

## Auscultation portal site guide



The Sound source posted on the site reproduces a real ausculation sound by listening to the "Kikuzo"

## For Ausculation skill acquistion

#### Supervision



There is no other way to acquire auscultation skills than to listen to repeated sounds with a stethoscope. Recently, you can learn using a stethoscope recording tool such as a CD, but learning without a stethoscope is not enough. Steso Sound Speaker 3S "Elephant to listen" is an excellent auscultation training device that can realistically reproduce body sounds. In addition, the auscultation portal site has many realistic auscultation sounds. If you use these to practice auscultation, you will be able to learn auscultation techniques more advanced and faster.

Norio Arakawa (Former President of the International Society for Hypertension, Professor Emeritus of Fukuoka University)

## About Ausculation portal site

With the advancement and diversification of healthcare, the role of healthcare professionals is being reviewed.

Doctors must acquire the latest knowledge and skills for advanced medical care.

Pharmacists are working hard to acquire physical assessment skills, including auscultation, to play a role in team medicine. Nurses are also becoming more specialized and require more knowledge and skills than ever before

There is no doubt that a stethoscope is an important clinical tool for healthcare professionals, but nowhere in the field of auscultation training has we found any substantial teaching material.

Therefore, we have developed an original auscultation portal site and a dedicated auscultation speaker that listens to the body sounds such as heart, lungs, and intestines.

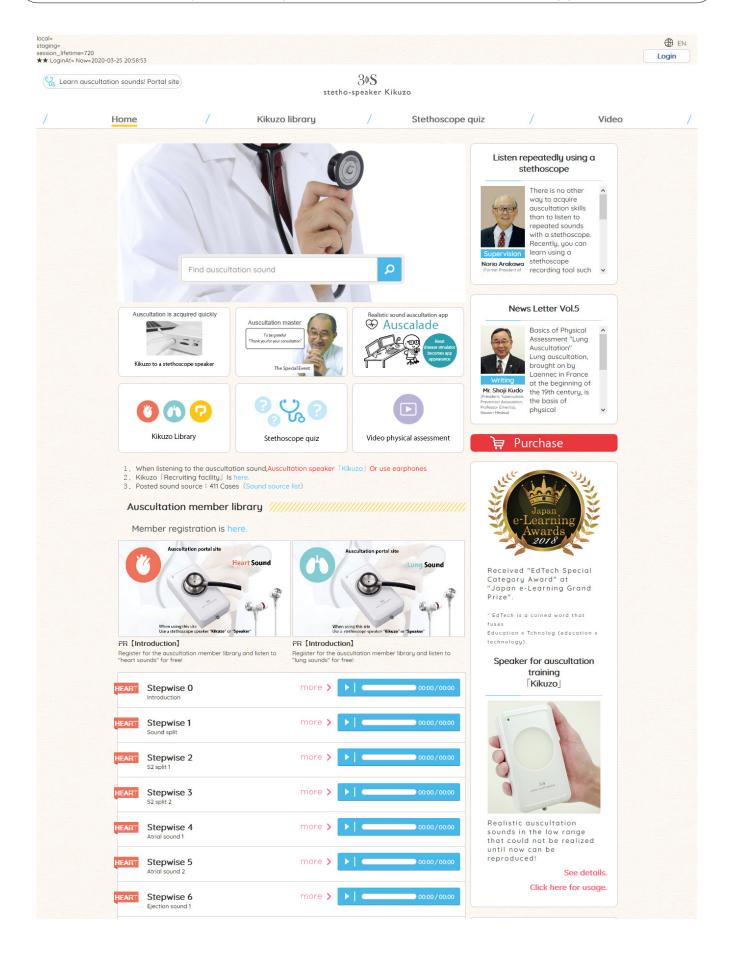
The auscultation speaker is developed by a major Japanese acoustic manufacturer, and the auscultation sound source is developed with the support of a specialist. We will work to further expand information in the future.

It is a pleasure to use the listening elephant and the auscultation portal site to improve the auscultation skills and clinical knowledge of everyone who is engaged in medical treatment and all those who aim for medical treatment.

