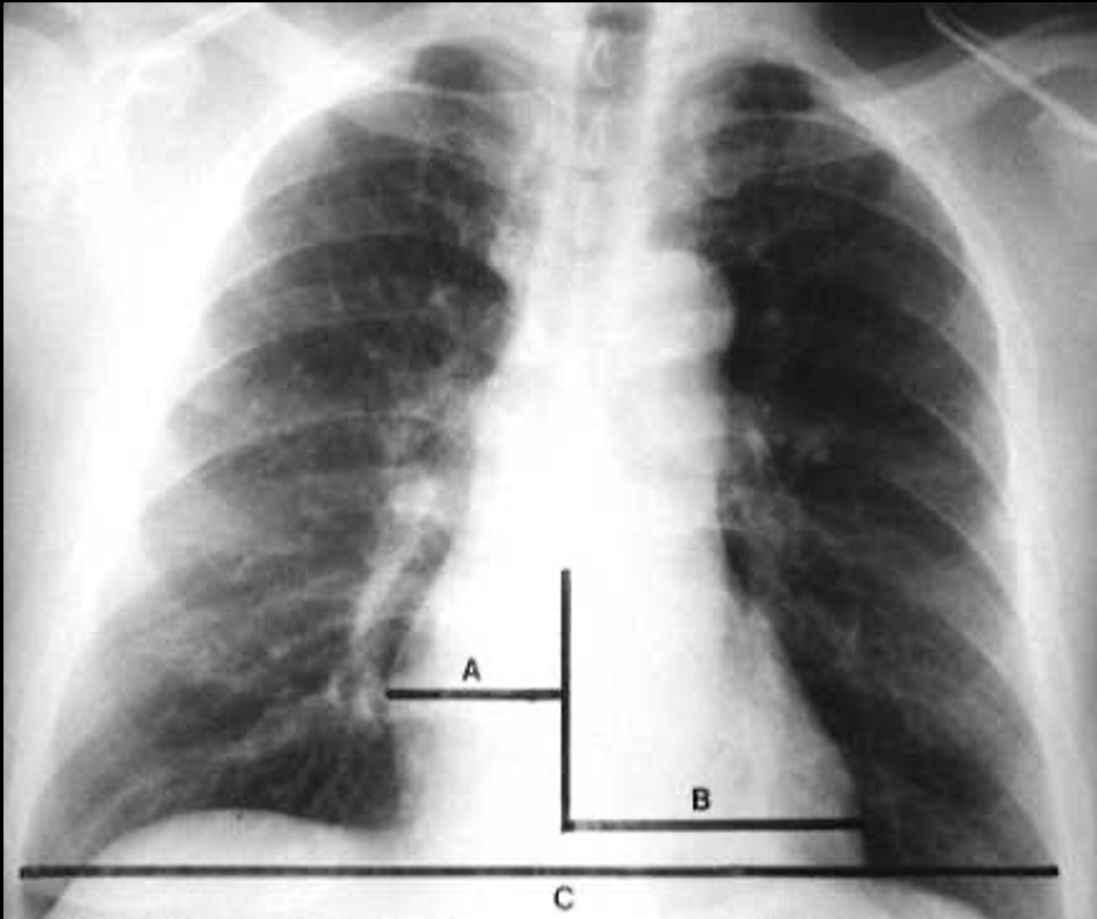
Múltiplas fraturas de arcos costais à direita – posteriormente / vasos hilares proeminentes



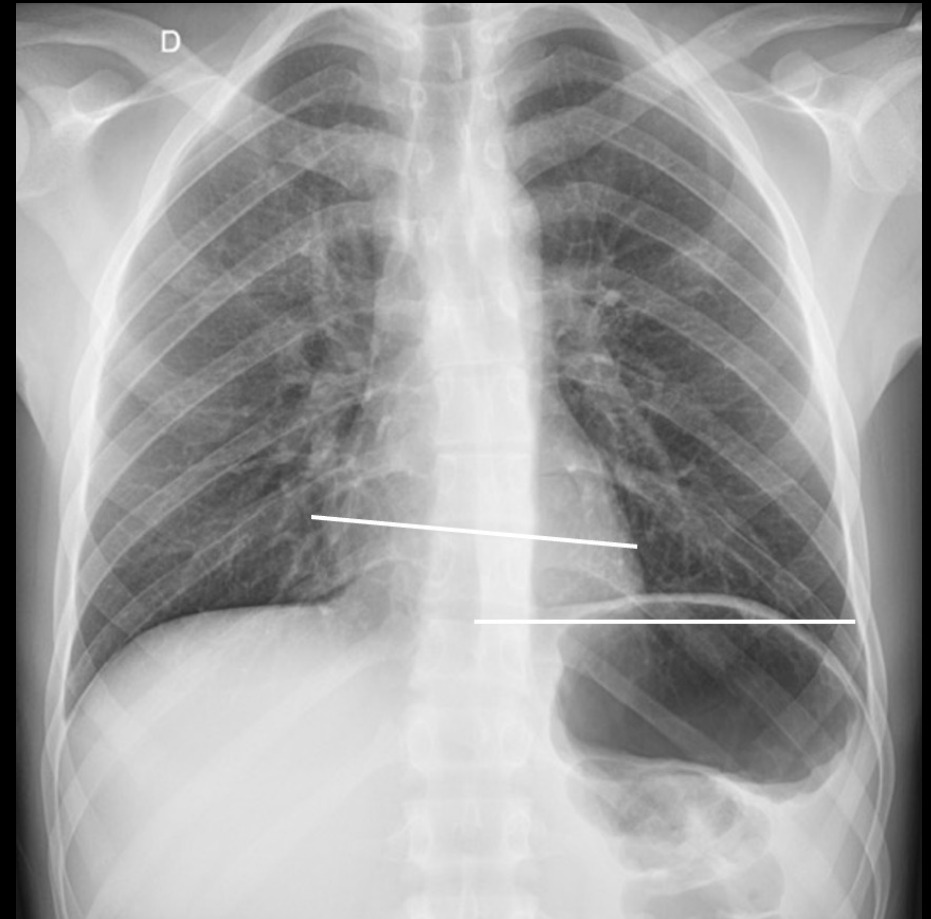


Aumento da área cardíaca + ectasia dos hilos pulmonares e da aorta

Índice cardiotorácico

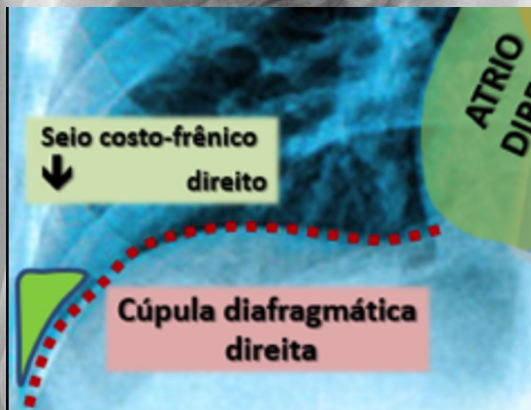


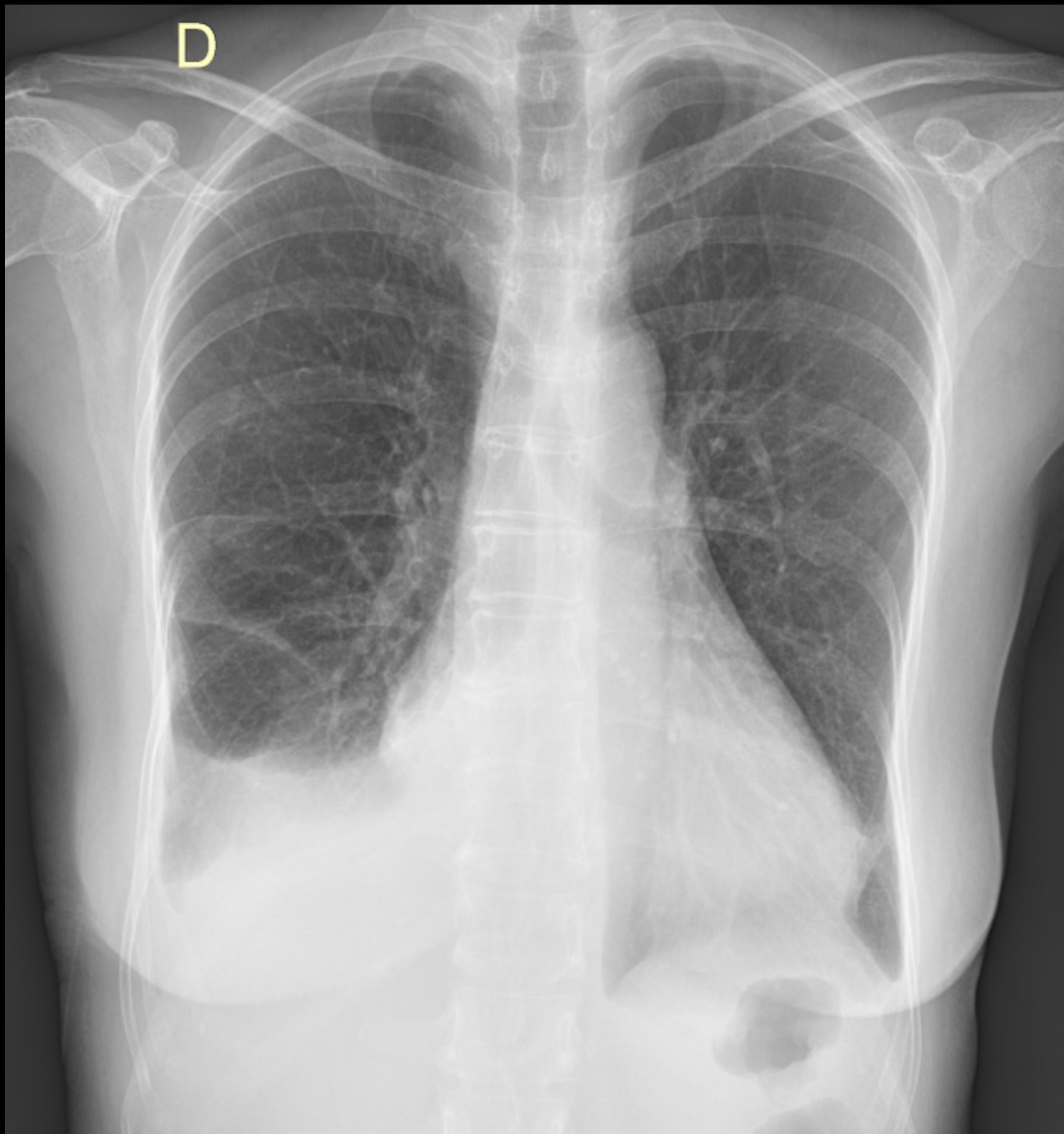
$$\text{ICT} = A + B/C \text{ [Normal} < 0,5 \text{ em adultos]}$$

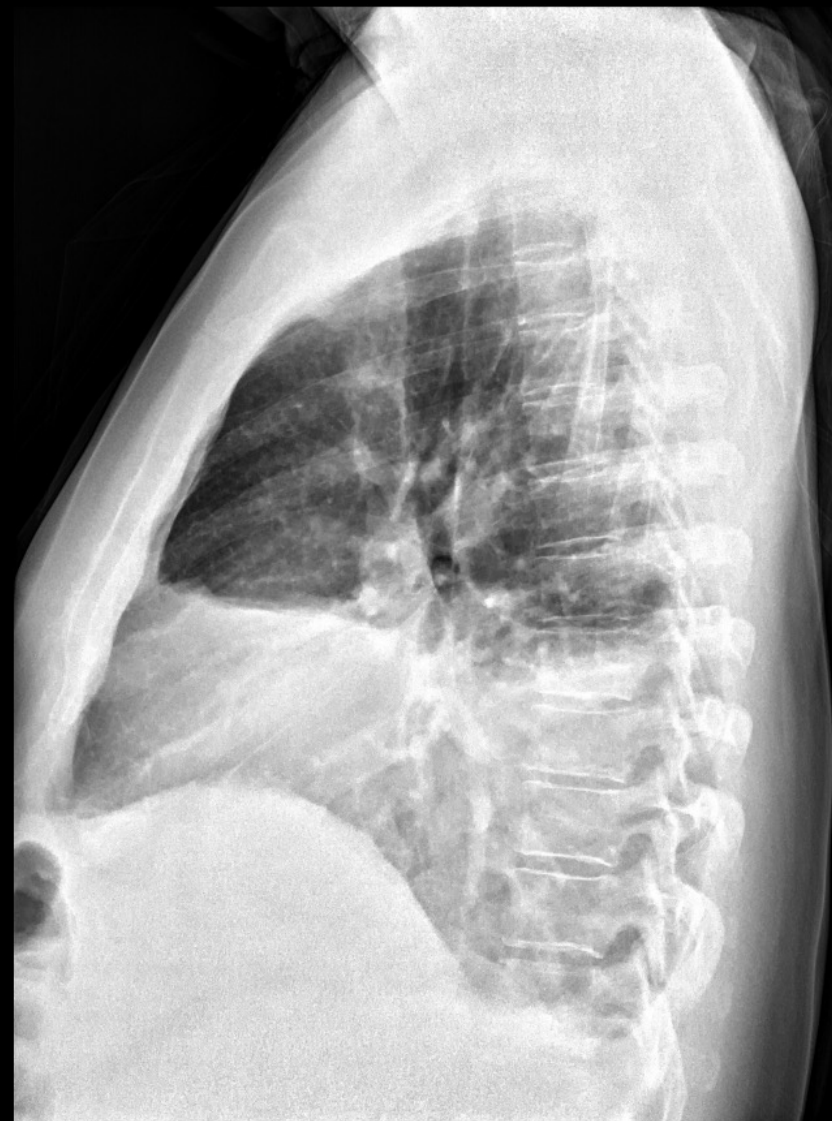
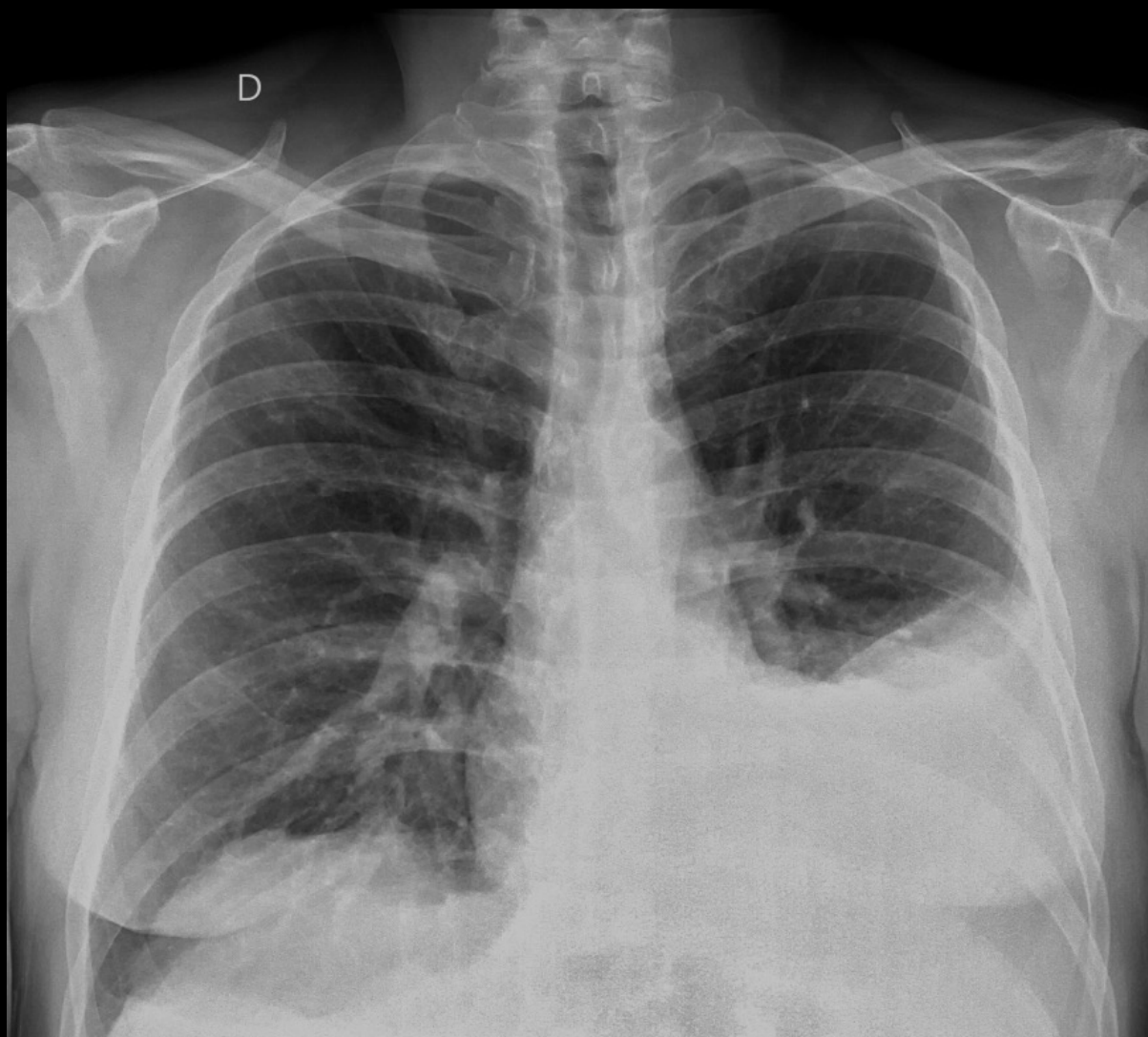




