# PHARMACY BULLETIN

BIL 1 /2018 JANUARY - APRIL

## MEDICATION SAFETY IN ELDERLY

## CARBAPENEM-RESISTANT ENTEROBACTERIACEAE -AN EMERGING THREAT

**DRUG UPDATES:**

KETOCONAZOLE FOR CASTRATE RESISTANT PROSTATE CANCER (OFF LABEL)

MYCOPHENOLATE FOR SCLERODERMA WITH INTERSTITIAL LUNG DISEASE (OFF LABEL)

**STAFF UPDATES**

**EVENTS:**

AMAZING PHARMRACE

SAMBUTAN TAHUN BARU CINA

KEJOHANAN BOLING

GOOD GOVERNANCE FOR MEDICINE



**CONTRIBUTORS:**
NORHAYATI BT DIN
NUR ATHIRAH BT MOHMD IDRIS
NUR EZZATY RIZDIANA BT CHE RIDZUAN
NURNAZURAH BT FAISAL
NURUL ILI IZYAN BT OMAR
SITI AMIRA IZZATI BT SHAH AZAM
UMIRA SYAHIRAH BT SHIRINAL IZUAN
ZAINATUL FADHILAH BT ZULKARNAIN

# NEW TEAM MEMBERS

BY NURUL ILI IZYAN OMAR

## NEWLY APPOINTED

### CIK LOW HUI WERN

- PEGAWAI FARMASI (KONTRAK) UF41
- FARMASI KLINIK PAKAR
- DATE REPORTED DUTY: 5 FEBRUARI 2018
- COMPLETED PRP TRAINING IN HOSPITAL KUALA LUMPUR

### CIK HENG LI CHIN

- PEGAWAI FARMASI (KONTRAK) UF41
- FARMASI BEKALAN WAD
- DATE REPORTED DUTY : 5 FEBRUARI 2018
- COMPLETED PRP TRAINING IN HOSPITAL KUALA LUMPUR

## TRANSFERRED IN

### PN. FATIN SYAFIQAH BINTI MOHMAD SAHIDIN

- PEGAWAI FARMASI UF44
- FARMASI MAKMUR
- DATE REPORTED DUTY: 8 JANUARI 2018
- TRANSFERRED FROM KLINIK KESIHATAN BUKIT GOH

### PN. NURUL HIDAYAH BINTI JUSOH

- PEGAWAI FARMASI UF44
- FARMASI KLINIK PAKAR
- DATE REPORTRD DUTY: 8 JANUARI 2018
- TRANSFERRED FROM KLINIK KESIHATAN CHINI, PEKAN

# TRANSFERRED IN ( cont.)

## CIK HANNAH HIEW SHIEN HUI

- PEGAWAI FARMASI UF44
- FARMASI ASEPTIK (TPN)
- DATE REPORTED DUTY: 26 FEBRUARI 2018
- TRANSFERRED FROM KLINIK KESIHATAN SUNGAI LEMBING

## PN. RABIATUL ADAWIAH BT NAZRI

- PEGAWAI FARMASI UF48
- PUSAT MAKLUMAT DAN SUMBER FARMASI
- DATE REPORTED DUTY : 17 APRIL 2018
- TRANSFERRED FROM KLINIK KESIHATAN SANDAKAN, SABAH

## PN. HALIZA BT MOHAMED HARIS

- PENOLONG PEGAWAI FARMASI UF32
- FARMASI ASEPTIK (TPN)
- DATE REPORTED DUTY: 26 FEBRUARI 2018
- TRANSFERRED FROM KLINIK KESIHATAN BESERAH

## PN. FALAHIAH BT ISMAIL

- PENOLONG PEGAWAI FARMASI UF29
- FARMASI MAKMUR
- DATE REPORTRD DUTY: 11 APRIL 2018
- TRANSFERRED FROM HOSPITAL BALING KEDAH

# TRANSFERRED IN (cont.)

## EN. MUHAMMAD MUHAIMIN BIN ZAINUDDIN

- PENOLONG PEGAWAI FARMASI UF29
- FARMASI BEKALAN WAD
- DATE REPORTED DUTY: 11 APRIL 2018
- TRANSFERRED FROM KLINIK BERGERAK 1 MALAYSIA (KB1M), KUALA LIPIS.