Kiyoshi Fujiki, Representative Director Telemedica Inc.

## Ausculation portal site TOP screen

## https://3sportal.telemedica.co.jp



# Detailed Information Screen: Information can be checked while listening to Ausculation sound

- Press ">" to play the auscultation sound.
- rmore J Press to display detailed information.

#### Heart sounds

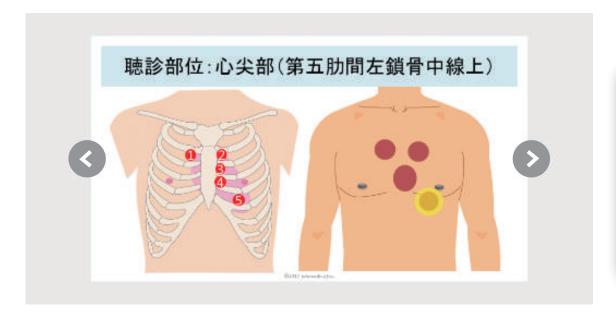




00:28/01:06

## IV sound (\$4gallop, benper tuning) \_002

IV 音 (excessive heart sounds)  $\cdot$  S4 gallop / hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM), etc. Caused by obstruction of rapid inflow / contraction of left atrium / audible as "wa-ka-ta" / IV sound occurs immediately before I sound and is masked by I sound making it difficult to hear / squeezing stethoscope Then, you can not hear the sound, so you can use it to distinguish it from the sound split / listen on the bell surface / # cardi\_sound4\_002\_60bpm



Auscultation sound name: IV sound (S4 gallop, tuned horse tuning) \_002

Auscultation sound type: Abnormal sound

On behalf of the disease: Abnormal left ventricular myocardium (hypertrophic cardiomyopathy,

dilated cardiomyopathy, etc.)

Auscultation site: Apex

## Detailed Information: Slide unfolds in a schematic diagram of ausculation sound

- · 「 🌏 」「 🔊 」 Press to switch slides.
- Press the slide to enlarge.

Heart Sound

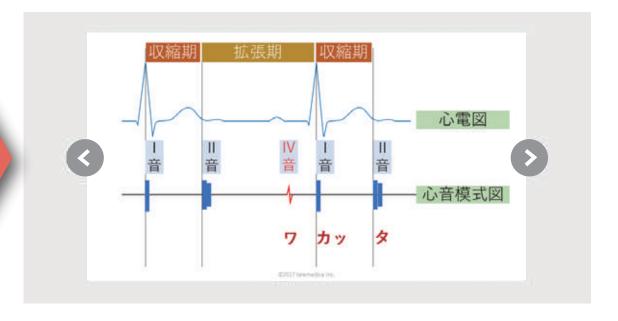




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Auscultation sound name: IV sound (S4 gallop, tuned horse tuning) \_002

Auscultation sound type: Abnormal sound

On behalf of the disease: Abnormal left ventricular myocardium (hypertrophic cardiomyopathy,

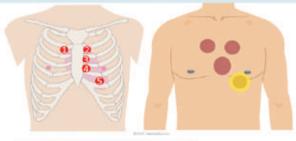
dilated cardiomyopathy, etc.)

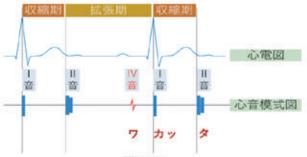
Auscultation site: Apex

## IV sound (\$4gallop, benper tuning) \_002

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#### 聴診部位:心尖部(第五肋間左鎖骨中線上)





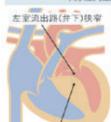


#### 拡張型心筋症(DCM)

- ・左室または両心室の心室内腔が拡張し、収 縮機能低下によりうっ血性心不全をきたす。 ・原因は不明だが、遺伝的因子、ウイルス持 統態染、自己免疫機序などの関与が指摘さ れている
  - 症状・臨床所見 ・息切れ、呼吸困難、動悸、失神など 心機能低下に伴いⅢ・Ⅳ音聴取、心拡大 進行に伴う僧帽弁逆流による収縮期雑音 肺うっ血による湿性ラ音も聴取。 心臓移植以外に根治療法はない。