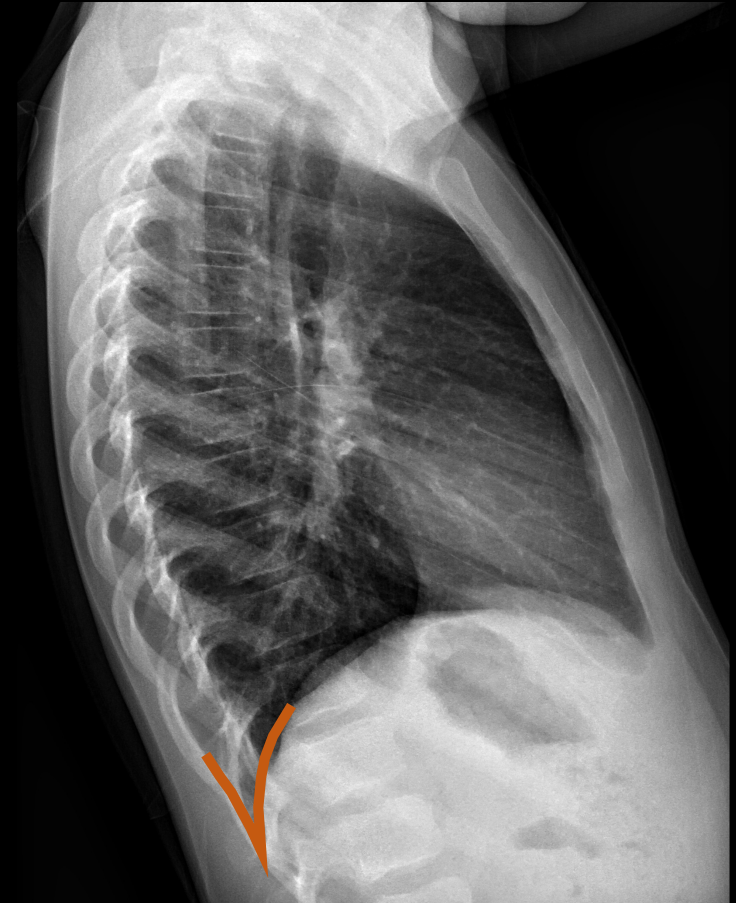
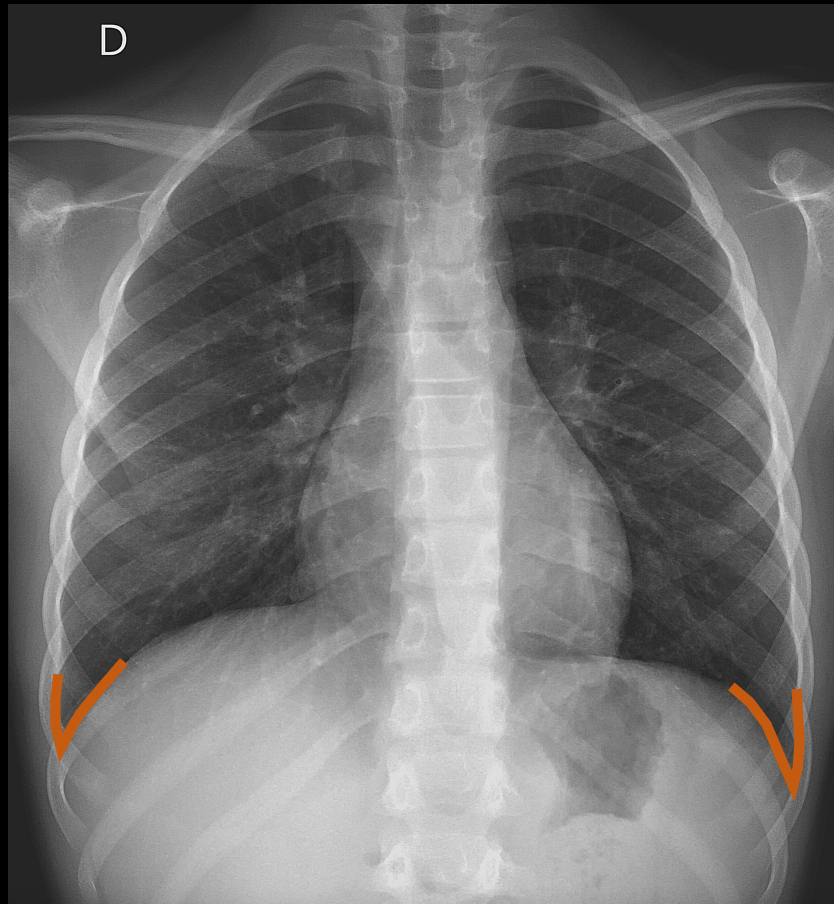
D







Seios costofrênicos

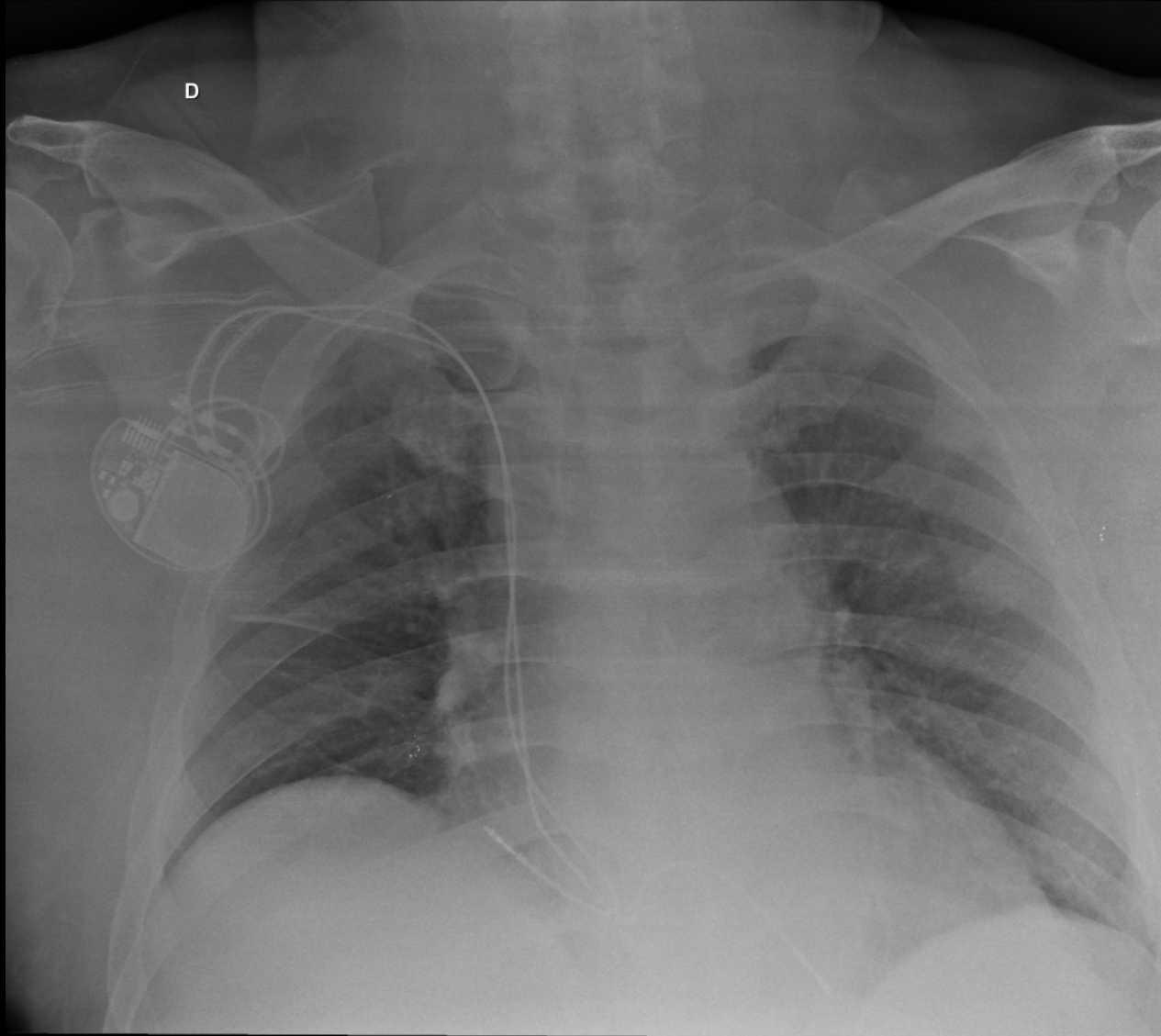


Regra: devem ter ângulos agudos

Questionário 3

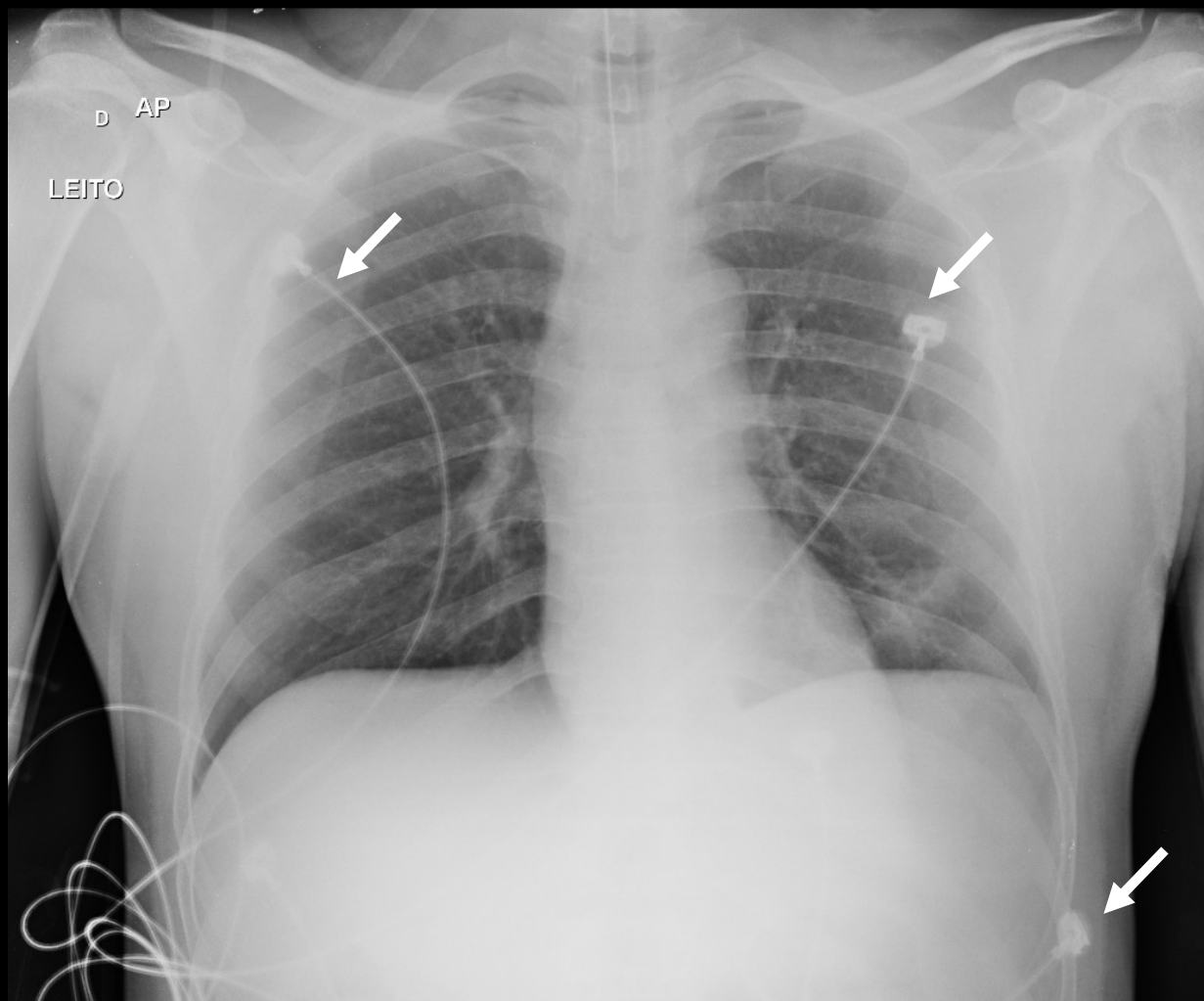
Questionário 3

Devolutiva, dúvidas e comentários









Para guardar

- Radiografia simples ainda é muito útil e muito realizada na rotina clínica
- É competência esperada do médico saber analisar e interpretar a radiografia simples de tórax
- É um exame por imagem bidimensional com 5 densidades básicas onde existe sobreposição de estruturas e órgãos tornando sua interpretação relativamente difícil
- Interpretação inclui correlação com conhecimentos de anatomia, fisiologia, patologia e embriologia
- Curva de aprendizado relativamente longa
- Comparativamente à tomografia computadorizada tem menor sensibilidade e menor especificidade, mas é mais barata, disponível, rápida



Tomografia computadorizada do tórax

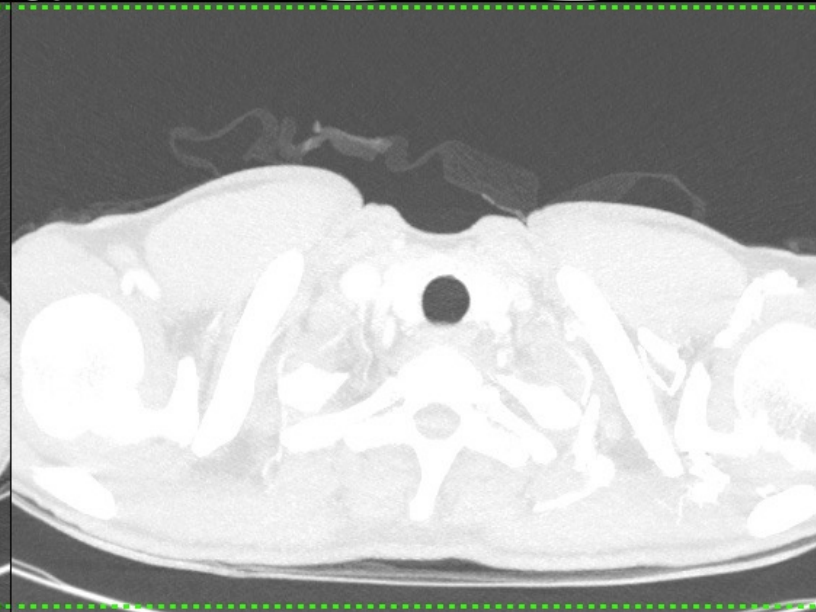
- geralmente não é o exame inicial para avaliação das afecções torácicas; cada vez mais utilizada

