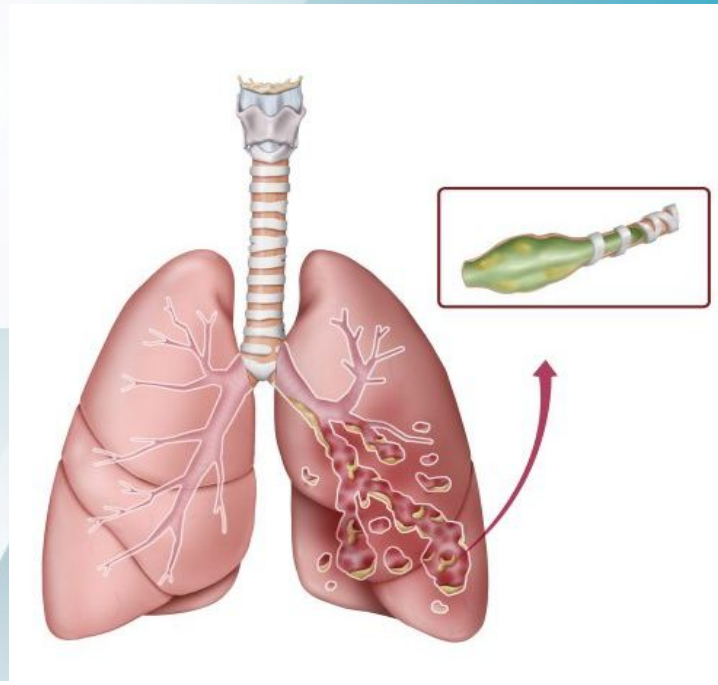
# Bronchiectasis



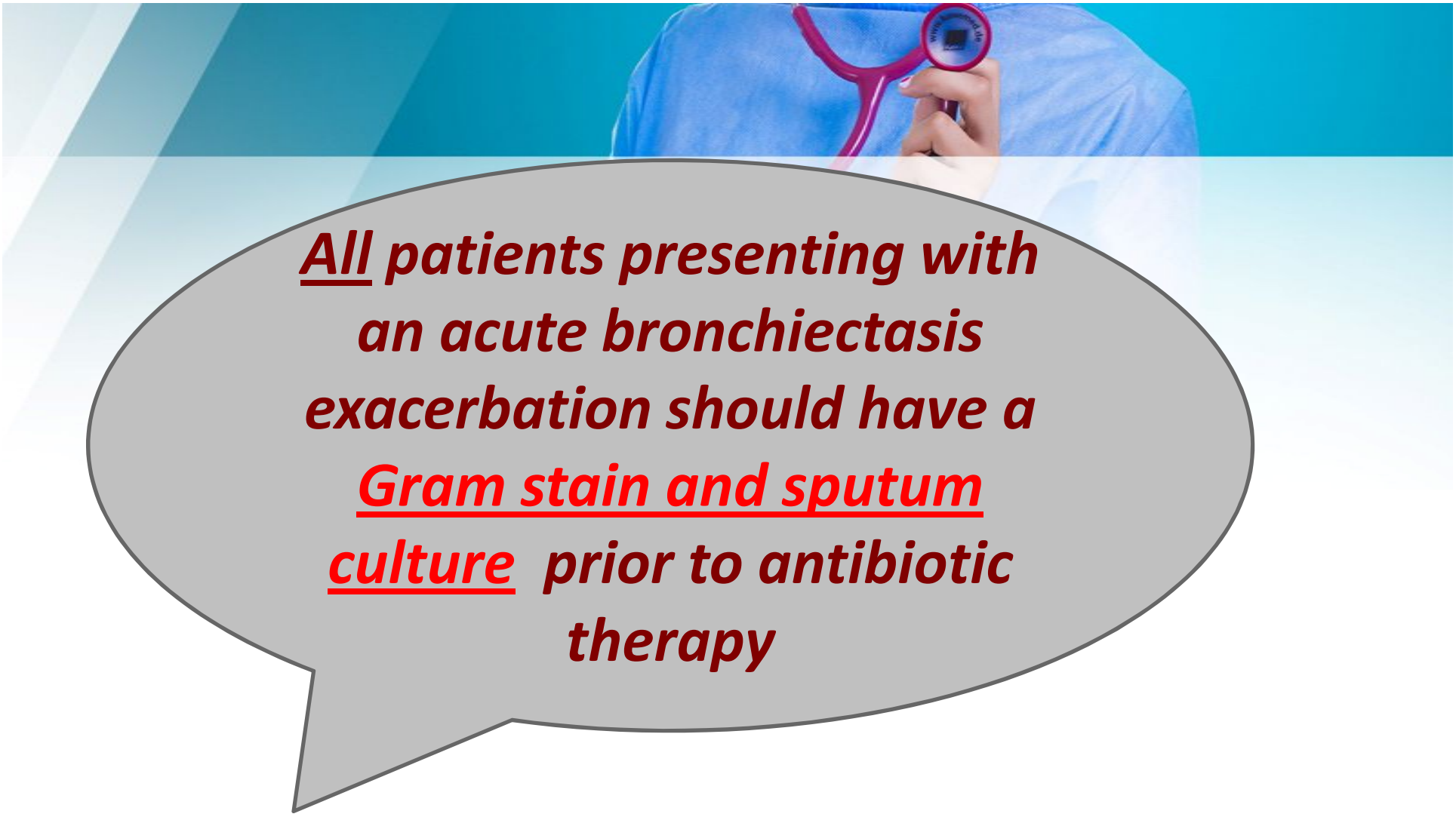
Dr.Rema Ibraheem

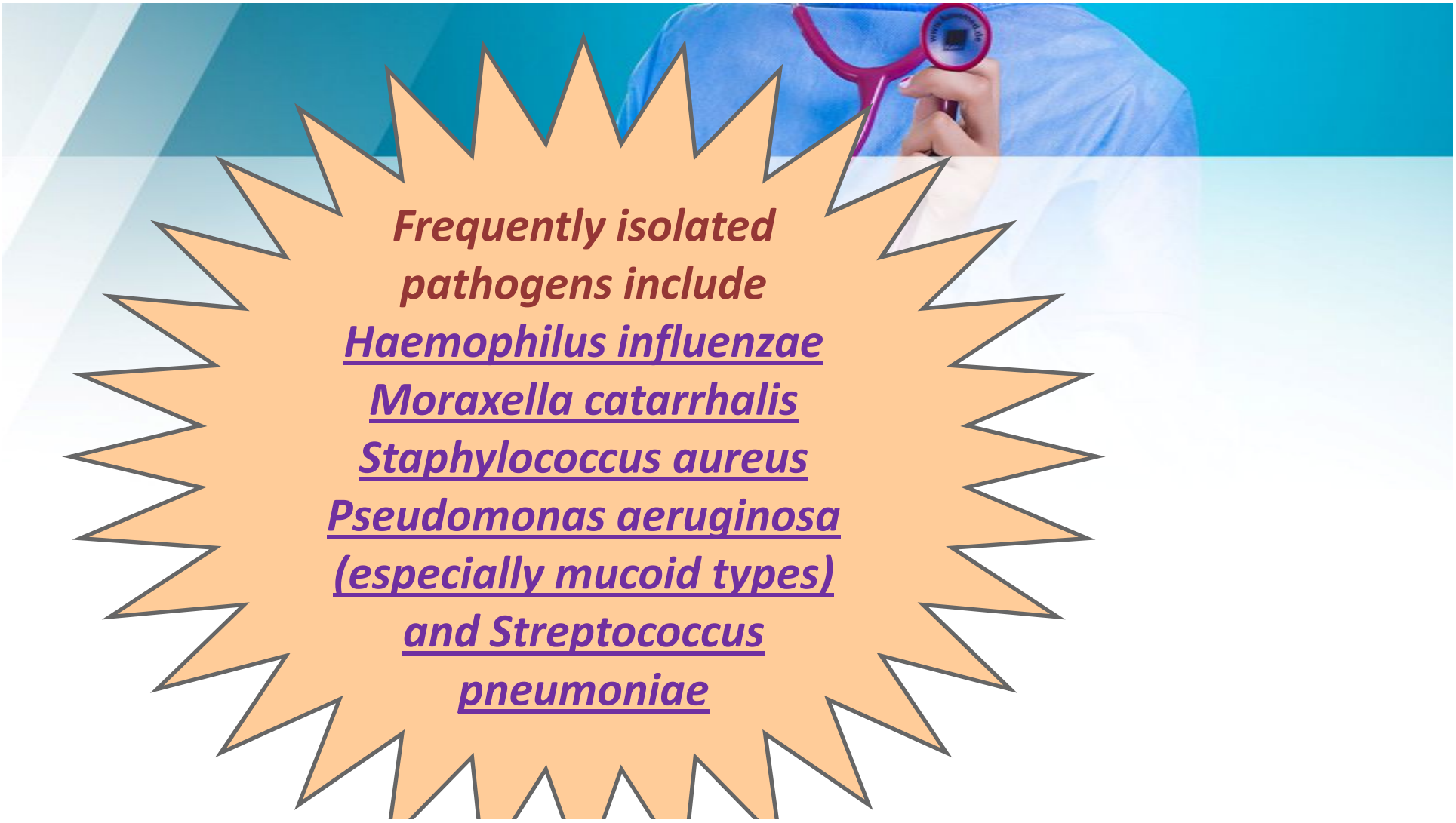
# MANAGMENT

1. Antibiotics
2. Bronchodilators
3. Antiinflammatory Agents
4. Airway Clearance Techniques
5. Mucolytic Agents and Hydration
6. Exercise Training
7. Vaccinations
8. Immunoglobulin therapy
9. gastroesophageal reflux
10. Surgery
11. Lung Transplantation

# •ANTIBIOTICS

**The mainstay of therapy for bronchiectasis exacerbations is <u>antimicrobial treatment</u>**


All patients presenting with an acute bronchiectasis exacerbation should have a Gram stain and sputum culture prior to antibiotic therapy


Frequently isolated pathogens include
Haemophilus influenzae
Moraxella catarrhalis
Staphylococcus aureus
Pseudomonas aeruginosa (especially mucoid types) and Streptococcus pneumoniae