心室の拡張と心室壁の菲薄化

#### 閉塞性肥大型心筋症(HOCM)



心室中障基部の肥大

- ・HCMの約50%が家族性(遺伝子異常).
- ・心室中隔基部の肥大により左室流出路の 狭窄・閉塞が生じたものを閉塞性肥大型 心筋症という
- 左室拡張能低下により不整脈、心不全を 生じうるが、多くの場合経過は比較的良 好、ただし突然死が起こることがある。 • 臨床所見
  - ・息切れ、胸痛、失神、動悸など ・胸骨左縁第3・4 肋間~心失能で、収 縮期駆出性雑音、IV音聴取、

#### 非閉塞性肥大型心筋症(HNCM)

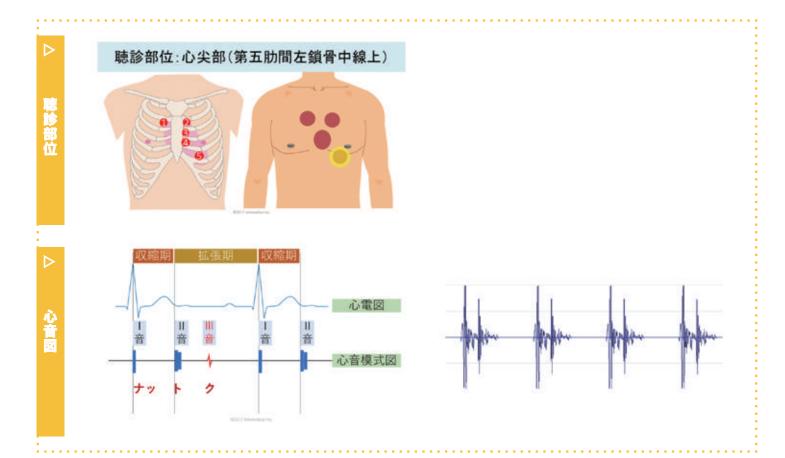


- HCMの約50%が家族性(遺伝子異常)。
- 心室中隔の肥大により左室流出路の狭 察・閉塞がないものを非閉塞性肥大型心
- 左室拡張能低下により不整脈、心不全を 生じうるが、多くの場合経過は比較的良 ただし突然死が起こることがある。
- 臨床所見 ・息切れ、胸痛、失神、動悸など
- •狭窄がないため、収縮期駆出性雑音 は聴取しない。IV音聴取

Auscultation sound name: IV sound (S4 gallop, tuned horse tuning) \_002 Auscultation sound type: Abnormal sound Abnormal left ventricular myocardium (hypertrophic cardiomyopathy) On behalf of the disease: Auscultation site: Apex

## Physiological Sound

Physiological sound (excessive heart sound) / Listened to in healthy young people (three years or younger) with thin chest wall and good myocardial extensibility / Sound of blood flowing from the left atrium bumping into the apex (ventricular filling sound) ) / You can hear "nat-to-ku" ./ There are physiological sounds and pathological sounds in the sound. Scrutinize as a target sound / Listen to the left side and listen on the bell /



Auscultation sound name: Physiological sound (ventricular filling sound) \_002

Auscultation sound type: Normal sound

On behalf of the disease: Healthy young people

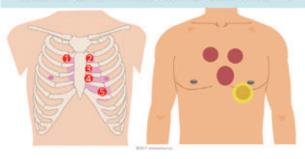
Auscultation site:

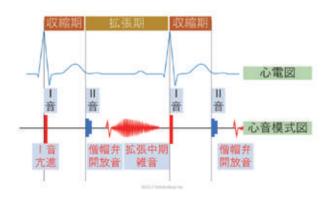
Apex

## Mid-diastolic noise (diastolic rumble, left ventricular filling sound)

Mid-diastolic murmur (diastolic rumble, left ventricular filling sound), mitral valve opening sound (OS), hypertonia / mitral valve stenosis / stenosis delays mitral valve opening, diastolic (II 音 and I 音) Between: Listen to mitral valve opening sound (OS) at mitral valve opening time) / Listen to middle diastolic rumble (left ventricular filling sound) / Listen to bell on left side lying position / # cardi\_mitral stenosis 001