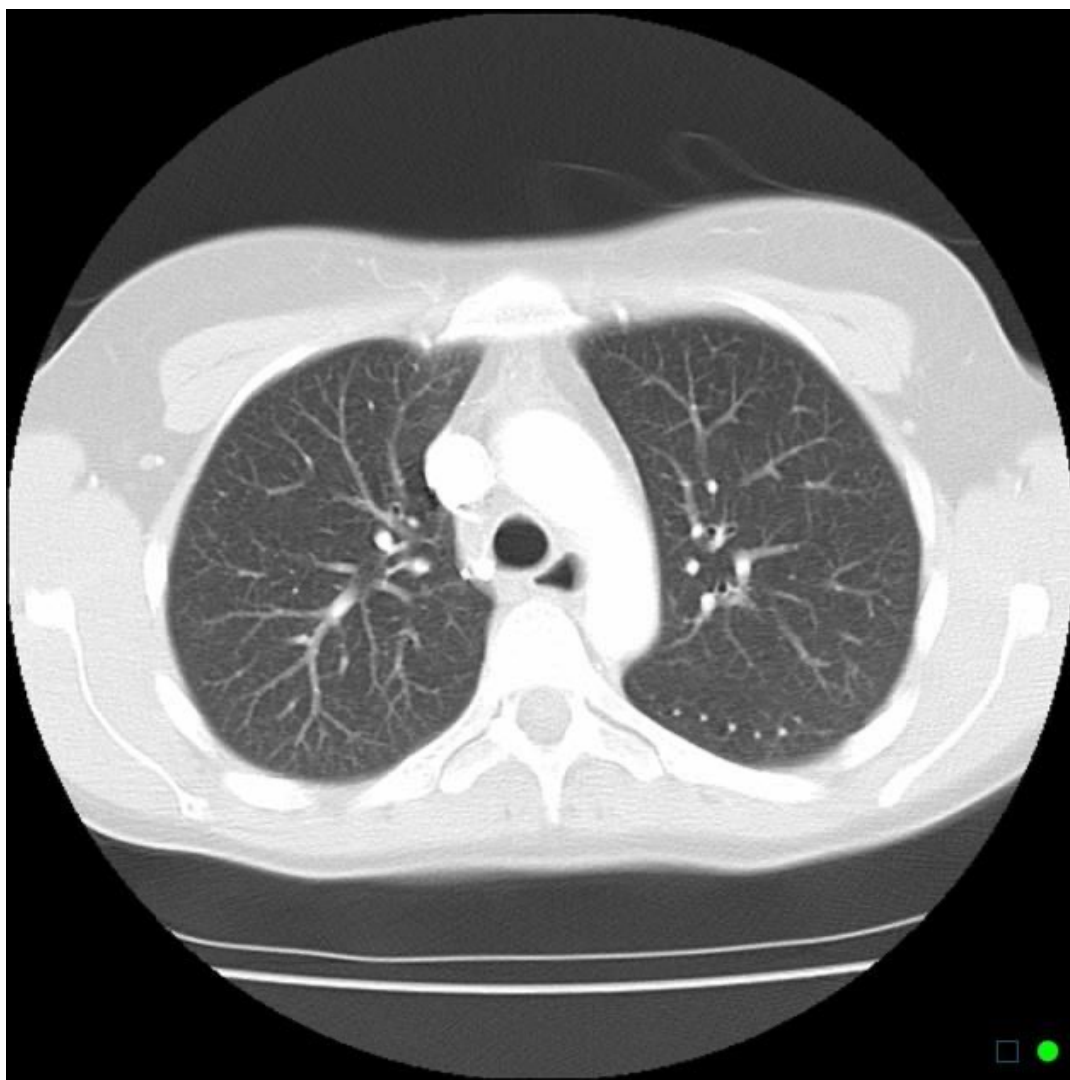
[doenças intersticiais, avaliação de alterações complexas à radiografia simples – maior sensibilidade e especificidade]

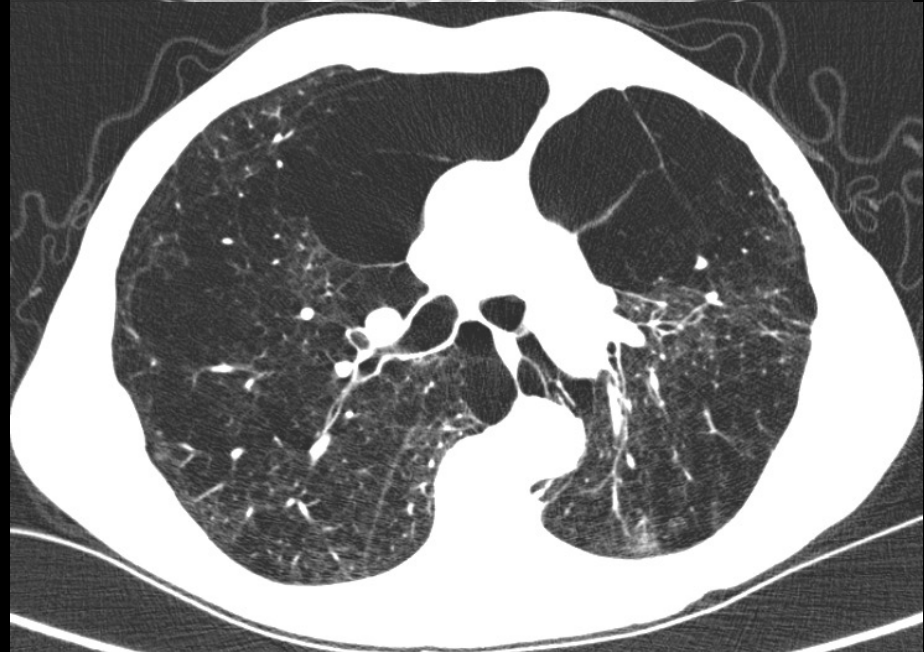
- Importante
 - no estadiamento dos tumores – avalia a extensão, invasão local e metástases
 - na avaliação e extensão de processos inflamatórios e infecciosos
 - no controle de procedimentos de punção percutânea (direcionamento)

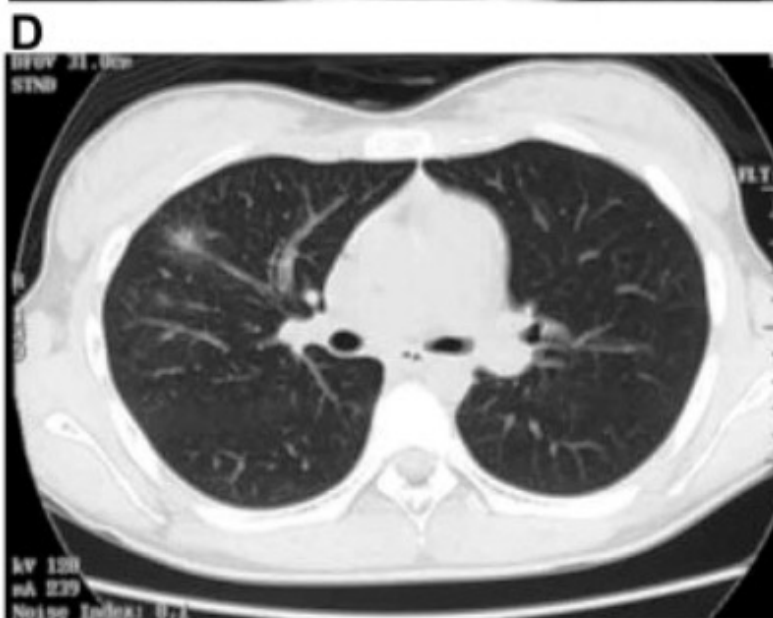
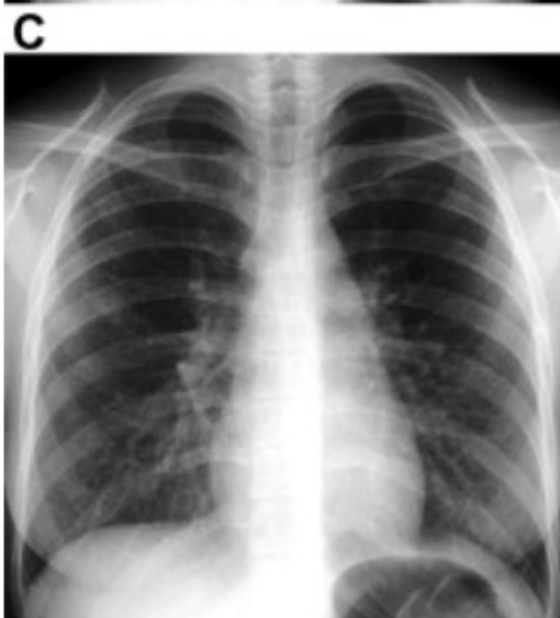
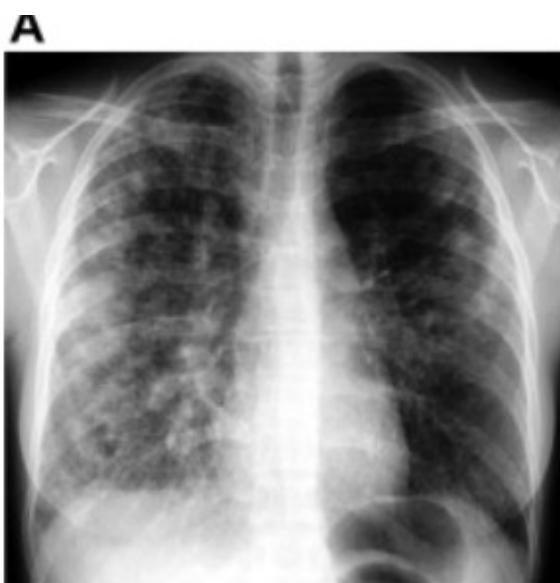


TC de tórax com
contraste EV





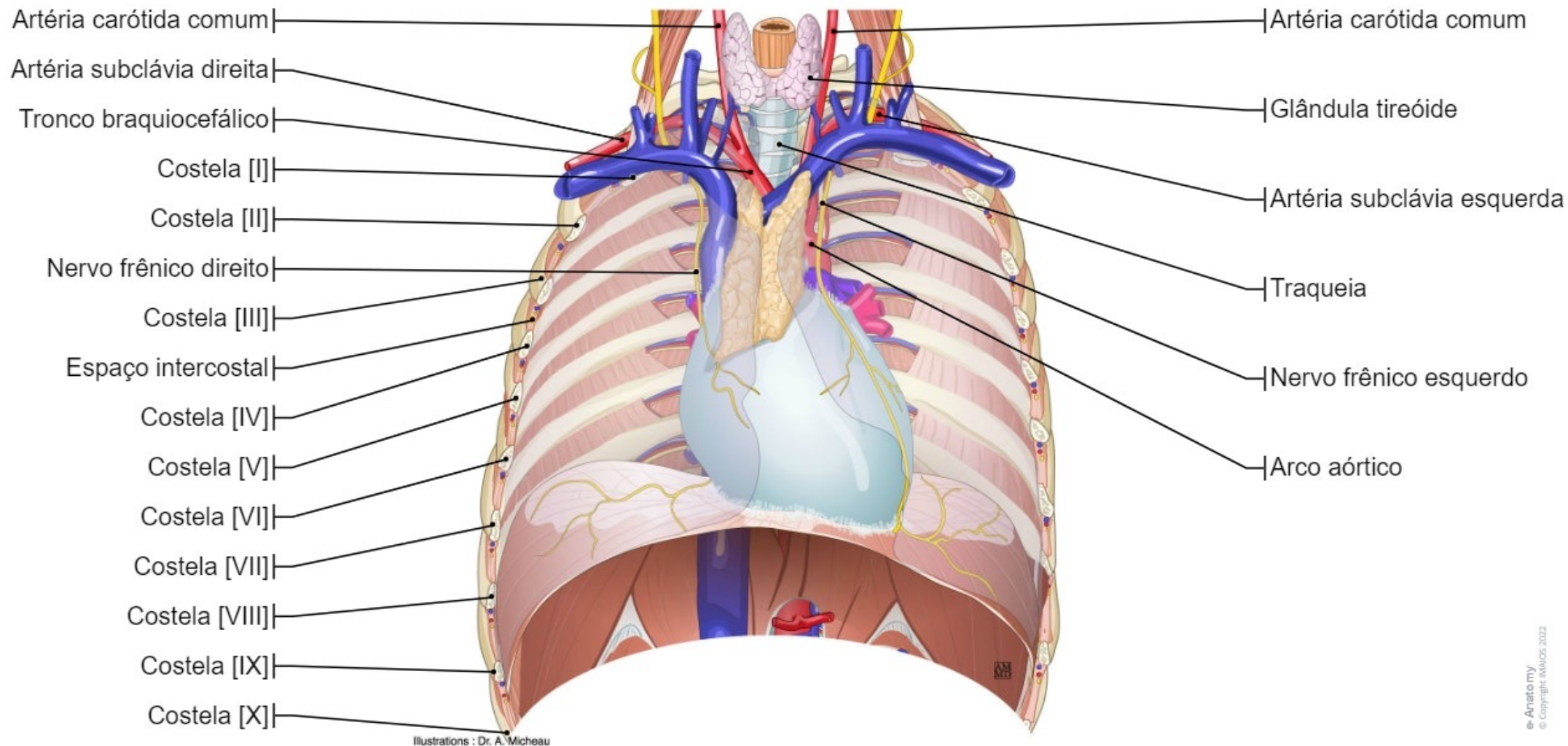


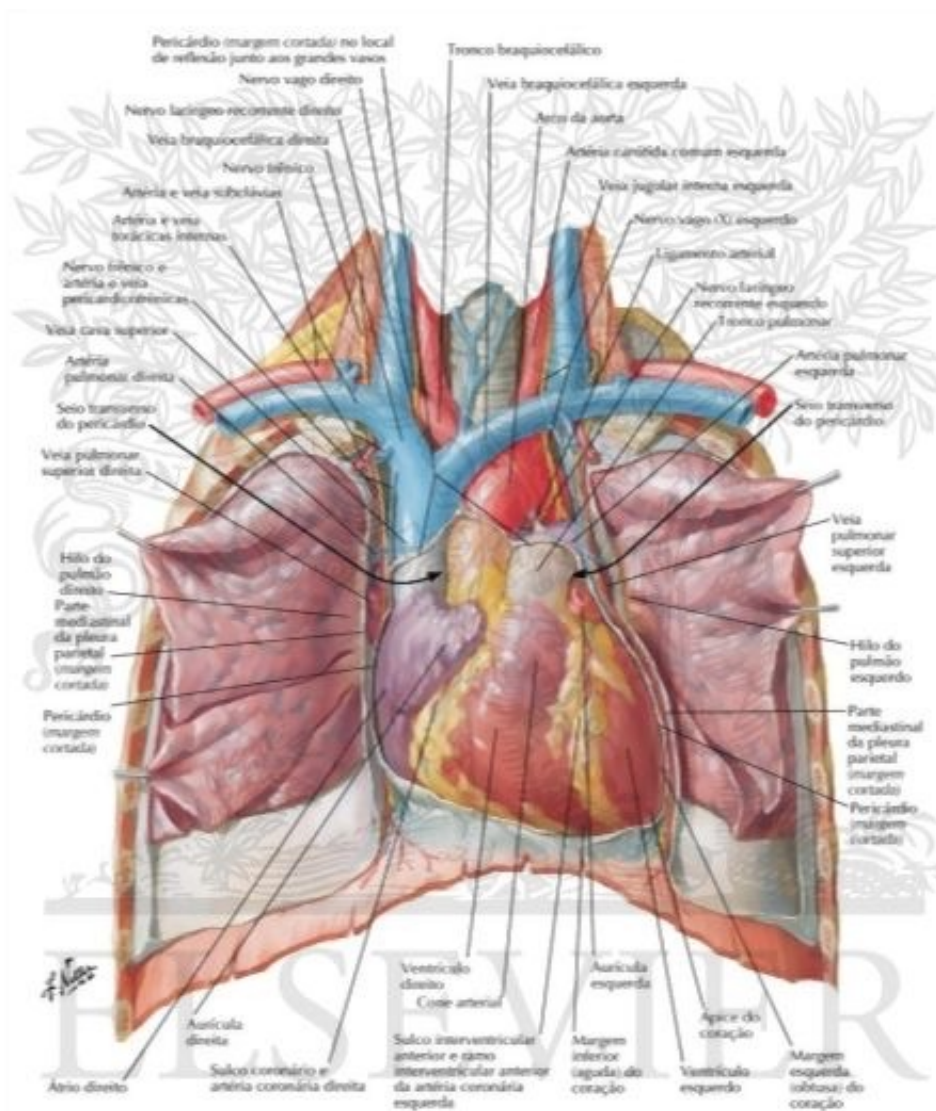


Informações finais

- Este material será disponibilizado – slides em pdf / material auxiliar no próprio pdf
- Próxima atividade: mais interpretações da radiografia de tórax, com ênfase na terminologia dos achados
- Questionário de avaliação da atividade de hoje: com espaço para incluir dúvidas que queira ver discutidas na próxima atividade
- Lembre-se que existe material complementar disponível – textos em português publicados na Revista Medicina – Ribeirão Preto