Inpatient

Outpatient

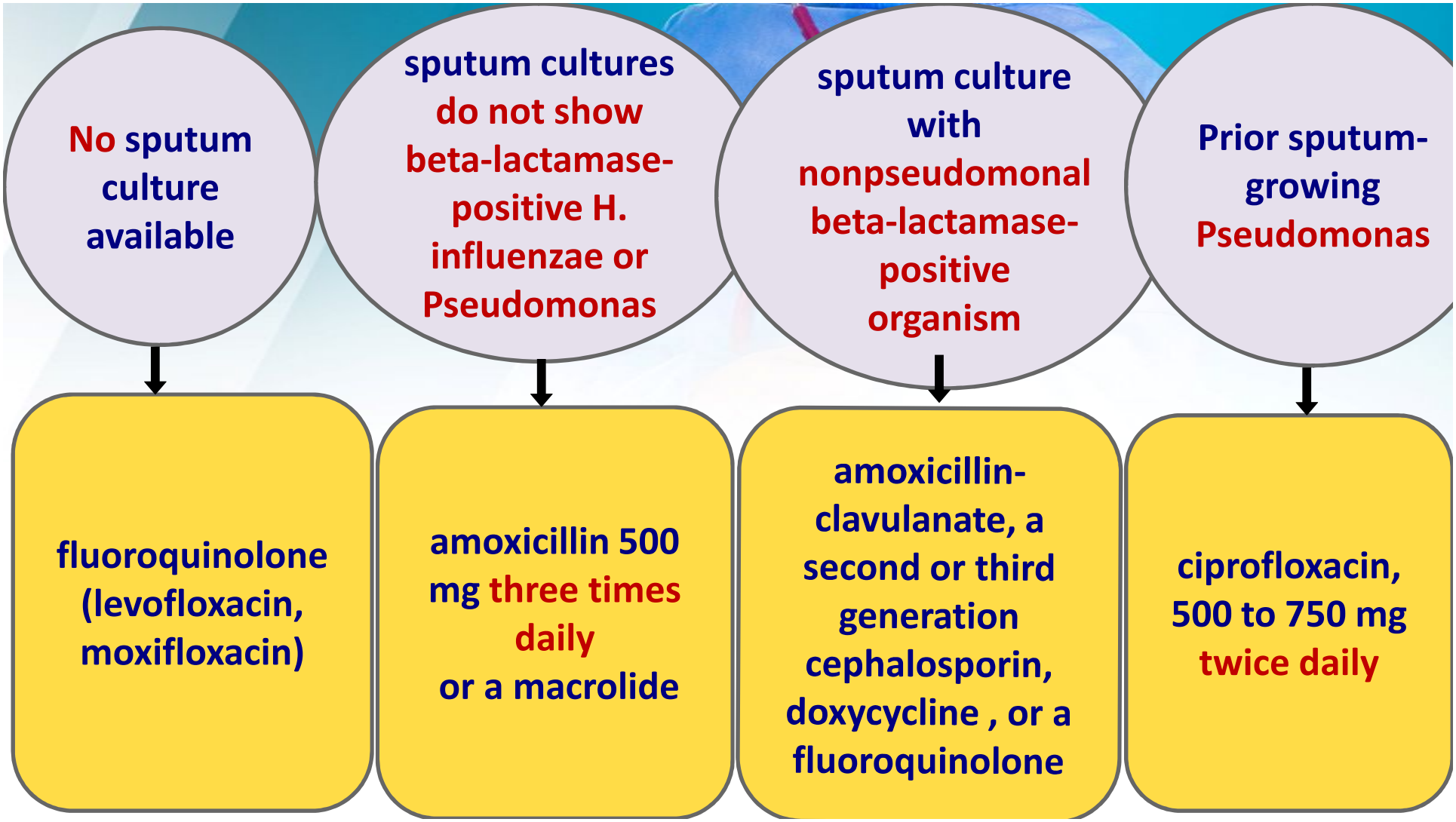


OUTPATIENT

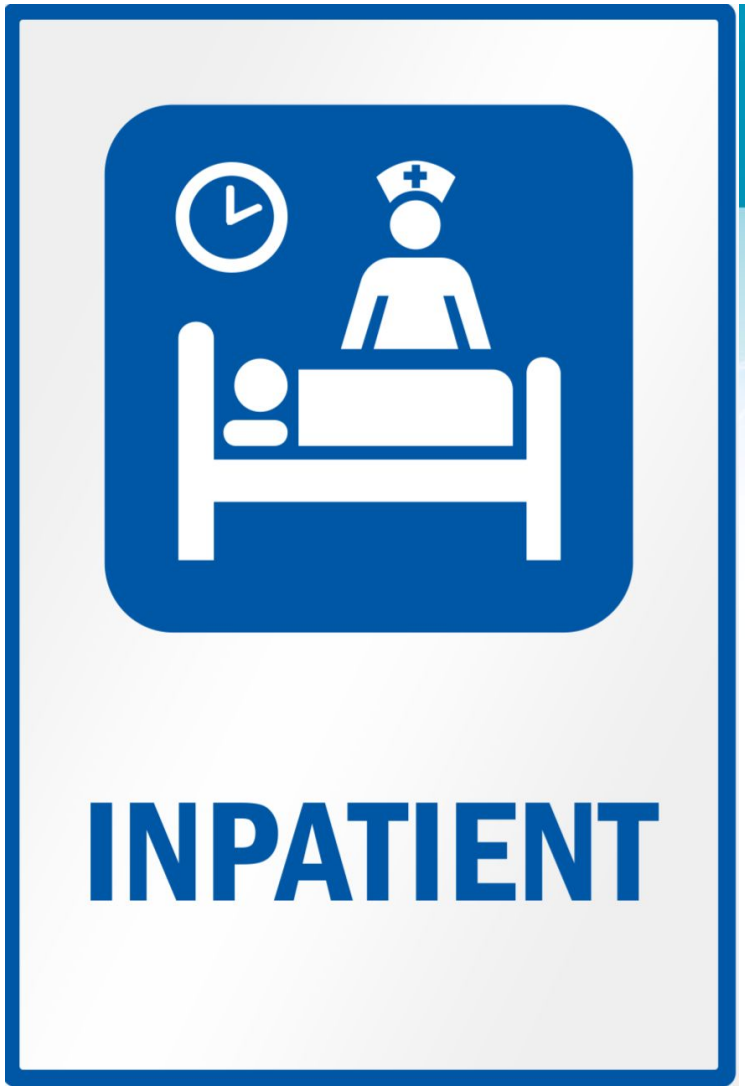
can be treated with an oral antibiotic

Duration of therapy 10_14 days

The initial antibiotic selection is guided by any sputum culture results within the past 12 _24 months


No sputum culture available
fluoroquinolone (levofloxacin, moxifloxacin)
sputum cultures do not show beta-lactamase-positive H. influenzae or Pseudomonas
amoxicillin 500 mg three times daily or a macrolide
sputum culture with nonpseudomonal beta-lactamase-positive organism
amoxicillin-clavulanate, a second or third generation cephalosporin, doxycycline , or a fluoroquinolone
Prior sputum-growing Pseudomonas
ciprofloxacin, 500 to 750 mg twice daily

***the efficacy of adding inhaled tobramycin solution (TS) to oral ciprofloxacin has been studied,*** ***but it has not been found to be helpful.***