#### 聴診部位:心尖部(第五肋間左鎖骨中線上)







#### 僧帽弁狭窄(MS)



- ほとんどが小児期のリウマチ熱の後遺症 であるため、リウマチ熱の減少により僧 帽弁狭窄は激減した。
- 僧帽弁狭窄により、左房のうっ血、心拍 出量低下、左房拡大が起こり心不全症状
- さらに病態が進むと、心房細動、肺うっ 血・肺高血圧から肺水腫、右心系の負荷 増大により三尖弁閉鎖不全などを生じる。

リウマチ熱:A群溶血性連鎖球菌の咽頭感染後に発症する全身の結合組織 の炎症性疾患、溶連菌感染の0.2~0.3%でリウマチ熱を発症し、そのうち 50%が心内膜炎を起こし、弁膜にも炎症を起こす。

Auscultation sound name: Mid-diastolic murmur (diastolic rumble, left ventricular filling

sound), mitral valve opening sound \_001

Auscultation sound type: Abnormal sound

On behalf of the disease: Mitral stenosis (MS)

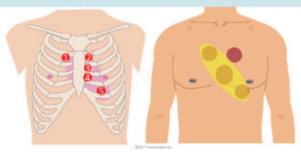
Auscultation site:

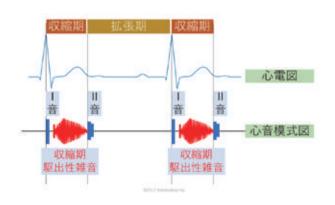
Apex

## Systolic ejection noise (organic noise), arterial ejection noise

Systolic ejection noise, arterial ejection noise / aortic valve stenosis / If there is a valve stenosis, listen for ejection noise (produced by rapid ejection of blood to artery) immediately before systolic noise / Since the sound is heard 0.04 to 0.1 seconds later than the sound, it sounds like a sound split / After the ejection sound, the ejection noise (gradually increasing and decreasing type) becomes the sound of the sound (half moon valve closing time) Prolonged to just before / Ejective murmur is caused by pressure difference between ventricle and artery when there is resistance to blood flow near meniscal valve (aortic valve / pulmonary valve) / Subvalvular stenosis (hypertrophic obstruction) Cardiomyopathy) does not produce an ejection sound and can be distinguished from valve stenosis / # cardi\_ejection\_murmur\_003

聴診部位:大動脈弁領域~心尖部







#### 大動脈弁狭窄(AS)

- 先天性・後天性の弁の形態異常、先天性 では大動脈二尖弁、まれに単尖弁(正常 な大動脈弁は三尖弁).
- 高齢化に伴い硬化性弁狭窄が増加
- 左室内圧への負荷が続き、左室肥大を呈
- 長期間無症状で経過し、初発症状は労作 時息切れ、動悸、易疲労感など.
- 進行すると狭心痛、失神・めまい、重篤 な左室不全症状が出現し、予後は2~5 年と極めて不良。

Auscultation sound name: Systolic ejection noise (organic noise), arterial ejection noise

Auscultation sound type: Abnormal sound

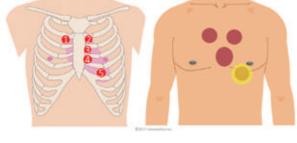
Meniscal (aortic, pulmonary) stenosis (AS, PS) On behalf of the disease:

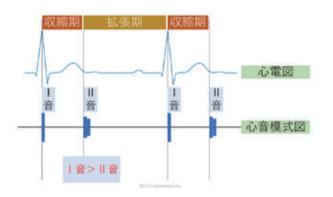
Aortic valve area Auscultation site:

## Normal heart sounds\_apex\_002

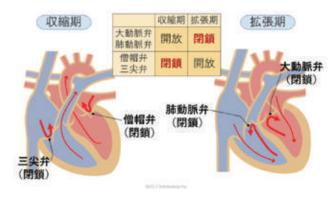
Normal heart sound / I sound lasts longer than the II sound / The shorter the interval between the next sound is, the main vibration of the I sound / I sound is the atrioventricular valve (mitral valve / tricuspid valve) closing time (QRS wave Of the aortic valve, which constitutes the end part of the sound / The sound is the vibration at which the blood hits the orifice when the semi-lunar valves (aortic and pulmonary valves) are closed / the apex (TM area) 領域 sound> II sound / # cardi normal base 002