Ilustrações e esquemas de anatomia
e de correlação radiológica

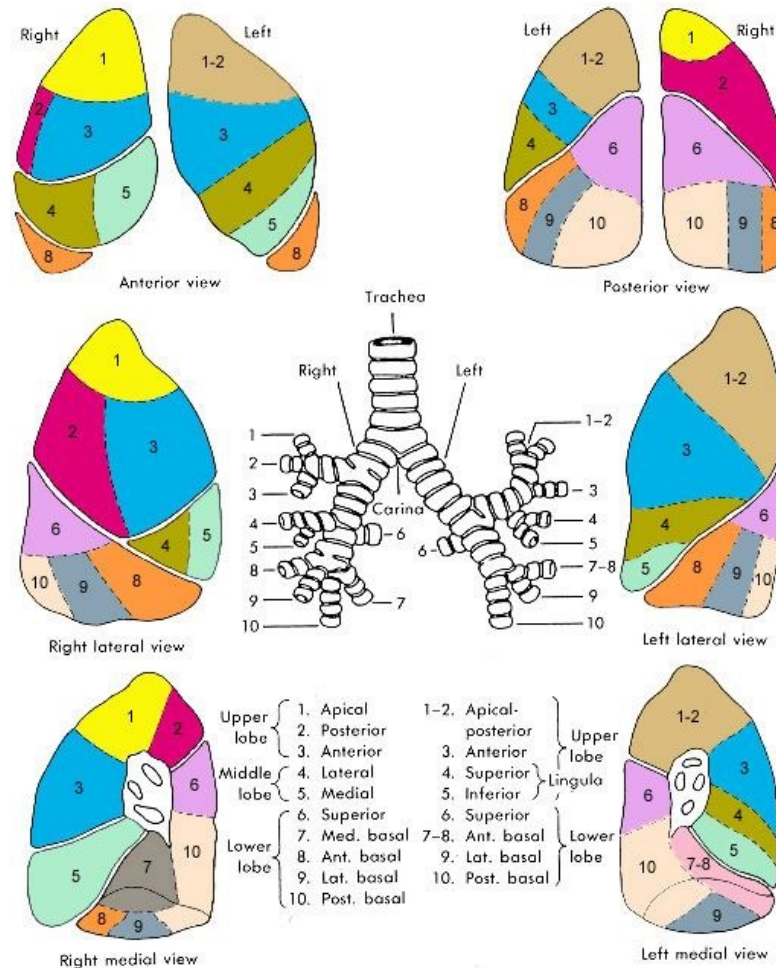




Campos Pulmonares e Segmentos

- Campos Pulmonares e Segmentos
- Divisão dos Pulmões:
 - Lobo superior, médio e inferior no pulmão direito.
 - Lobo superior e inferior no pulmão esquerdo.
- Segmentos Pulmonares:
 - Divisão funcional dos pulmões.
 - Importância cirúrgica e diagnóstica.

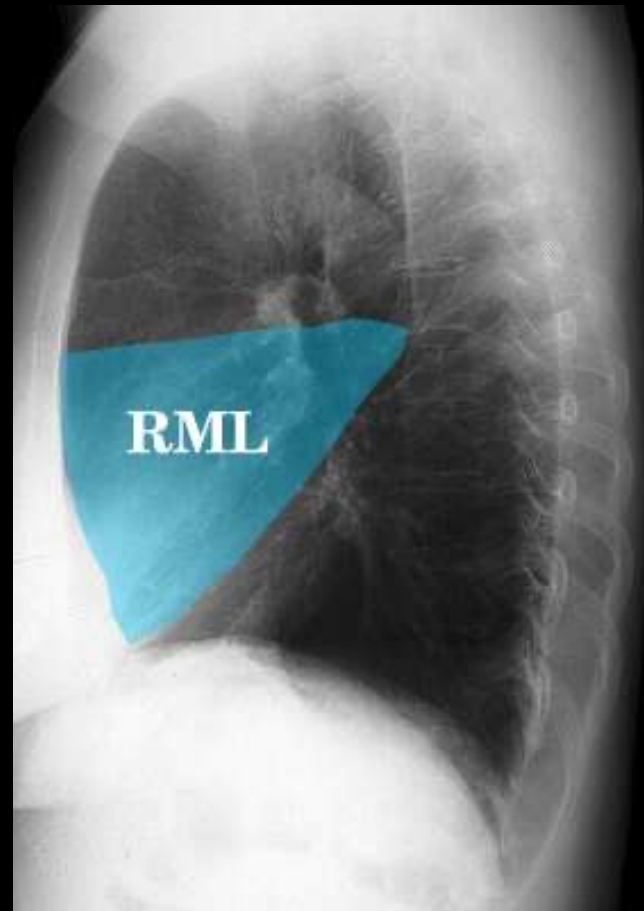
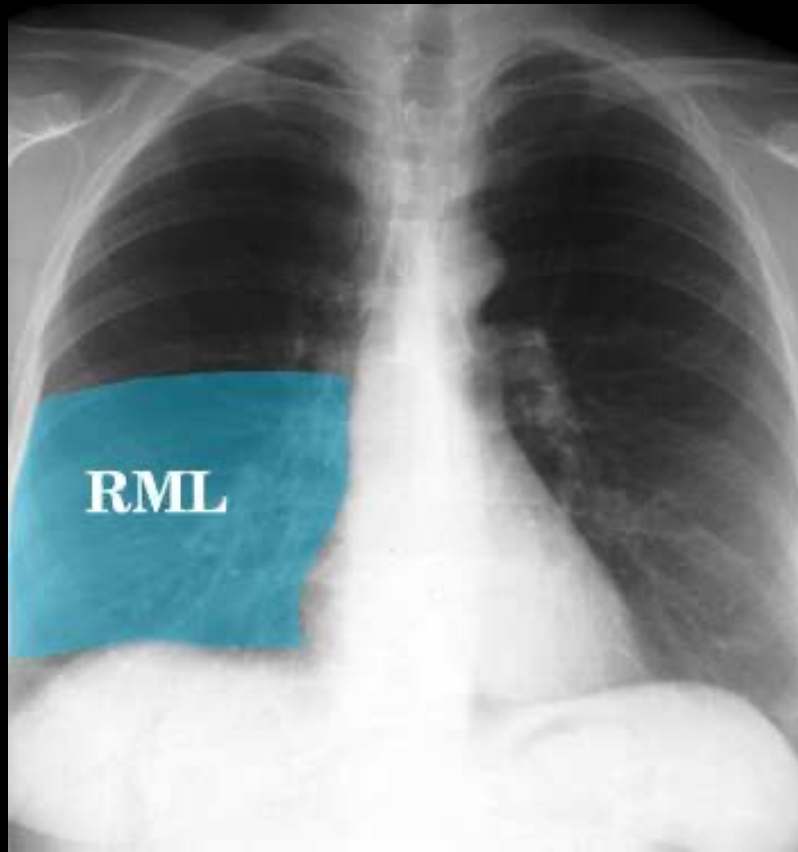
Segmentação Pulmonar



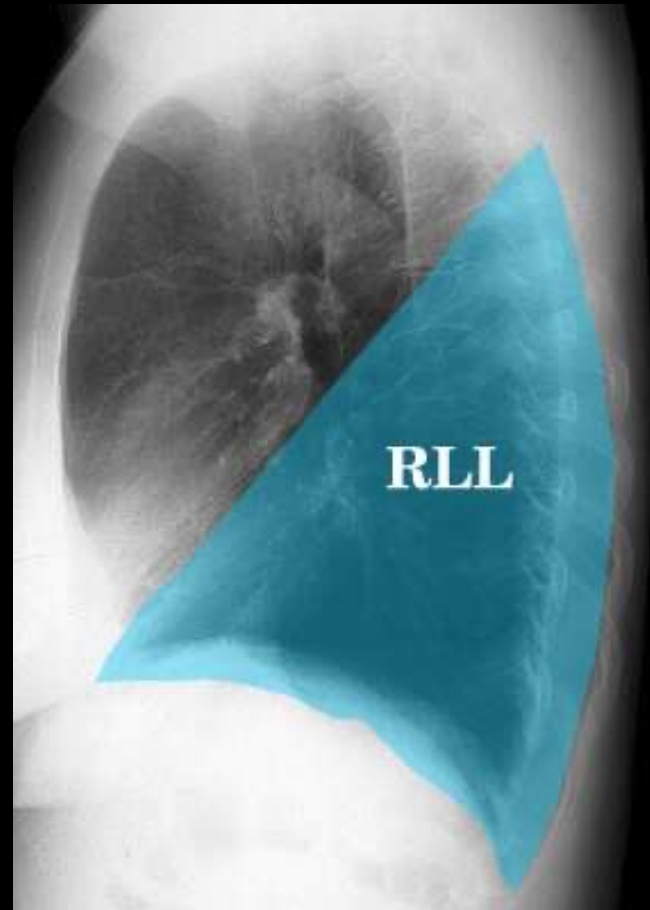
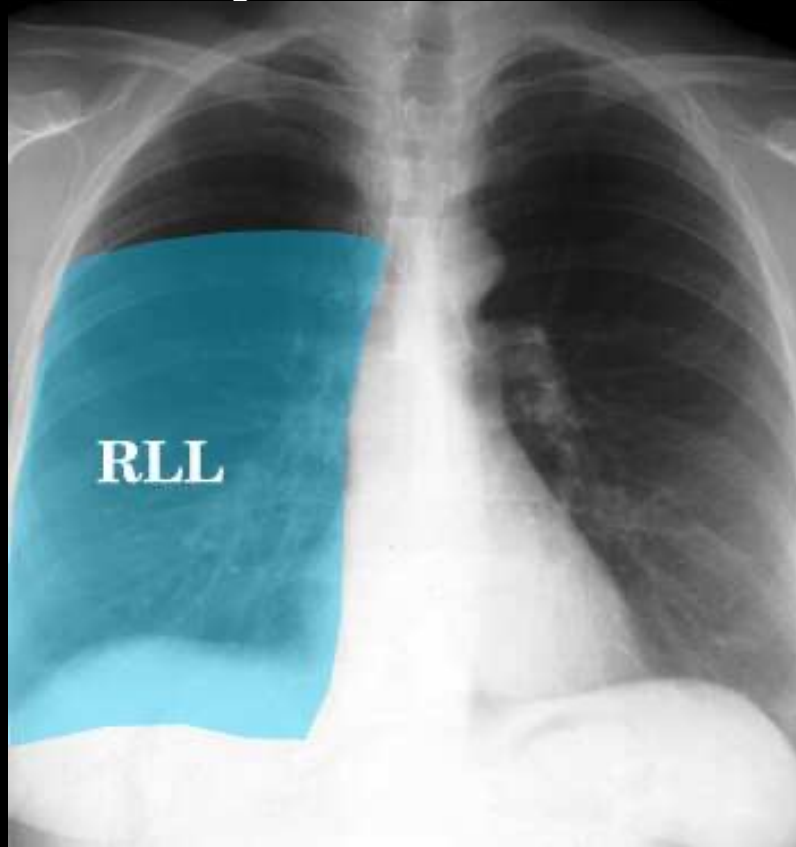
Anatomia Pulmonar – retirado de

<https://mariearg.wordpress.com/2011/04/26/segmentacion-pulmonar/>

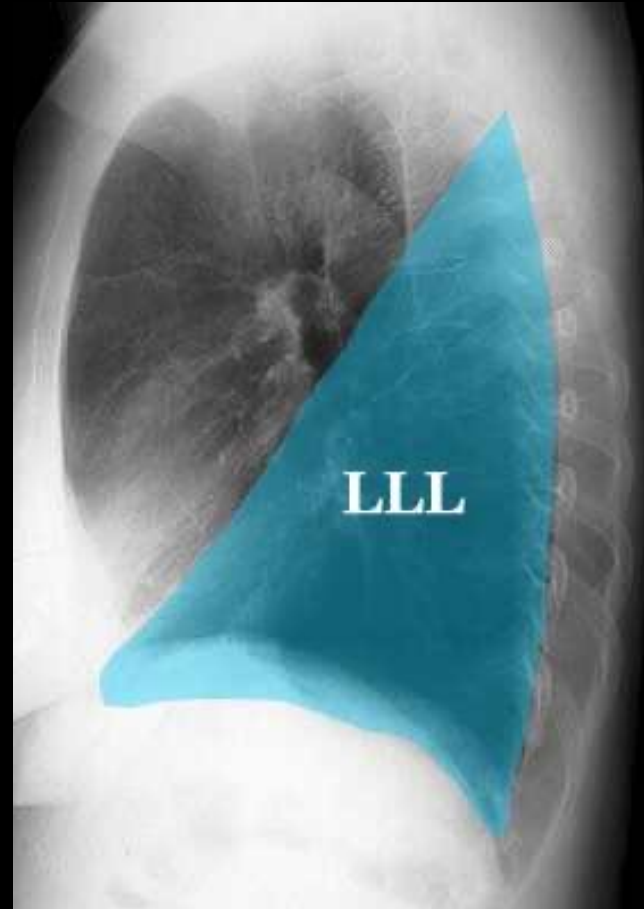
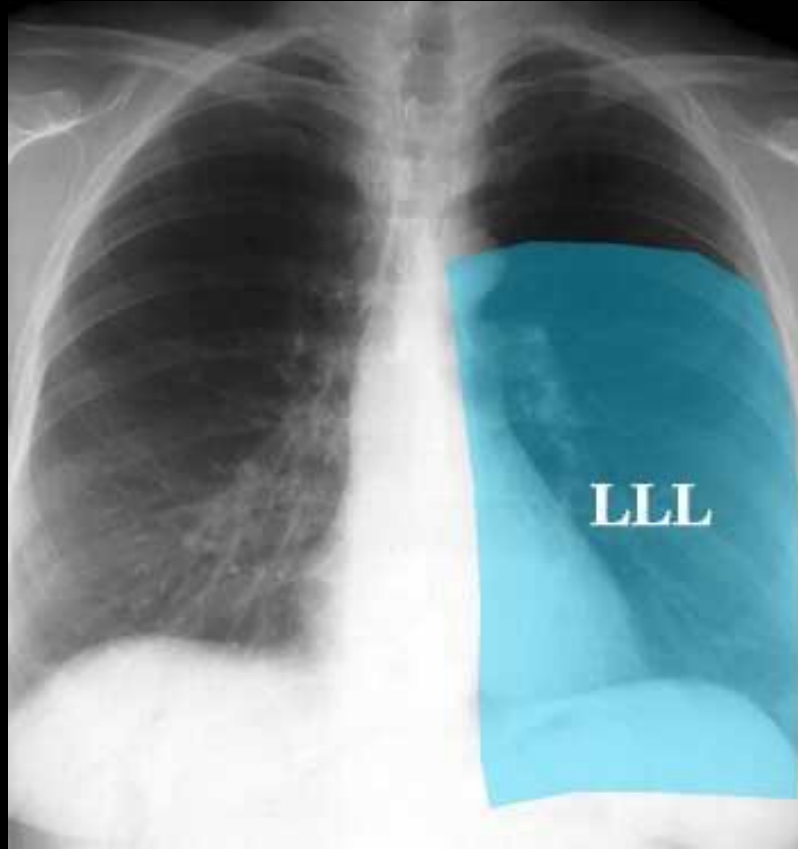
Lobo médio direito