## Potential indications for inpatient management of bronchiectasis exacerbations

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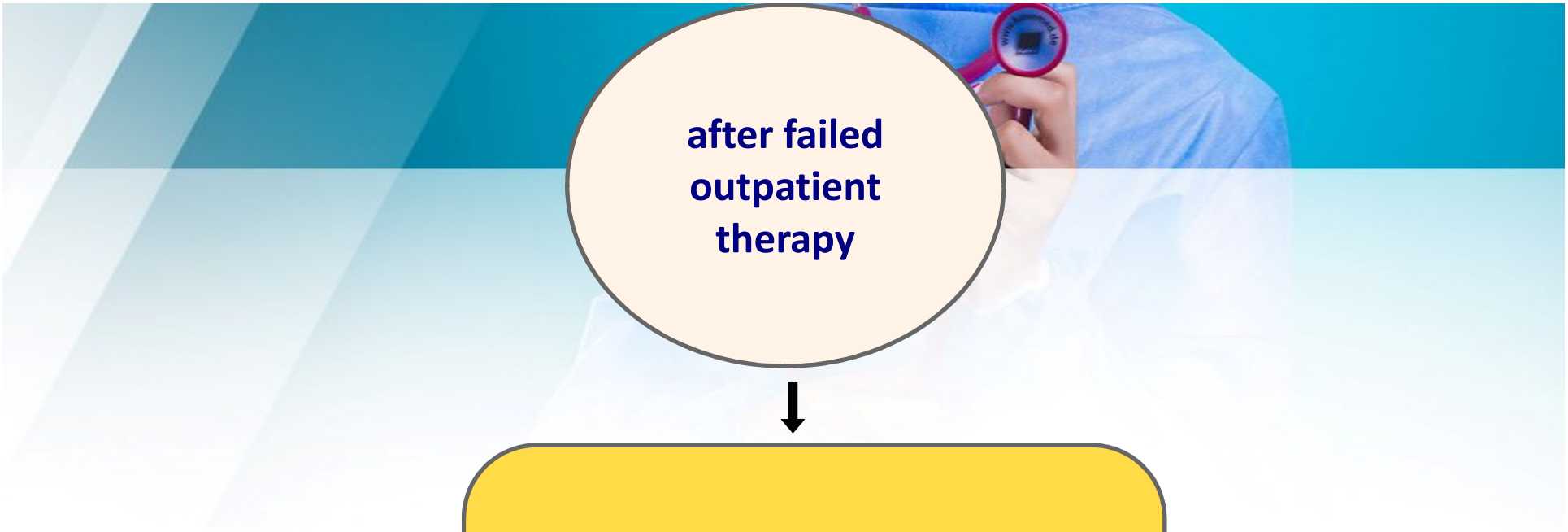
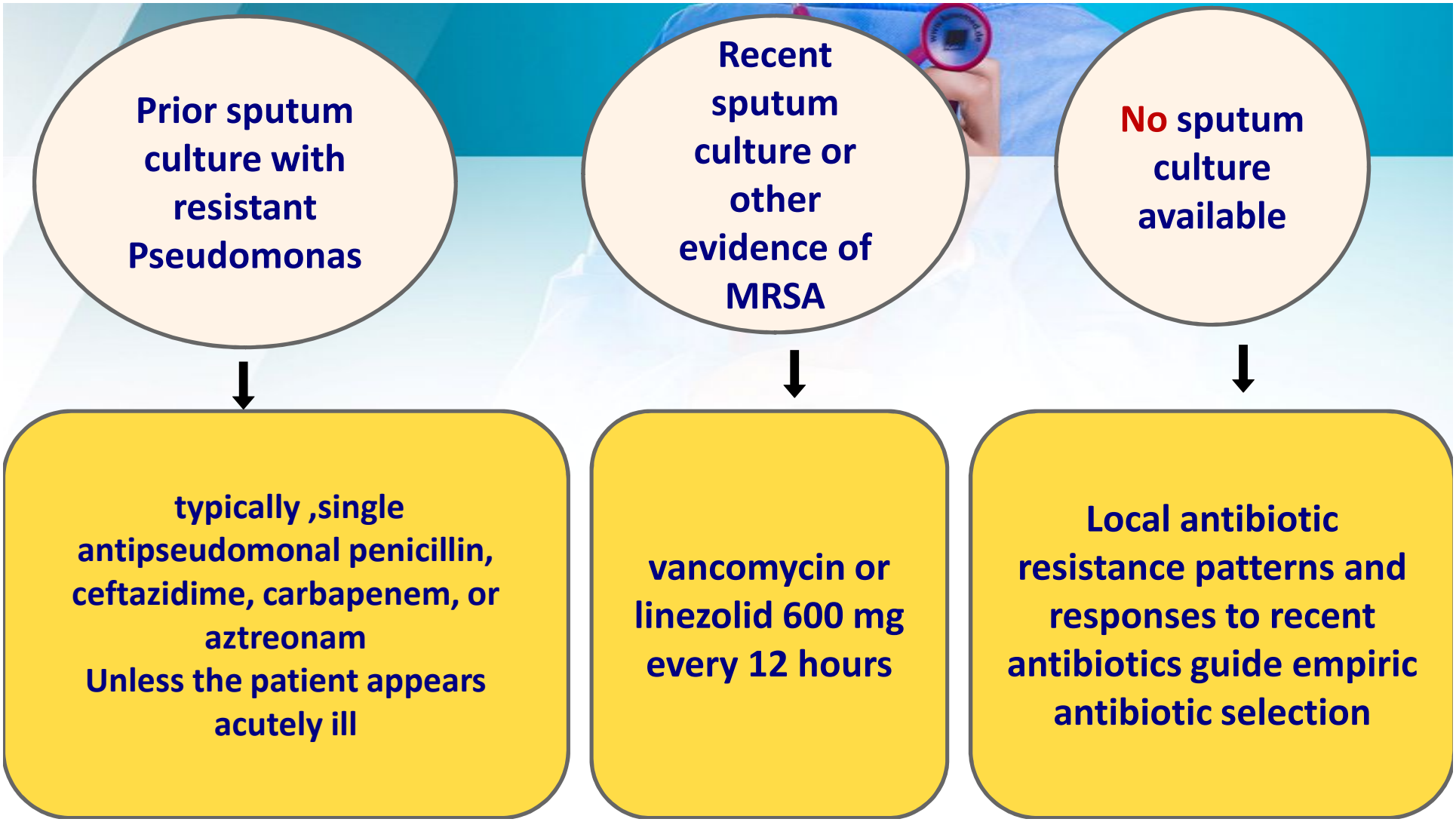
|---|
| **Evidence of severe infection or sepsis** |
| New hypoxemia (oxygen saturation <92%) |
| Respiratory distress |
| Tachypnea (respiratory rate ≥25/minute) |
| High fevers (temperature ≥39°C) |
| Severe tachycardia (heart rate ≥125/minute) |
| Hypotension |
| Altered mental status |
| Acute fall in urine output or elevation in urea (>20 mg/dL) |
| **Concern for patient frailty** |
| Older age |
| Multiple difficult-to-manage comorbidities |
| Malnutrition or frank cachexia |
| Inability to maintain oral intake |
| History of exacerbations requiring hospitalization |

| |
|---|
| **Practical barriers to outpatient management** |
| Need for intravenous therapy without resources for home administration |
| Concern about adherence to therapy |
| Mental illness or substance abuse that interferes with management |
| Cognitive or functional impairments |
| Inability to return for follow-up in the event of clinical worsening |
| **Active hemoptysis** |
| Significant bleeding beyond small-volume or self-limited disease |
| **Clinical worsening despite outpatient treatment** |



after failed outpatient therapy

Care should be taken to avoid drugs in the same class as the ones that failed in the outpatient setting or antibiotics for which the patient has known resistant flora


Prior sputum culture with resistant Pseudomonas
Recent sputum culture or other evidence of MRSA
No sputum culture available
typically ,single antipseudomonal penicillin, ceftazidime, carbapenem, or aztreonam
Unless the patient appears acutely ill
vancomycin or linezolid 600 mg every 12 hours
Local antibiotic resistance patterns and responses to recent antibiotics guide empiric antibiotic selection

- ***ANTIBIOTICS FOR PREVENTION OF EXACERBATIONS***

1)Macrolides

***500 mg three times weekly or 250 mg once daily for 6-12 months.***

*patients who have recurrent exacerbations and do not have P. aeruginosa infection, we suggest preventive therapy with a macrolide

*For patients with chronic P. aeruginosa in their sputum, inhaled anti- pseudomonal antibiotics are preferred.