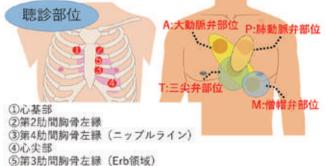












Auscultation sound name: Normal heart sounds\_apex\_002

Auscultation sound type: Normal sound

On behalf of the disease:

Apex of the heart (I sound> II sound) Auscultation site:

## Heart Sound Library

- Normal heart sound
- I Muted
- I Hypertone
- II Split tone
- Il Increased aorta component
- II Hyperpneumo pulmonary component
- Physiological sound (ventricular filling sound)
- Pathological sound (S3 gallop, benper tuning)
- IV Sound (S4 gallop, tuned horse tuning)
- Overlapping horse tune (gallop)
- Four-part tuning
- Mitral valve opening sound
- Mid systolic click
- Systolic ejection noise (functional noise)
- Systolic ejection noise (organic noise), arterial ejection noise
- Musical noise / systolic ejection noise
- Mid-systolic ejection noise
- Systolic reflux noise
- Mid-diastolic noise (diastolic rumble, left ventricular filling sound)
- Diastolic reflux noise
- Ventricular extraperitoneal contraction (PVC, VPC)
- Sinus tachycardia
- Sinus bradycardia
- Continuity noise

More than 60 sound sources

\*The stethoscope library is updated as needed. Please confirm the latest information on auscultation portal site.

> Heart sounds posted on the auscultation portal site

## Lung Sound You can audition on the auscultation portal site TOP screen

## Sound rhonchi\_004 / Katan storage

Sputum retention / Inhalation / expiration / Vibration caused by viscous secretions sticking to the airway wall, or due to vibration of the narrowed airway wall due to airflow / Snoring sound "Gugu" / Inhalation Listening to the low-pitched continuous ra (rhonchi) from the first half / Listening to the slightly low-pitched continuous ra (rhonchi) during expiration / # respiratory\_rhonchi\_004



# 聴診部位:音源に近い胸壁上/広範に伝搬 副雑音(ラ音)



#### 胸膜摩擦音

ラ音	名称	音の聴こえ方	発生源	代表疾患
囲かい 断続性 ラ音	捻髮音 (fine crackles)	チリチリ パリパリ	呼気時に開塞した末梢気道 が吸気時に開放する際の音	間質性肺疾患。 肺水腫(初期)、 非定型肺炎
担い 断続性 ラ音	水泡音 (coarse crackles)	ゴロゴロ ブツブツ	比較的太い気道内の分泌物 (水・痰)による膜が、吸気時 または吸気時・呼気時に破 裂する音	慢性気管支炎。 気管支拡張症、 細菌性肺炎、 肺水腫、COPD
高音性 連続性 ラ音	m声音 (wheezes)	ヒューヒュー キューキュー ピーピー	鉄窄した気道壁(細い気管 支、狭窄の程度によっては 太い気管支)の振動音	気管支喘息、 COPD、気管支 狭窄
低音性 連続性 ラ音	類鼾音 いびき音 (rhonchi)	グーゲー	気道の壁に張り付いた痰な どの振動で生じる。また比 較的太い気管支が狭窄した 時の振動でも生じる。	気管支傷息。 COPD、気管支 拡張症、気管・ 気管支狭窄。

吸気

呼気

#### 気管支拡張症

- 主に反復的な気道の感染と炎症が誘因となる。
  - ●遺伝、全身性炎症性疾患などが関与する場合もある
    - 気管支・細気管支の不可逆的な拡張を認める症候群
  - 多くは持続的な細菌感染が存在し、慢性気道炎症で増加し た分泌物などにより気道閉塞をきたす。
  - 慢性副鼻腔炎の合併が多い(副鼻腔気管支症候群)
  - 無症状の場合もあるが、湿性咳嗽や後鼻漏を伴う場合は、 (coarse crackles)を聴取、時に血痰・喀血を認める
- ばち状指を認めることが多い。
  - びまん性汎細気管支炎(DBP)に準じて、マクロライド少量 長期投与を行う場合がある、