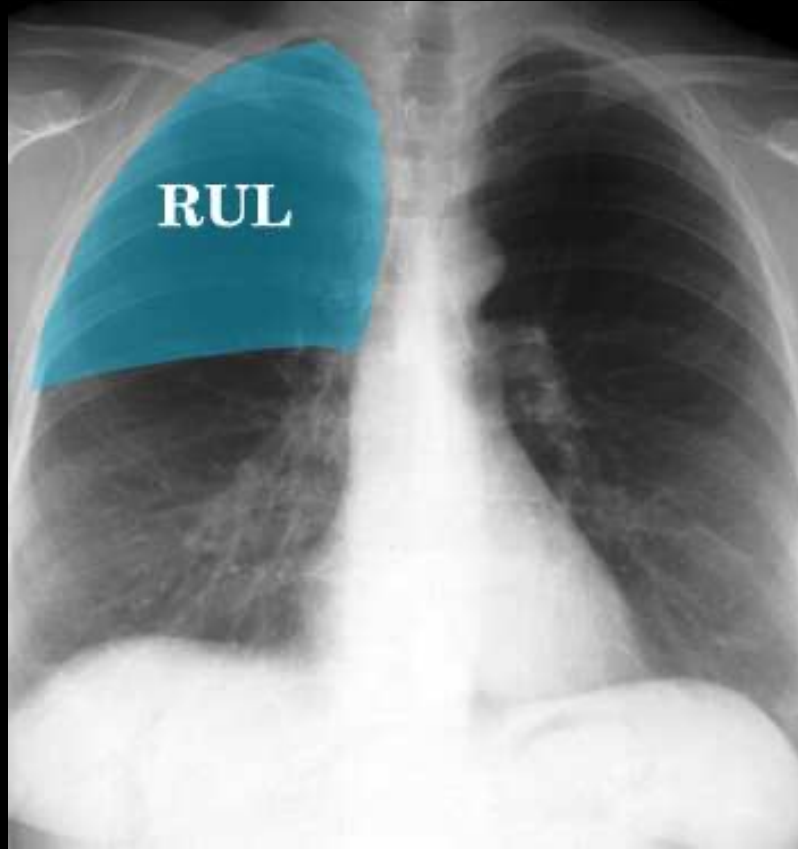
Lobo inferior direito



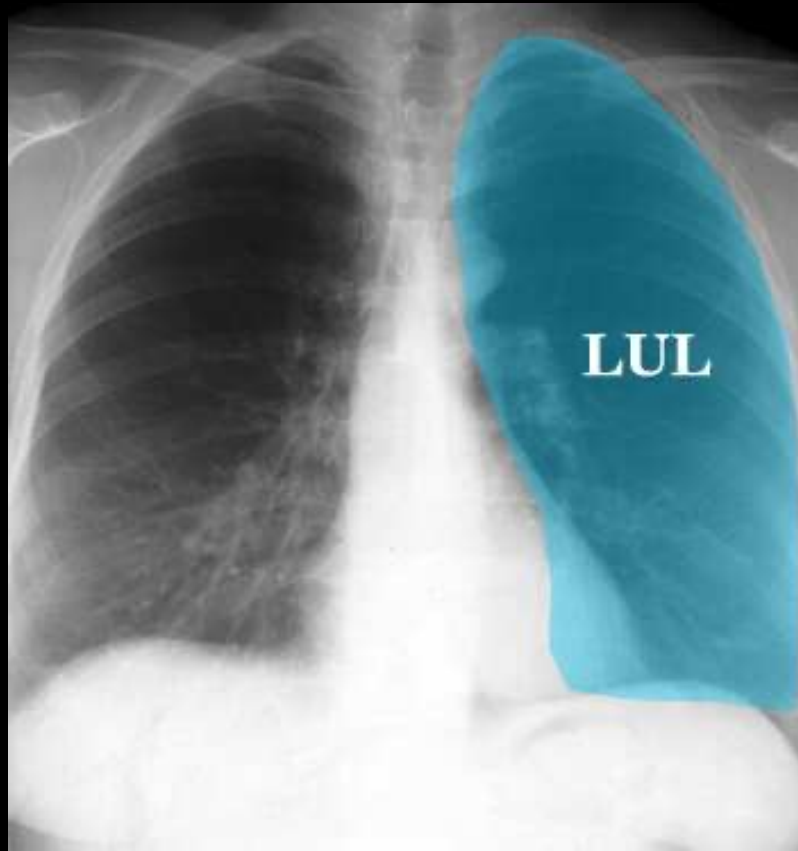
Lobo inferior esquerdo

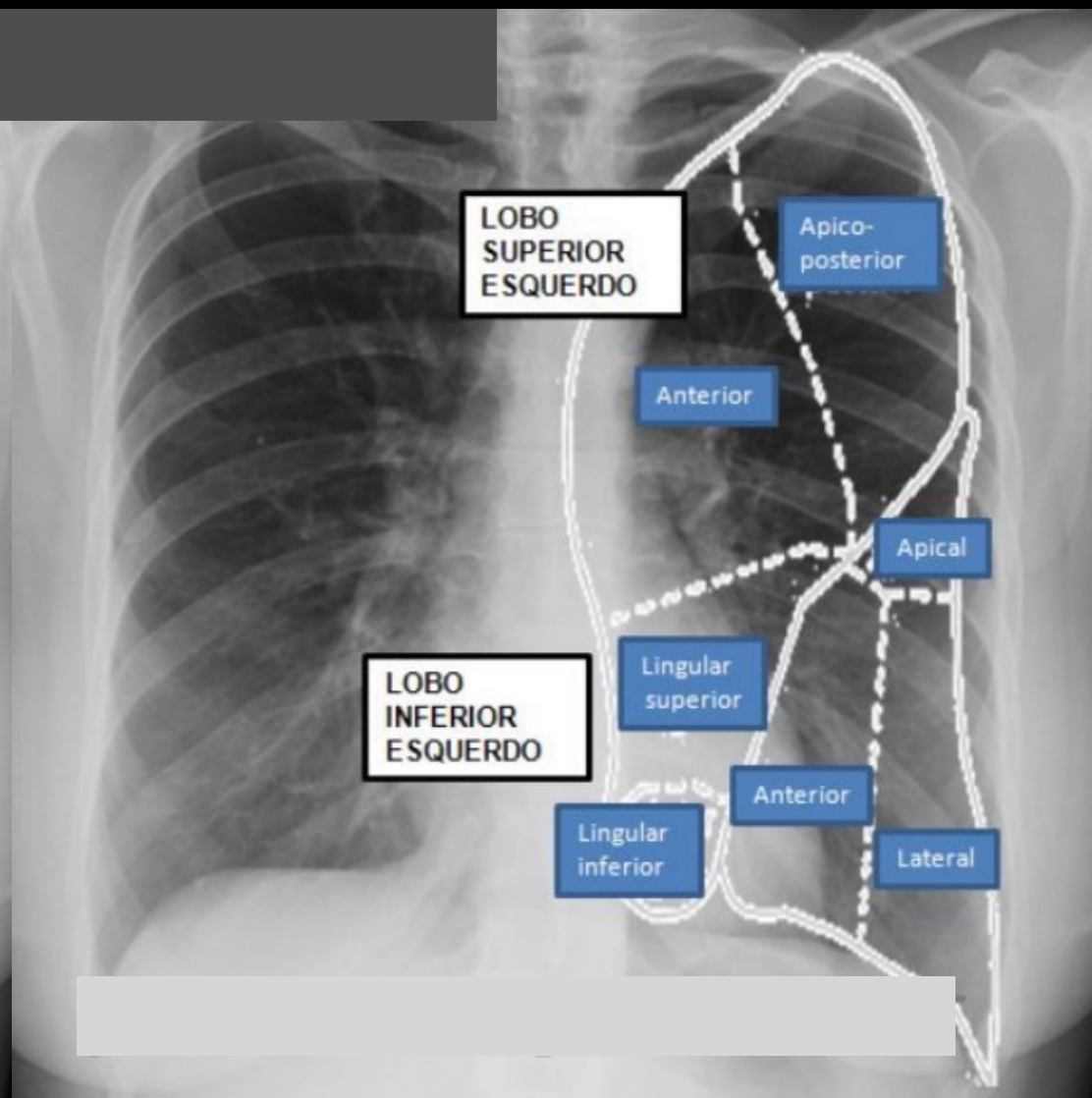
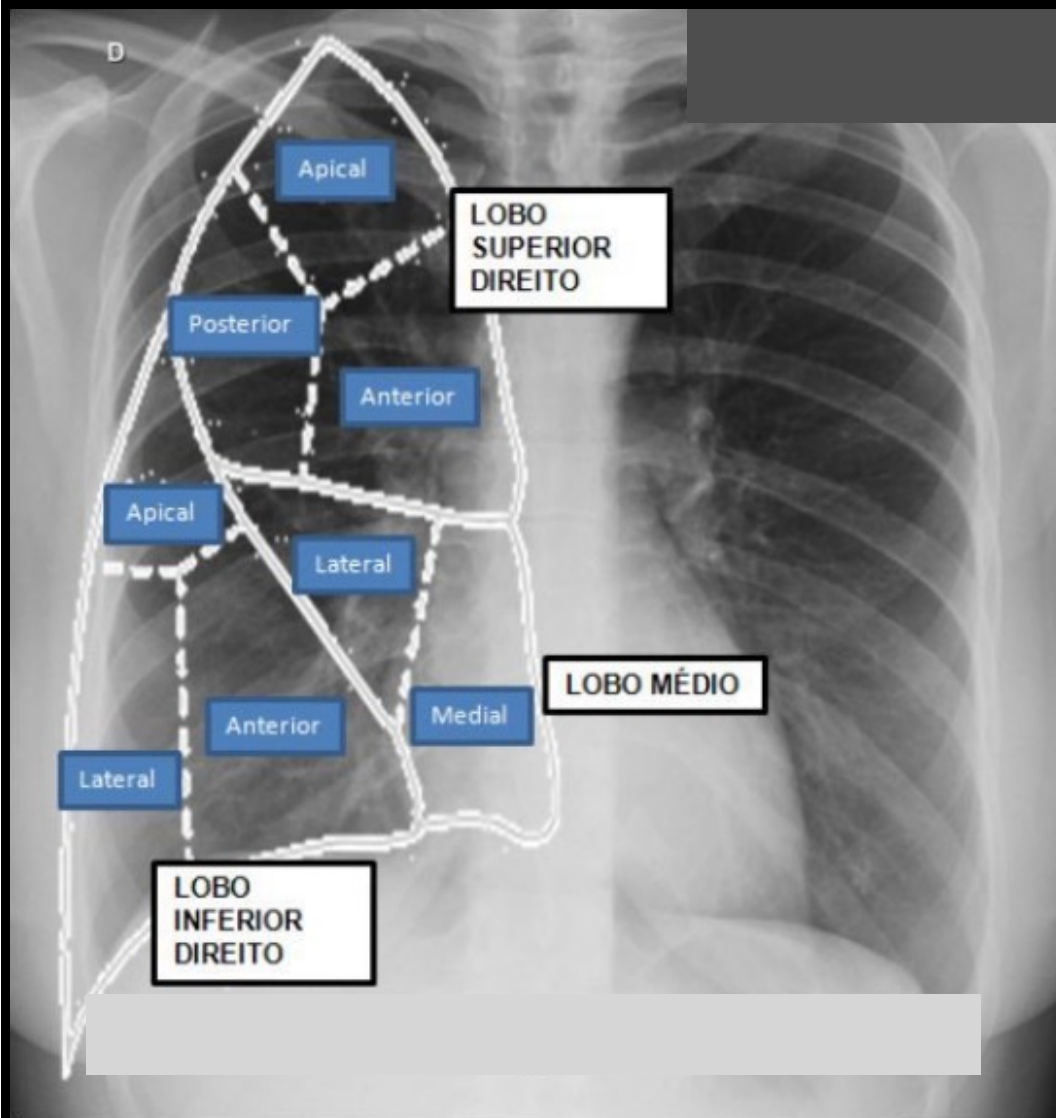


Lobo superior direito



Lobo superior E - l ngula





Segmentação Pulmonar

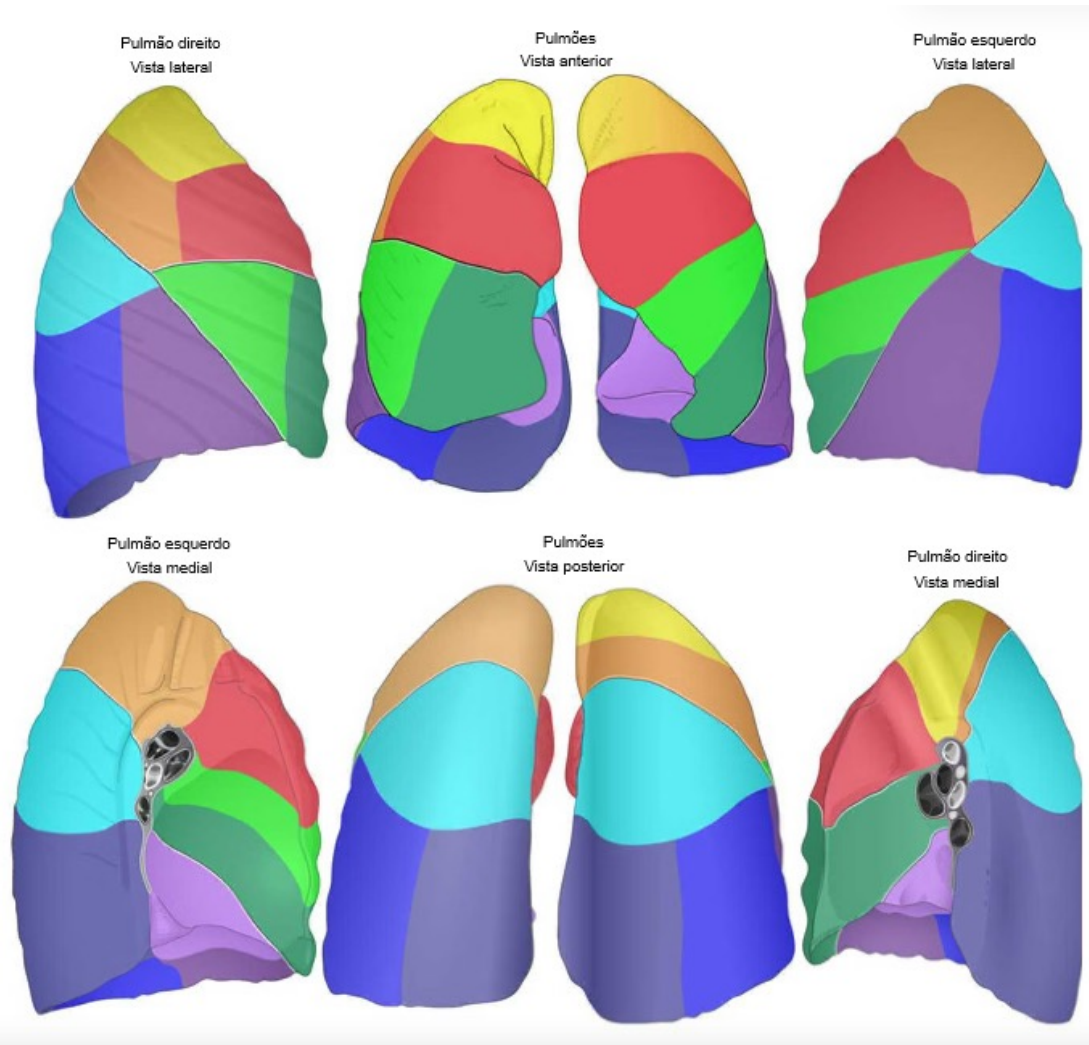
-  Pulmão direito, lobo superior
-  Segmento apical [S I]
-  Segmento posterior [S II]
-  Segmento anterior [S III]