*Patients cannot take an inhaled antibiotic and those who continue to have exacerbations despite inhaled antibiotic may benefit from macrolide therapy as an alternative to or in addition to inhaled antibiotic.

Among macrolides, we prefer azithromycin.

**2)Nonmacrolide oral antibiotics**

**amoxicillin 500mg twice daily, doxycycline 100 mg twice daily**

for patients with three or more exacerbations a year who are not candidates for long-term macrolide administration and do not have airway infection with P. aeruginosa.

## 3)Inhaled antibiotics

for patients with P. aeruginosa in their sputum and either three or more exacerbations per year or significant morbidity from fewer exacerbations,

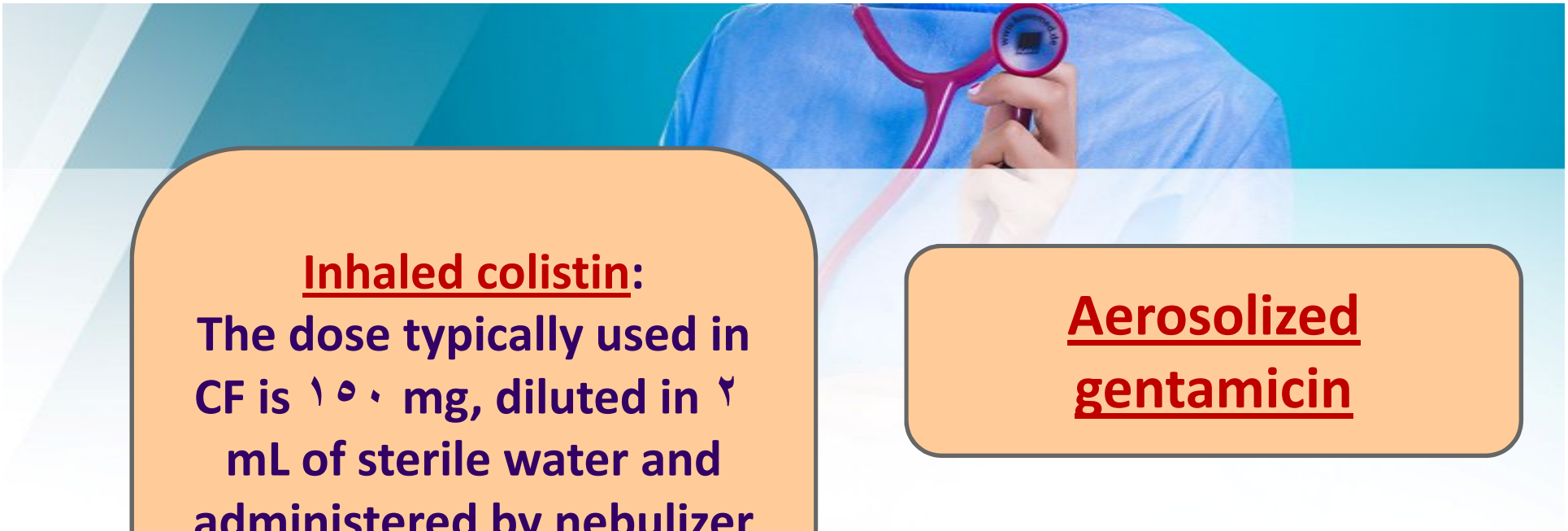
for patients not infected with P. aeruginosa in whom oral antibiotic prophylaxis is contraindicated, not tolerated, or ineffective.

**Inhaled tobramycin:**

**The usual dose for nebulization is ٣٠٠ mg/٥ mL every ١٢ hours in repeated cycles of ٢٨ days on the drug followed by ٢٨ days off..**

**Aerosolized aztreonam lysine:**

**The dose is 75 mg via eFlow mesh nebulizer three times daily in repeated cycles of 28 days on drug followed by 28 days off drug.**



**Inhaled colistin:**
The dose typically used in CF is ١٥٠ mg, diluted in ٢ mL of sterile water and administered by nebulizer twice per day for ٢٨ days, alternating with ٢٨ days off treatment.