#### 気管支喘息

- 小児ではダニなどをアレルゲンとするアトビー型が大半 を占め、成人では非アトビー型が多くなる。
  - 気道の慢性炎症に基づき、発作性で可逆性の気道狭窄と 気道過敏性亢進を認める。
  - Th2細胞から産生されるサイトカインが深く関与し、気 道粘膜に好酸球を主体とした炎症細胞増加を認める。長期罹患で気道の構造変化(リモデリング)をきたし、非
- 可逆性の気道壁の肥厚を認める。 発作性の呼吸困難、喘鳴、
  - 症状は夜間、早朝に出現することが多い。
  - ●発作時は吸気時、または吸気・呼気時ともに ラ音; 笛声音)を聴取

#### COPD(慢性閉塞性肺疾患)

- ●タバコ煙を主とする有害物質を長期に吸入暴露すること で生じる肺の進行性炎症性疾患(40歳以上の喫煙者に好発)
  - 好中球などから放出されるプロテアーゼが肺胞壁を破壊。
  - ●気流制限(1秒量の低下)、肺過膨張をきたす。
  - 末梢気道病変および気腫性病変による気流閉
  - ●炎症により末梢気道狭窄(気道壁肥厚、分泌物貯留)をきた し、また、肺胞壁破壊により気腔が拡大し肺弾性収縮力が低下する。
- ●労作時息切れ、慢性の咳・痰、喘鳴、口すぼめ呼吸(呼気時の 気道閉塞を防ぐため)、肺過膨張による棒状胸郭、COPD増 思時には右室不全症状(頭静脈怒張、下腿浮腫など)。
  - 聴診では肺胞呼吸音減弱と呼気時間延長を認める。

#### Auscultation sound name: Sound rhonchi\_004 / Katan storage

Auscultation sound type: Abnormal sound

Sputum retention, bronchiectasis, bronchial asthma, COPD, On behalf of the disease:

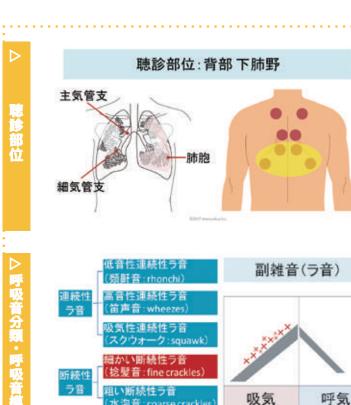
chronic bronchitis, bacterial pneumonia, heart failure

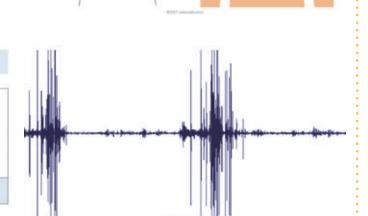
Propagation on chest wall close to sound source / widespread Auscultation site:

細気管支

## Sound crackles\_005 / interstitial lung disease

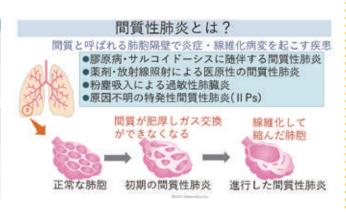
Interstitial lung disease / Inspiration / Sound of sudden opening of the peripheral airway that was obstructed during expiration / Large intermittent buzzing sound from the beginning of the inspiration phase / # respiratory\_finecrackles\_005