-  Pulmão direito, lobo médio
-  Segmento lateral [S IV]
-  Segmento medial [S V]

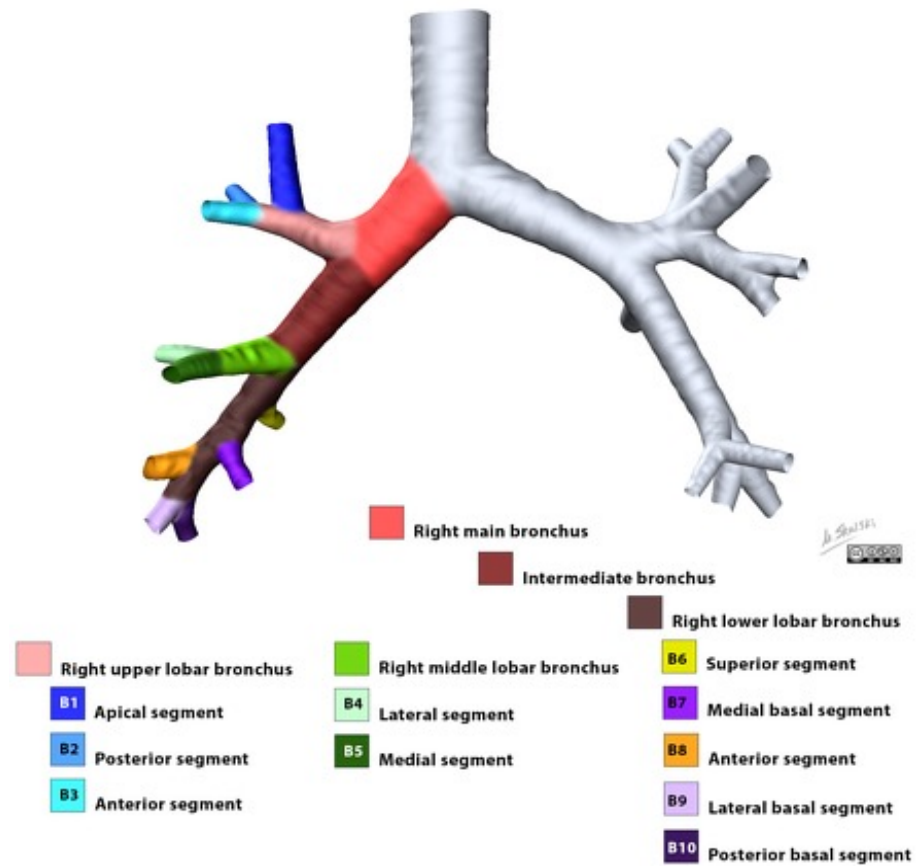
-  Pulmão direito, lobo inferior
-  Segmento superior [S VI]
-  Segmento basilar medial [S VII]
-  Segmento basilar anterior [S VIII]
-  Segmento basilar lateral [S IX]
-  Segmento basilar posterior [S X]

-  Pulmão esquerdo, lobo superior
-  Segmento apicoposterior [S I+II]
-  Segmento anterior [S III]
-  Segmento lingular superior [S IV]
-  Segmento lingular inferior [S V]

-  Pulmão esquerdo, lobo inferior
-  Segmento superior [S VI]
-  Segmento basilar medial [S VII]
-  Segmento basilar anterior [S VIII]
-  Segmento basilar lateral [S IX]
-  Segmento basilar posterior [S X]



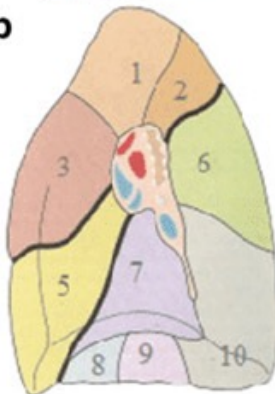
Segmentos Broncopulmonares



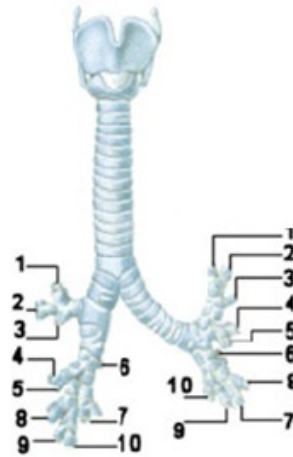
a



b



e



Right lung (Upper lobe):

1. Apical
2. Posterior
3. Anterior

Right lung (Middle lobe):

4. Lateral
5. Medial

Right lung (Lower lobe):

6. Superior
7. Medial basal
8. Anterior basal
9. Lateral basal
10. Posterior basal

Left lung (Upper lobe):

1. Apical
2. Posterior
3. Anterior
4. Lingula-Superior
5. Lingula Inferior

Left lung (lower lobe):

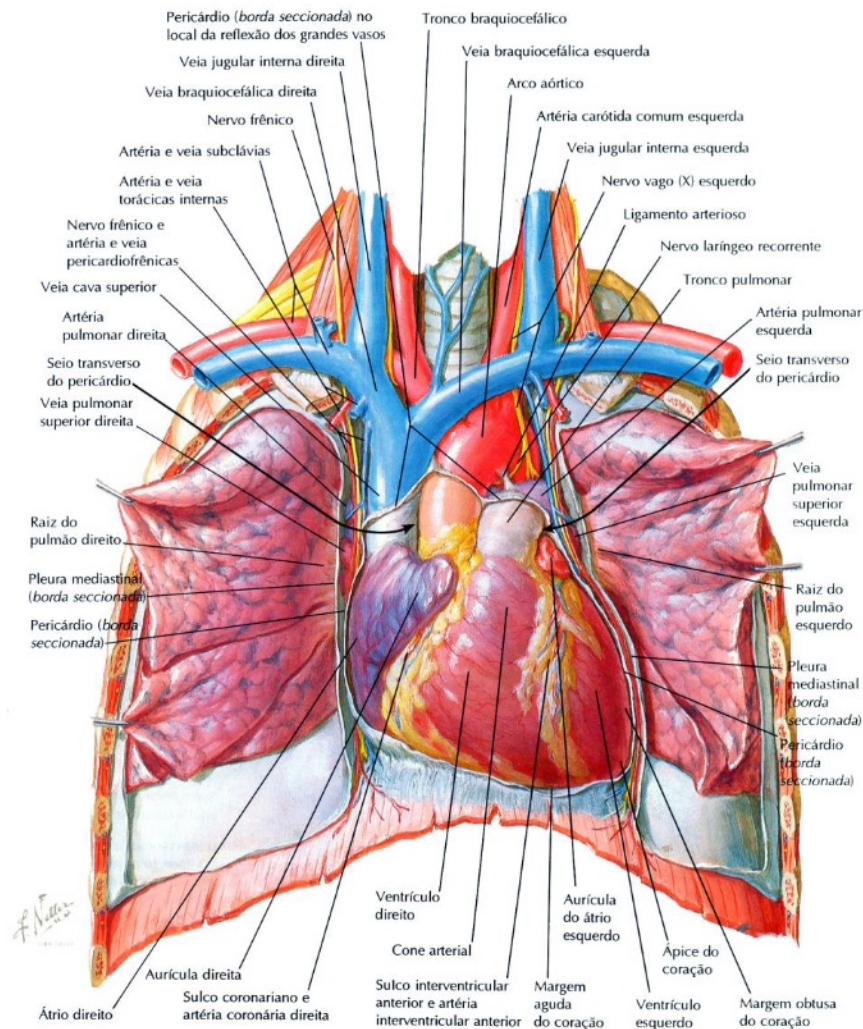
6. Superior
7. Medial basal
8. Anterior basal
9. Lateral basal
10. Posterior basal

c



d

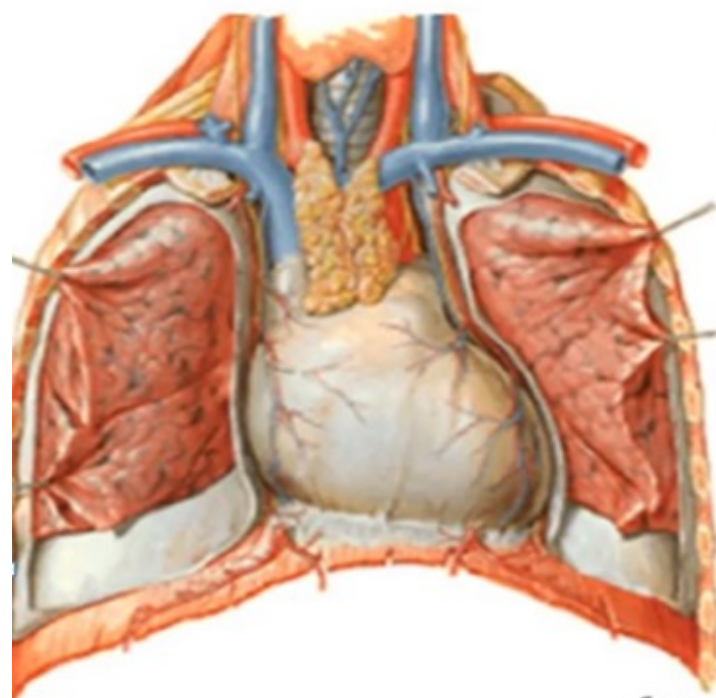




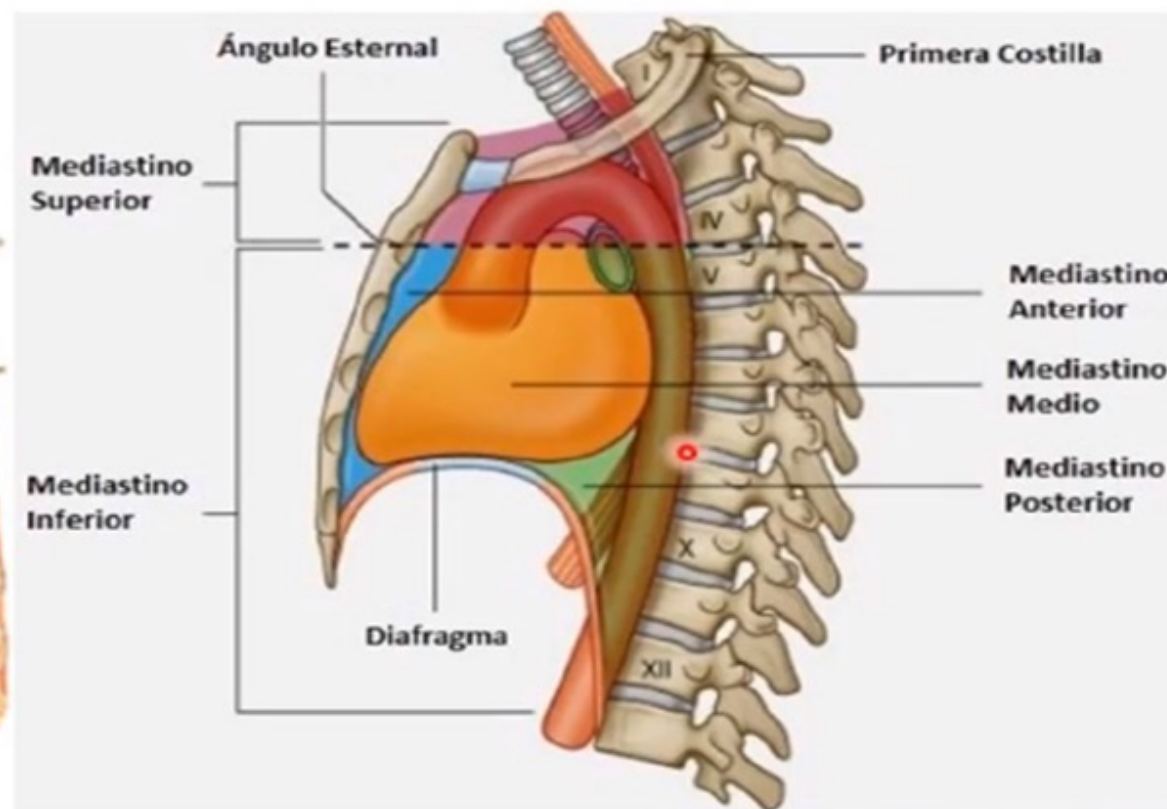
CONTEÚDO: Pericárdio e coração, tronco pulmonar, aorta ascendente, veia cava superior, veias pulmonares, nervos frênicos, artérias e veias pericardiofrênicas, ligamento pericardiofrênico



MEDIASTINO e Seus Limites e Divisões

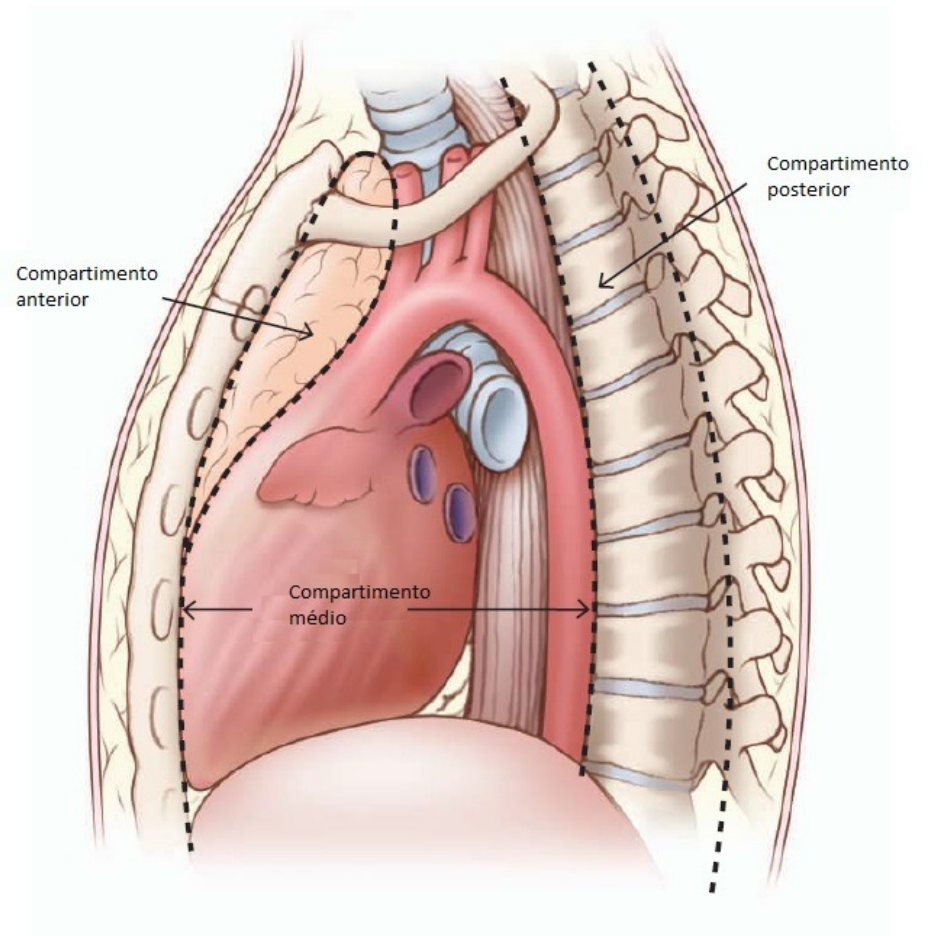
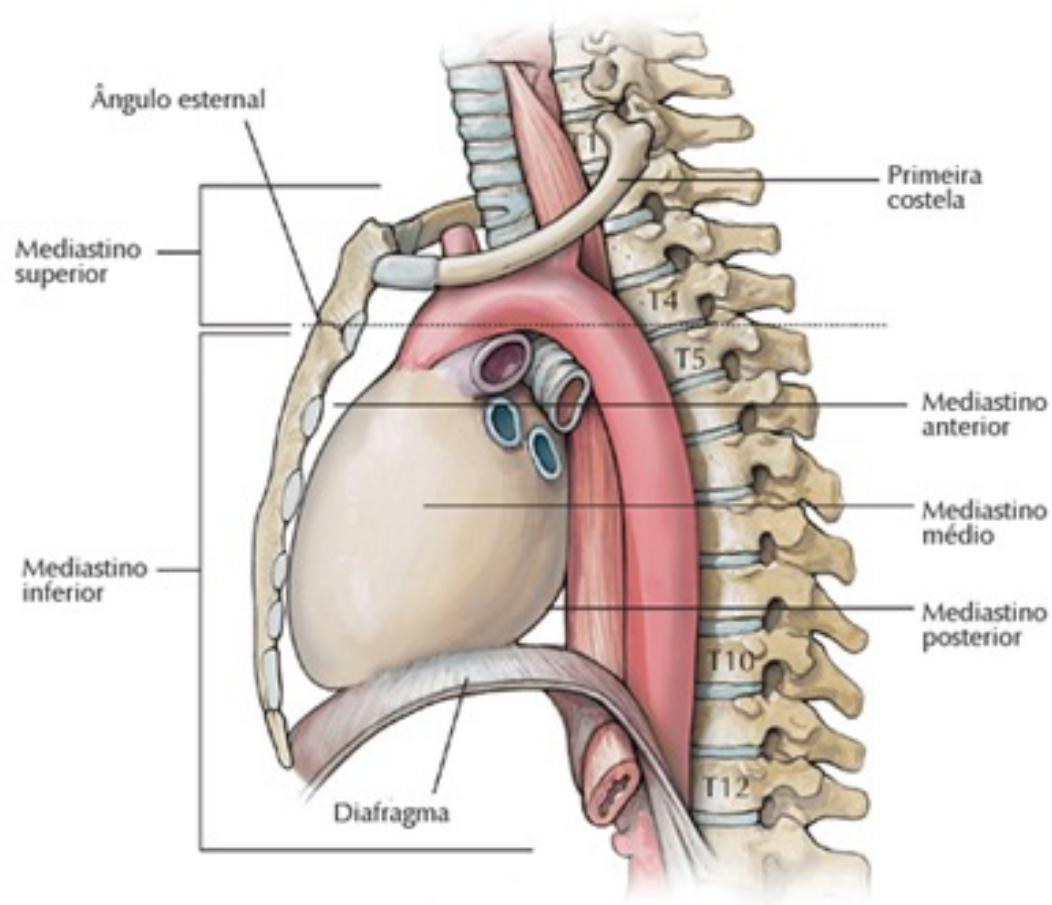