**Aerosolized gentamicin**


Aerosolized preparations of aztreonam lysine and colistin have demonstrated benefit in CF, but not in noncystic fibrosis bronchiectasis

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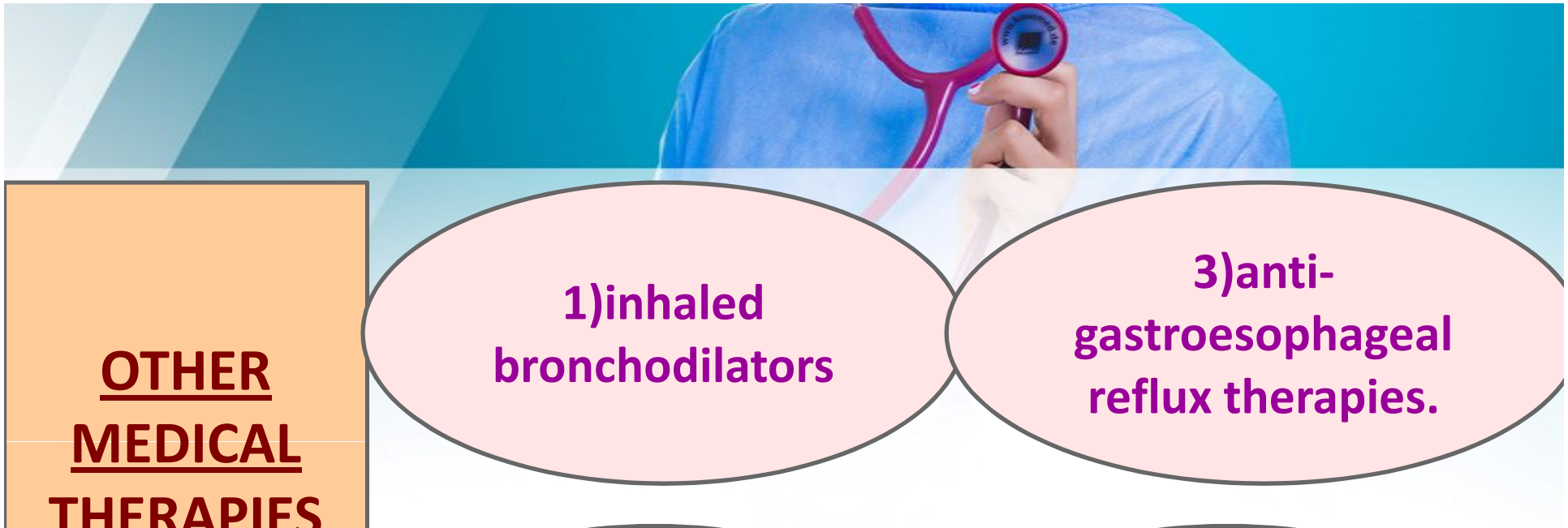
## 2)Airway clearance therapy :

**using regular physiotherapy improve cough and help patients to expectorate the tenacious secretions and mucous plugs .**



## OTHER MEDICAL THERAPIES

1)inhaled bronchodilators

2)anti-inflammatory medications

3)anti-gastroesophageal reflux therapies.

4)immunization

# Anti-inflammatory medications

## Oral glucocorticoids

***for acute exacerbations that are accompanied by wheezing suggestive of concomitant asthma or ABPA***

***In other patients, we avoid it because they depress host immunity, promote bacterial and fungal colonization, and may perpetuate infection.***

## Inhaled glucocorticoids

**advise against use of inhaled glucocorticoid therapy in the absence of asthma or COPD.**

**3)Mucolytic agents and airway hydration**:

hypertonic ,Inhaled mannitol,Mucolytic agents, (acetylcysteine, Dornase alpha)

Dornase alfa improves pulmonary function (FEV1) and reduces hospitalizations in patients with CF.