## CIK WAN ZURAINAH BT WAN BAKAR

- PENOLONG PEGAWAI FARMASI UF29
- FARMASI GALENIKAL
- DATE REPORTED DUTY : 11 APRIL 2018
- TRANSFERRED FROM HOSPITAL JENGKA

## PUAN CHE ATIYA FARAHIDA BT CHE ALIAS

- PENOLONG PEGAWAI FARMASI UF29
- FARMASI KLINIK PAKAR
- DATE REPORTED DUTY: 11 APRIL 2018
- TRANSFERRED FROM KLINIK KESIHATAN MARAN

## CIK AIZANEEN BT ZULKIFLI

- PENOLONG PEGAWAI FARMASI UF29
- FARMASI ASEPTIK (CDR)
- DATE REPORTRD DUTY: 11 APRIL 2018
- TRANSFERRED IN FROM KLINIK KESIHATAN PERAMU JAYA, PEKAN

# TRANSFERRED OUT

## PN. WAN ASFARINA BINTI WAN ISMAIL

- PEGAWAI FARMASI UF48
- PUSAT MAKLUMAT DAN SUMBER FARMASI
- DATE TRANSFERRED OUT: 8 FEBRUARI 2018
- TRANSFERRED TO KLINIK KESIHATAN GAMBANG

## PN. NURZAWANAH AMALINA BINTI ZAINUDDIN

- PENOLONG PEGAWAI FARMASI UF29
- DATE TRANSFERRED OUT: 19 MAC 2018
- TRANSFERRED TO KLINIK KESIHATAN SENTUL

## PN. NURUL FATHIN BT RAMLAN

- PEGAWAI FARMASI UF44
- FARMASI SATELIT
- DATE TRANSFERRED OUT: 2 APRIL 2018
- TRANSFERRED TO HOSPITAL AMPANG

## CIK NOOR AZRIN BT ALLADIN

- PEGAWAI FARMASI UF52
- UNIT FARMASI LOGISTIK
- DATE TRANSFERRED OUT: 9 APRIL 2018
- TRANSFERRED TO HOSPITAL KUALA LIPIS, PAHANG

# TRANSFERRED OUT (CONT.)

## PN. HARFANIZA BINTI SHARUDIN

- PENOLONG PEGAWAI FARMASI UF32
- DATE TRANSFERRED OUT: 11 APRIL 2018
- TRANSFERRED TO KLINIK KESIHATAN PERMATANG BADAK

## PN. PHUA YEE CHAN

- PEGAWAI FARMASI UF44
- FARMASI ASEPTIK (TPN)
- DATE TRANSFERRED OUT: 16 APRIL 2018
- TRANSFERRED TO HOSPITAL RAJA PERMAISURI BAINUN,IPOH

# RETIREMENT

## EN. ZAMRI BIN ARIFFIN

- PENOLONG PEGAWAI FARMASI UF40
- DATE OF RETIREMENT: 9 APRIL 2018

# RESIGNATION

## EN. NISHAAN RD SEVANESAN

- PEGAWAI FARMASI UF44
- FARMASI ASEPTIK (CDR)
- DATE OF RESIGNATION: 1 MAY 2018

You'll be Missed

# Amazing Pharmrace 2018

By Norhayati Binti Din

12 April 2018 (Sabtu)
Pantai Balok, Kuantan

Para peserta program Amazing Pharmrace 2018

Aktiviti-aktiviti yang dijalankan semasa Amazing Pharmrace 2018.

Pemenang-pemenang Amazing Pharmrace 2018

# Good Governance for Medicine 2018

28 April 2018 (Sabtu)
Bilik Mesyuarat Zamrud (Tingkat 4 Bangunan Ambulation Care Centre)

Para peserta yang menghadiri kursus "Good Governance for Medicine"

Penceramah (En. Lim Boon Peow) memberikan ceramah berkenaan pengenalan kepada "Good Governance for Medicine"dan Integriti dalam Sektor Farmaseutikal.

# Majlis Meraikan Tahun Baru Cina. Majlis Perasaan Serta Sambutan Hari Jadi Januari– Mac

5 Mac 2018

Ruang UOD , Farmasi Bekalan Ward, HTAA

Acara ‘Prosperity toss’ atau juga dikenali sebagai “Yee Sang”

Staff yang bersara : Pn. Tengku, En Zamri dan En Choo
Staff yang berpindah: Pn. Zawanah

Acara memotong kek untuk Sambutan Hari Jadi Januari-Mac

Ahli Jawatankuasa Majlis.

Pemenang “Best Dressed”.

Antara kakitangan yang meraikan majlis ini..

Ucapan oleh Ketua Jabatan Farmasi.

Kakitangan yang diraikan.

By Nurul Ili Izyan Omar& Norhayati Binti Din

# Kejohanan Boling Jabatan Farmasi

**10 Februari 2018**

**Plaground No.6, Kuantan**

By Nurul Ili Izyan Omar & Norhayati Binti Din

Proses pendaftaran bagi ahli-ahli kumpulan di Playground No.6.