Netter
© 1996



Gray's, anatomía clínica para
estudiantes - Elsevier, 2005

Divisões e compartimentos mediastinais

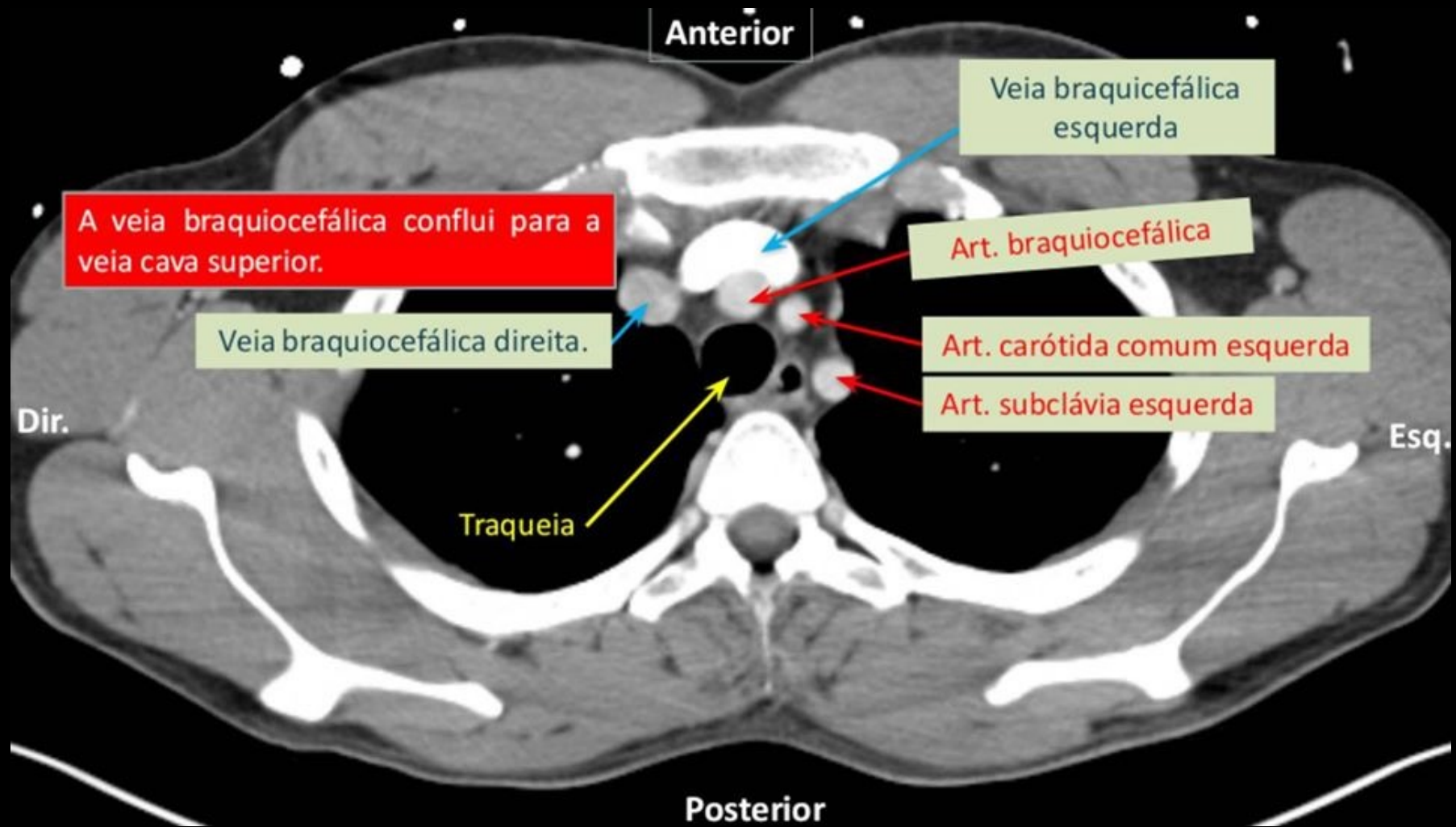


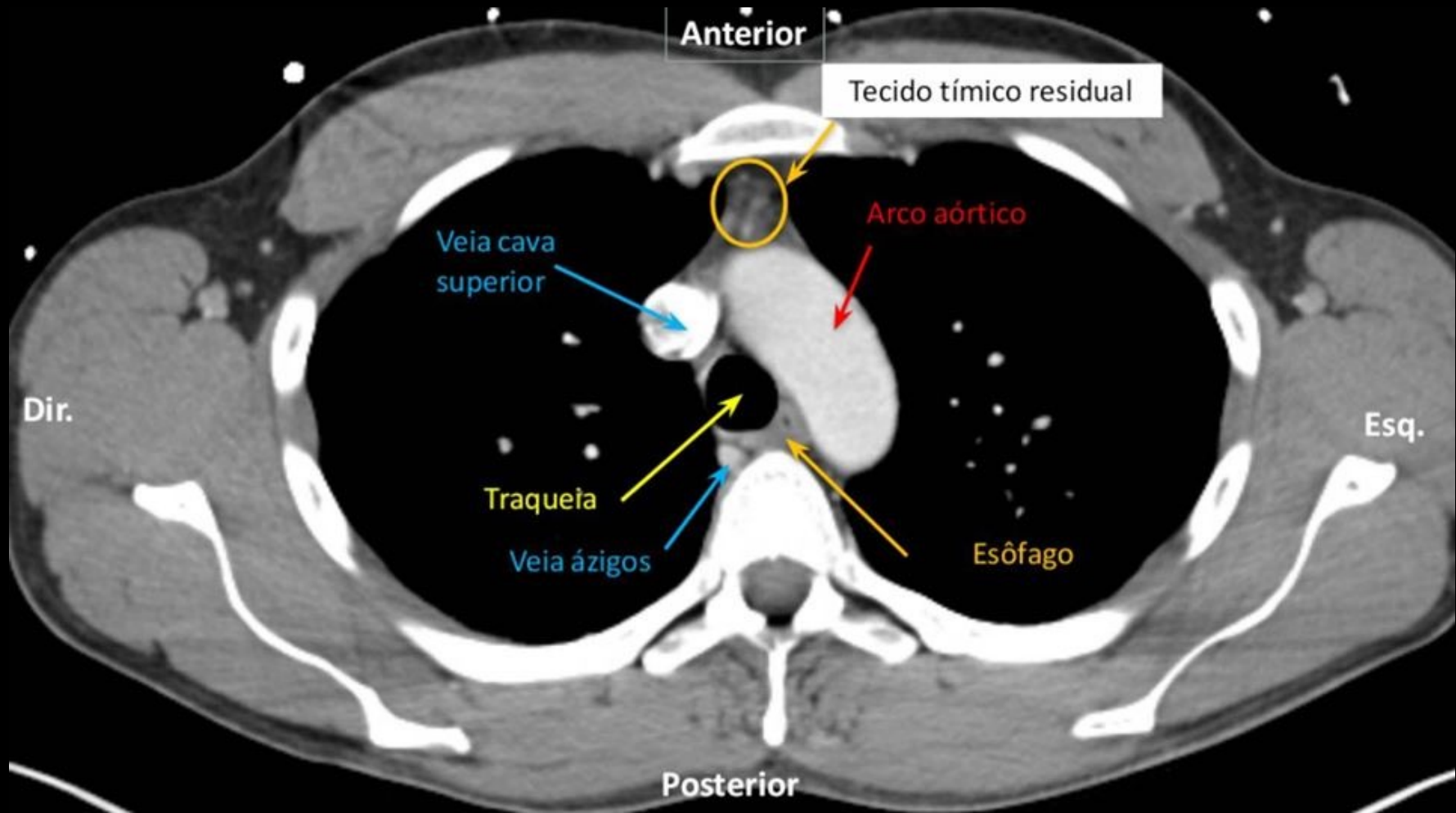
Estruturas Vasculares

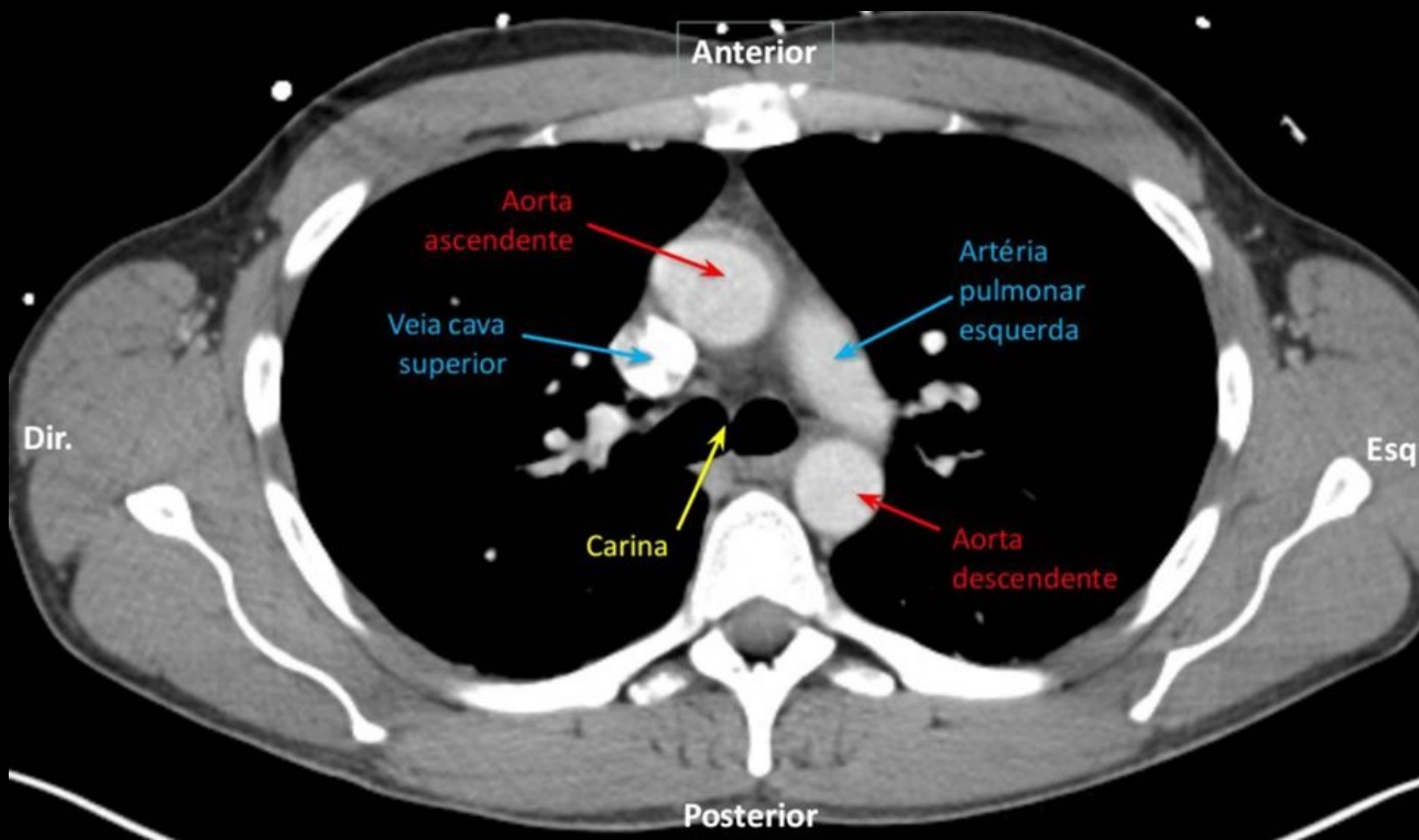
- **Estruturas Vasculares**
- **Aorta e Artéria Pulmonar:**
 - Configuração normal.
 - Aneurismas e estenoses.
- **Veias Cavas:**
 - Superior e inferior.
 - Importância para o retorno venoso.