**4)Systemic hydration:**

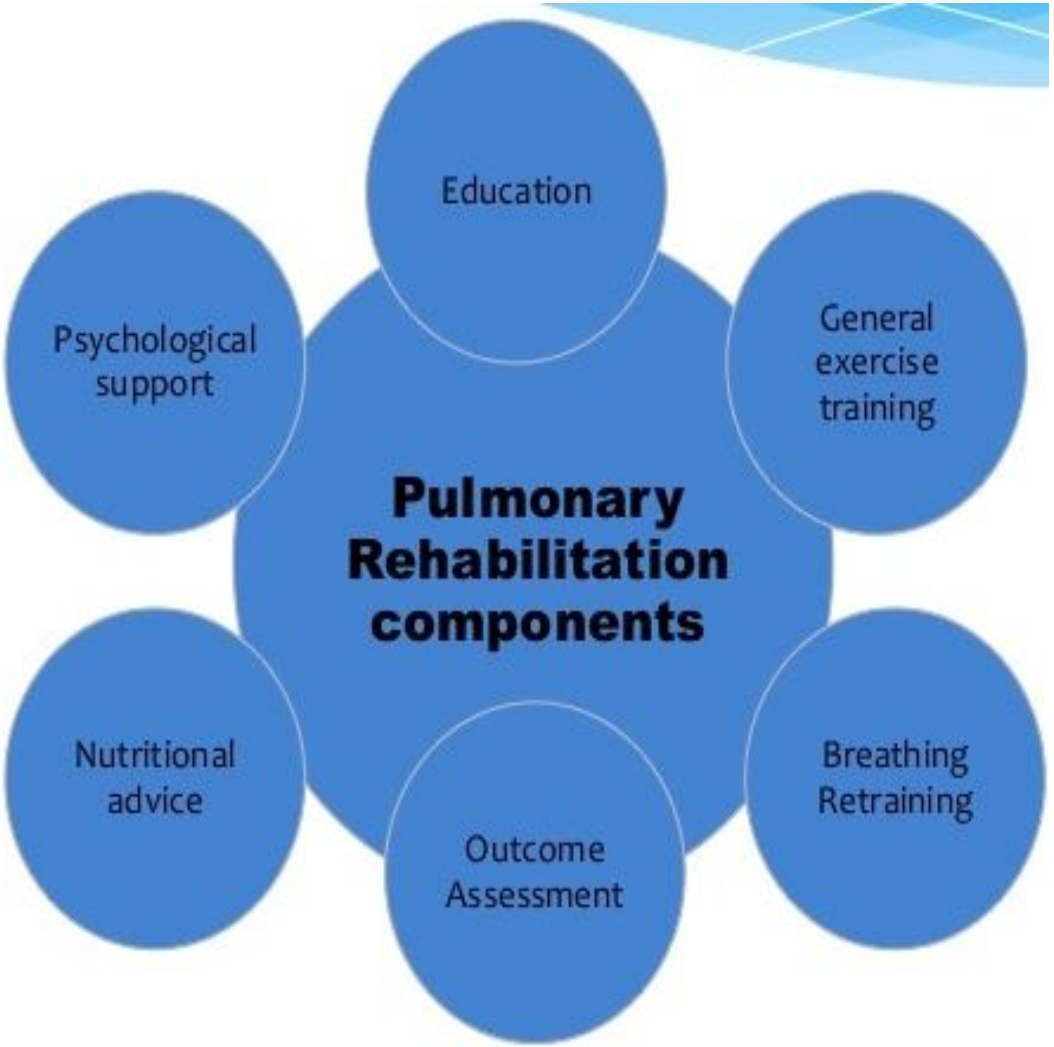
with oral liquids.

## Immunizations

*Seasonal influenza vaccine is administered annually to patients with bronchiectasis, except those unable to receive live attenuated vaccines due to immune deficiency disease.

*Pneumococcal vaccine is typically given to patients with bronchiectasis.

# 6) pulmonary rehabilitation

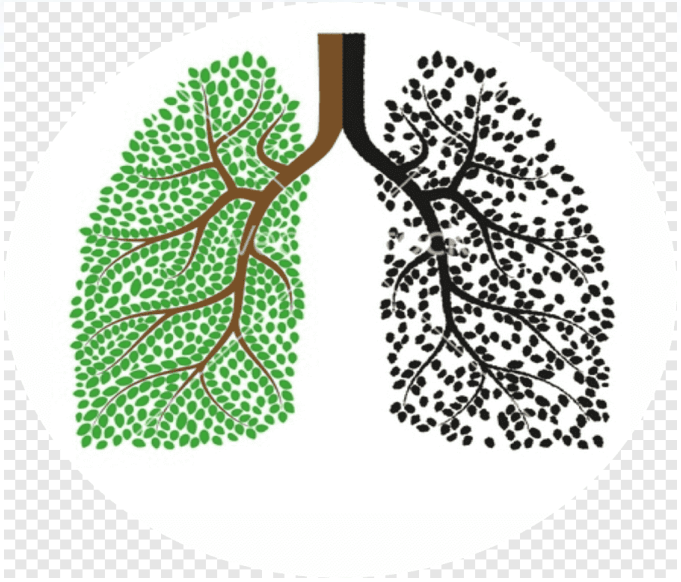


# SURGERY

# Patient selection

I. *Removal of destroyed lung distal to partial obstruction by a nonmetastatic tumor or the residue of a foreign body.*
II. *Recurrent infective episodes due to localized bronchiectasis not responsive to medical therapy.*
III. *Overwhelming purulent and viscid sputum production in patients with localized bronchiectasis that is unresponsive to medical therapy.*
IV. *Presence of a localized bronchiectatic area suspected of harboring resistant organisms such as (NTM) or multidrug-resistant tuberculosis.*
V. *massive hemoptysis(uncontrolled hemorrhage when other measures fail)*

# Lung transplantation



## ***The indications for transplant:***

1. ***FEV1<30%.***
2. ***severe secondary pulmonary hypertension.***
3. ***recurrent massive hemoptysis.***
4. ***ICU admissions requiring noninvasive or invasive ventilation.***

# Studies

## Brensocatib

**DPP1** is an enzyme responsible for activating neutrophil serine proteases (NSPs) including neutrophil elastase

**Brensocatib is a small molecule, oral, reversible inhibitor of dipeptidyl peptidase 1 (DPP1) being developed by Insmed for the treatment of patients with bronchiectasis and other neutrophil-mediated diseases**

# WILLOW STUDY

**256 patients**
**87 were assigned to receive placebo,**
**82 to receive 10 mg of brensocatib,**
**and 87 to receive 25 mg of brensocatib**

**subgroups defined according to age, baseline neutrophil elastase concentrations, the number of exacerbations in the 12 months before the trial, the Bronchiectasis Severity Index score, and lung function**

# Studies

## ARIKAYCE

Amikacin
Liposome
Inhalation
Suspension (ALIS)

# THANK YOU

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