聴診部位:前胸部下肺野

ラ音	名称	音の聴こえ方	発生源	代表疾患
細かい 断続性 ラ音	捻髮音 (fine crackles)	チリチリ パリパリ	呼気時に閉塞した末梢気道 が吸気時に開放する際の音	間質性肺疾患、 肺水腫(初期)、 非定型肺炎
粗い 断続性 ラ音	水泡音 (coarse crackles)	ゴロゴロ ブツブツ	比較的太い気道内の分泌物 (水・痰)による膜が、吸気時 または吸気時・呼気時に破 裂する音	慢性気管支炎、 気管支拡張症、 細菌性肺炎、 肺水腫、COPD
高音性 連続性 ラ音	笛声音 (wheezes)	ta-ta- +a-+a- L-L-	狭窄した気道壁(細い気管 支、狭窄の程度によっては 太い気管支)の振動音	気管支喘息、 COPD、気管支 狭窄
低音性 連続性 ラ音	類鼾音 いびき音 (rhonchi)	グーグー	気道の壁に張り付いた痰などの振動で生じる。また比較的太い気管支が狭窄した 時の振動でも生じる。	気管支喘息、 COPD、気管支 拡張症、気管・ 気管支狭窄、 肺炎、心不全



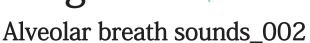
Auscultation sound name: Sound crackles\_005 / interstitial lung disease

Auscultation sound type: Abnormal sound

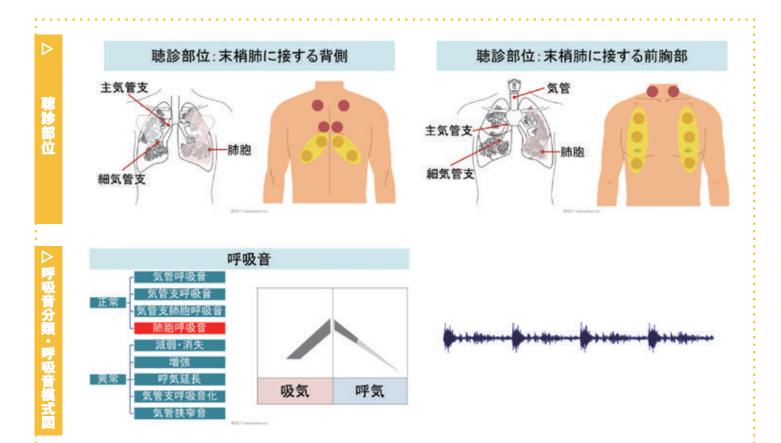
On behalf of the disease: Interstitial lung disease, early stage of pulmonary edema, non-typed pneumonia

Dorsal and precordial lower lung fields / widespread Auscultation site:

胸膜摩擦音



Alveolar breathing sound / Low soft soft sound / Volume is inspiration > expiration / inspiration time: expiration time = 1: 2, but after mid-expiration the volume is low and cannot be heard / no pause (pause) / # respiratory\_vesicular\_002



Auscultation sound name: Alveolar breath sounds\_002

Auscultation sound type: Normal Sound

On behalf of the disease:

The back and precordium in contact with the peripheral lung Auscultation site:

## Lung Sound Library

- Tracheal breathing sounds
- Bronchoalveolar breath sounds
- Alveolar breath sounds
- Twisting sound (fine crackles)
- Blisters (coarse crackles)
- Flute sound (wheezes)
- Chirp (rhonchi)
- Squawk (squawk)
- The snowfall sound (snowball)

And more than 35 sound sources

Lung sounds posted on the auscultation portal site

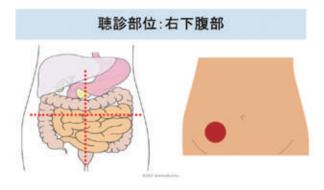
\*The stethoscope library is updated as needed. Please confirm the latest information on auscultation portal site.

auscultation portal site TOP screen

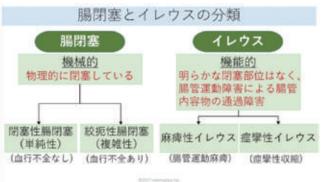
00:00/01:00

#### Intestinal sound

Transverse colon site / Glue reduction / 14 seconds, listening for gurus at around 59 seconds / Peristaltic sound propagates throughout the abdomen, so auscultation points are sufficient at one or two places / Normal: 5 times or more per minute (5 to 15 (Every second) Hearing sound can be heard, Decrease: 1 to 2 times a minute (constipation, peritonitis, paralytic ileus, intestinal dysmotility due to surgery, disappearance: No gleaming sound for 5 minutes (functional ileus, peritonitis), hyperactivity: Always audible (infectious enteritis, diarrhea, ileus)