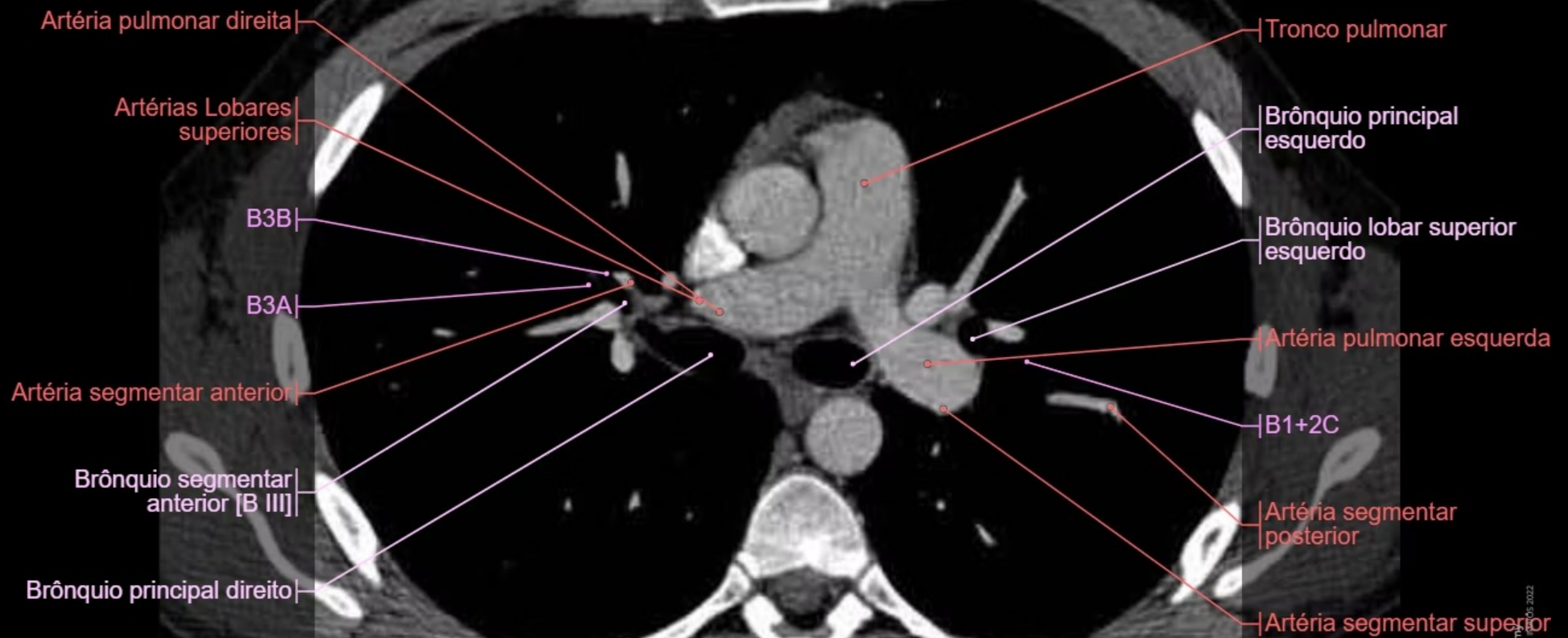


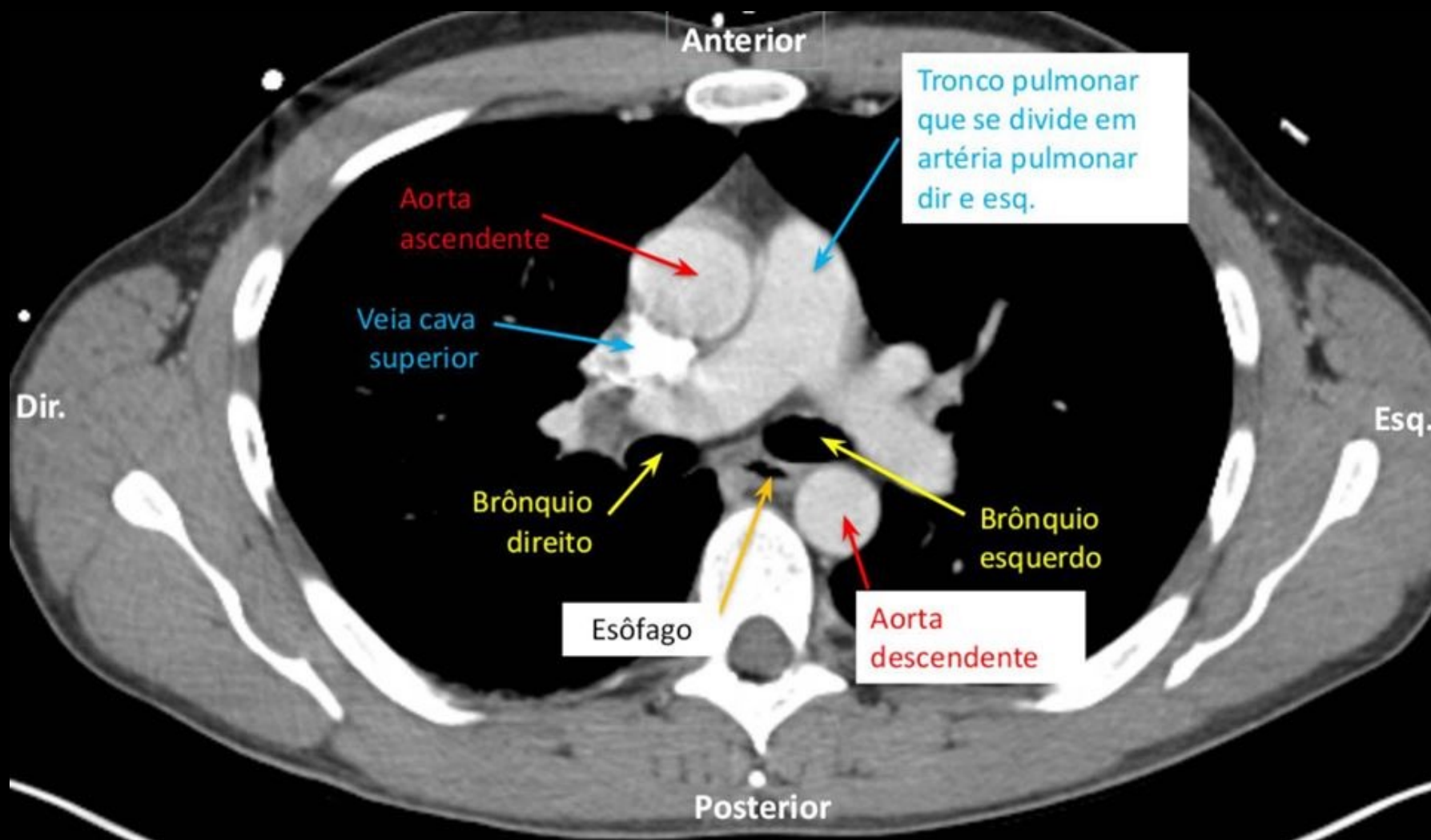
Imagens de TC de tórax anotadas
para correlação anatômica

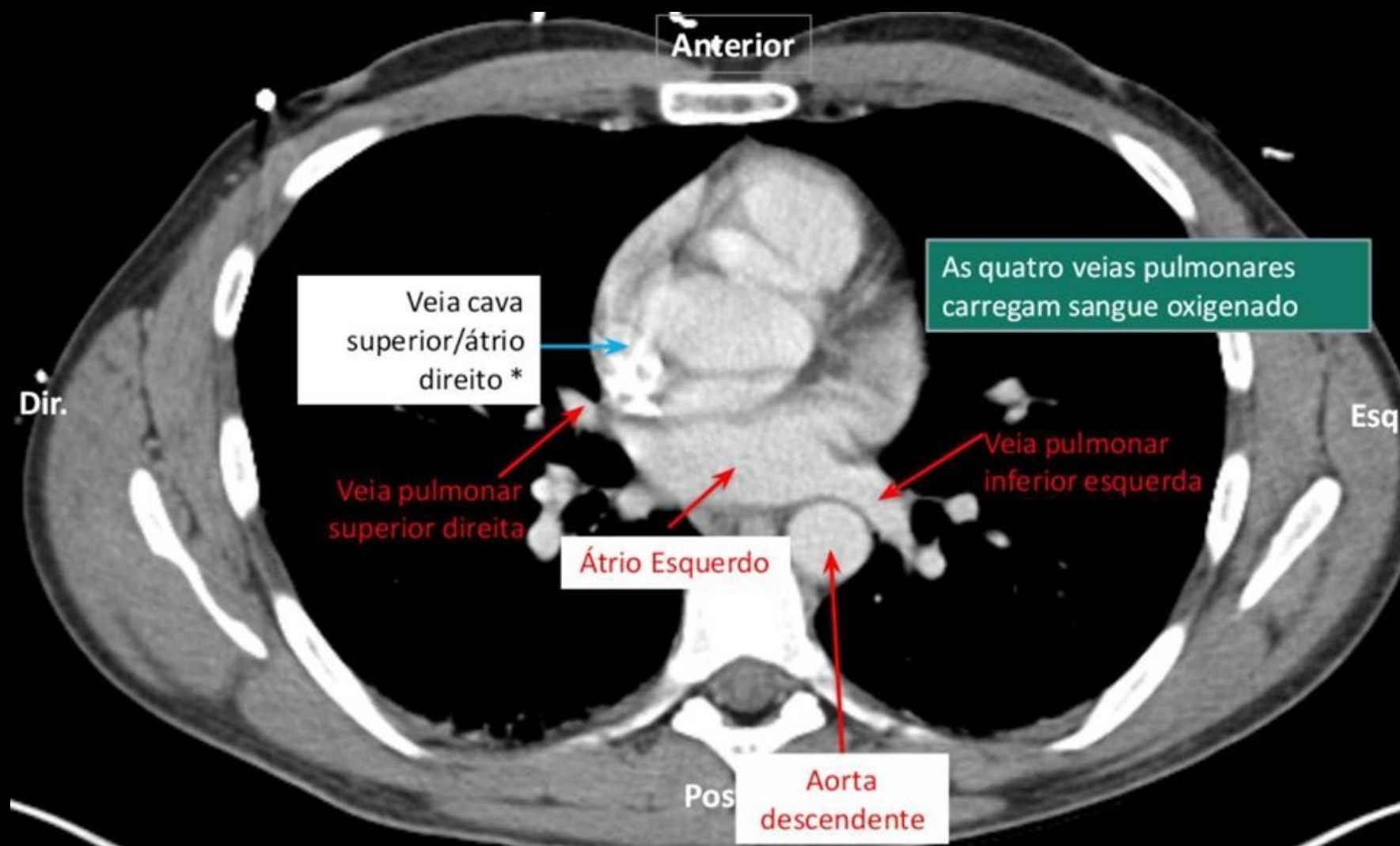


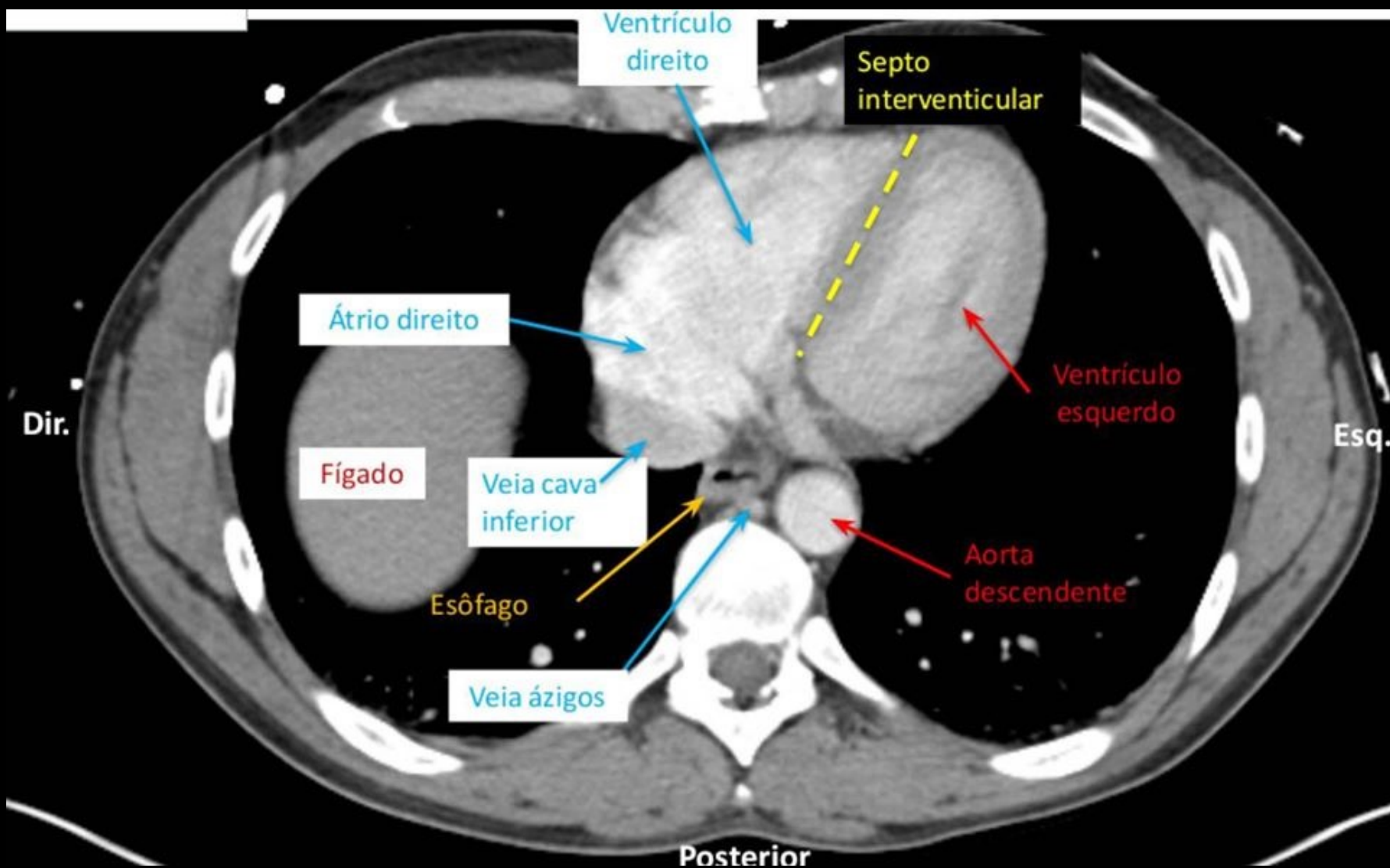












RIGHT

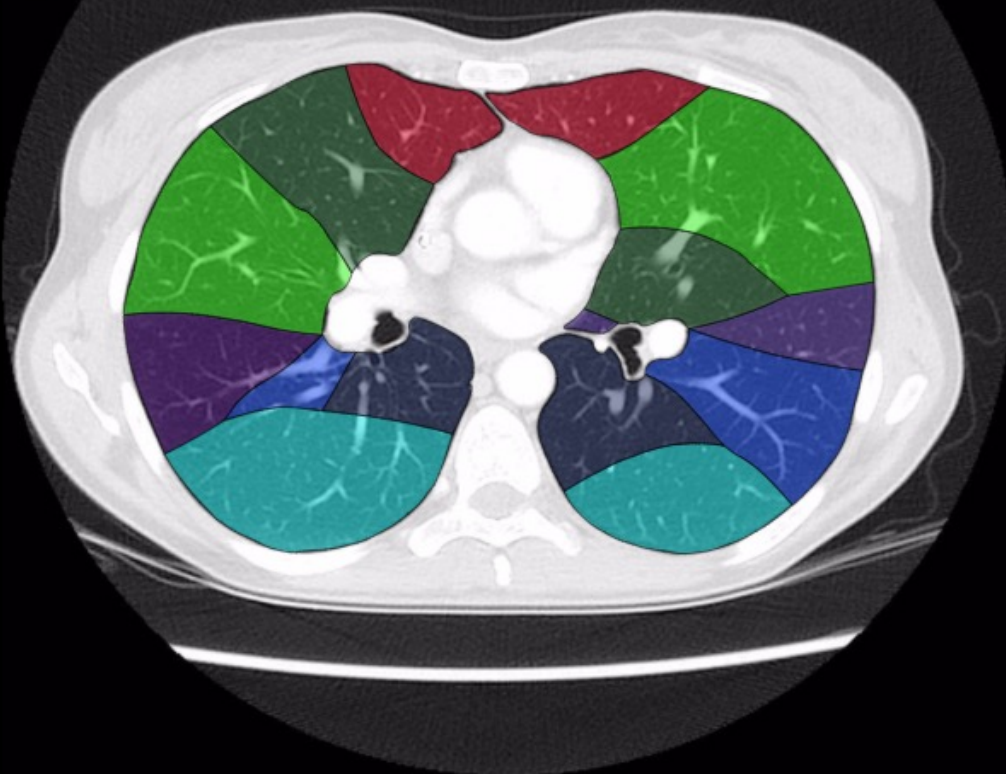
Upper Lobe
Apical
Posterior
Anterior
Middle Lobe
Lateral
Medial

Lower Lobe
Superior
Medial
Anterior
Lateral
Posterior

LEFT

Upper Lobe
Apicoposterior
Anterior
Superior lingular
Inferior lingular

Lower Lobe
Superior
Anteromedial
Lateral
Posterior



RIGHT

Upper Lobe
Apical
Posterior
Anterior
Middle Lobe
Lateral
Medial

Lower Lobe
Superior
Medial
Anterior
Lateral
Posterior

LEFT

Upper Lobe
Apicoposterior
Anterior
Superior lingular
Inferior lingular

Lower Lobe
Superior
Anteromedial
Lateral
Posterior