Auscultation sound name: Intestinal sound

Auscultation sound type: Abnormal sound

Constipation, peritonitis, paralytic ileus, intestinal hypomotility due to surgery On behalf of the disease:

Auscultation site:

Transverse colon

## **Bowel Sound and Other**

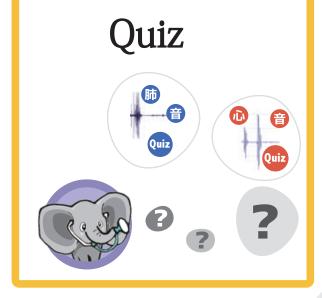
### Other Sound

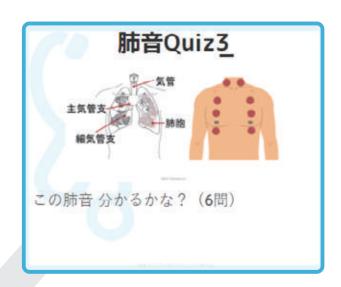
- Bowel sound
- Mechanical bowel obstruction (metallic sound)
- Thyroid rales
- Vascular murmur
- Dialysis shunt sound

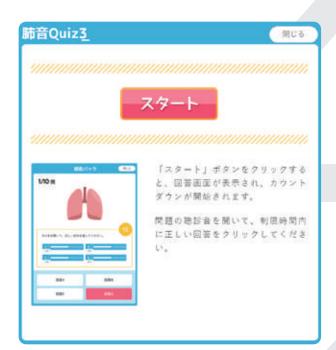
And more than 20 sound sources

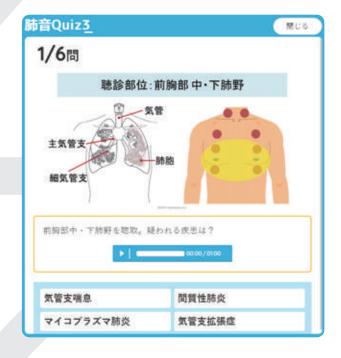
> Bowel sounds and other information posted on the auscultation portal site

\*\*The stethoscope library is updated as needed. Please confirm the latest information on auscultation portal site.

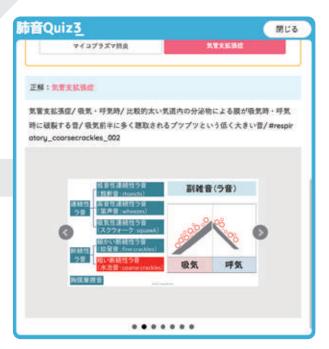












## **Ausculation Quiz Library**

- 1. Lung sounds Quiz\_1 Guess the correct lung sounds (5 questions)
- 2. Heart sounds Quiz\_1 Guess the correct heart sounds (6 questions)
- 3. Lung Sound Quiz\_2 Which sound is suspected of interstitial lung disease? (6 questions)
- 4. Heart sounds Quiz\_2 Heart failure due to aortic stenosis (AS) is increasing with aging. Early detection possible by auscultation
- 5. Lung sounds Quiz\_3 Do you understand these lung sounds? (6 questions)
- 6. Heart sound Quiz\_3 Is this heart sound normal? Abnormal? (5 questions)
- 7. Lung sounds Quiz\_4 Do you understand these lung sounds? (6 questions)
- 8. Heart sound Quiz\_4 Do you understand this heart sound? (7 questions)
- 9. Lung sound basic Quiz\_1 Let's compare two sounds (6 questions)
- 10. Heart sound basic Quiz\_1 Let's assign the listening part of heart sound! (10 questions)

\*\*Auscultation quiz is updated from time to time. Please confirm the latest information on auscultation portal site.

## Telemedica Inc.

₹227-0055 9-9 Azumigaoka, Aoba-ku, Yokohama-shi, Kanagawa

Emai 3sp@telemedica.co.jp

URL https://3sportal.telemedica.co.jp