Para pemenang beserta hadiah kemenangan bagi kategori pertandingan yang telah dipertandingkan.

Aksi-aksi para peserta semasa sesi bowling.

Para peserta yang telah menjayakan kejohanan Bowling Farmasi 2018.

# Carbapenem-Resistant Enterobacteriaceae An Emerging Threat

*by Nur Athirah Idris, Umira Syahirah*

## What is CRE?

CRE, which stands for Carbapenem-resistant Enterobacteriaceae, are a family of germs that are difficult to treat because they have high levels of resistance to antibiotics. CRE are an important emerging threat to public health.

Common Enterobacteriaceae include Klebsiella species and Escherichia coli (E. coli). These germs are found in normal human intestines (gut). Sometimes these bacteria can spread outside the gut and cause serious infections, such as urinary tract infections, bloodstream infections, wound infections, and pneumonia.

Carbapenems are a group of antibiotics that are usually reserved to treat serious infections, particularly when these infections are caused by germs that are highly resistant to antibiotics. Sometimes carbapenems are considered antibiotics of last resort for some infections.

One of the more common ways that Enterobacteriaceae become resistant to carbapenems is due to production of Klebsiella pneumoniaecarbapenemase (KPC). KPC breaks down carbapenems making them ineffective.

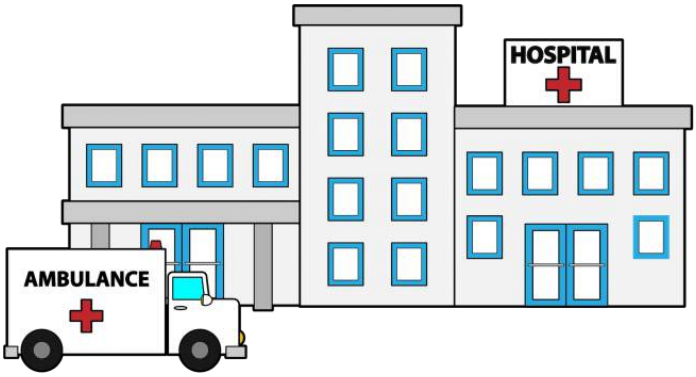
## How CRE can spread?

To get a CRE infection, a person must be exposed to CRE germs. CRE germs are usually spread person to person through contact with infected or colonized people, particularly contact with wounds or stool. CRE can cause infections when they enter the body, often through medical devices like ventilators, intravenous catheters, urinary catheters, or wounds caused by injury or surgery.

## Who is most likely to get infected with CRE?

CRE primarily affect patients in acute and long-term healthcare settings, who are being treated for another condition. CRE are more likely to affect those patients who have compromised immune systems or have invasive devices like tubes going into their body.

# Prevention of CRE




## Role of hospital

• Washing hands with soap and water or an alcohol-based hand sanitizer before and after caring for a patient
• Carefully cleaning and disinfecting rooms and medical equipment
• Wearing gloves and a gown before entering the room of a CRE patient
• Keeping patients with CRE infections in a single room or sharing a room with someone else who has a CRE infection
• Whenever possible, dedicating equipment and staff to CRE patients
• Removing gloves and gown and washing hands before leaving the room of a CRE patient
• Only prescribing antibiotics when necessary
• Removing temporary medical devices as soon as possible
• Sometimes, hospitals will test patients for these bacteria to identify them early to help prevent them from being passed on to other patients

## Role of patient

• Tell your doctor if you have been hospitalized in another facility or country.
• Take antibiotics only as prescribed.
• Expect all doctors, nurses, and other healthcare providers wash their hands with soap and water or an alcohol-based hand rub before and after touching your body or tubes going into your body. If they do not, ask them to do so.
• Clean your own hands often, especially:
o Before preparing or eating food
o Before and after changing wound dressings or bandages
o After using the bathroom
o After blowing your nose, coughing, or sneezing
• Ask questions. Understand what is being done to you, the risks and benefits.

*Reference: Centers for Disease Control and Prevention. Carbapenem-resistant Enterobacteriaceae (CRE) Infection*

# PRESCRIBING MEDICATION SAFETY IN ELDERLY: CARDIOVASCULAR

By: Zainatul Fadhilah Bt Zulkarnain

## INTRODUCTION

In general, older people experience more concurrent illnesses, prescribed with more medications and suffer more adverse drug events than younger people. According to the WHO, most developed world countries have accepted the chronological age of 65 years as a definition of 'elderly' or older person. Many drugs predispose older people to adverse events such as falls and cognitive impairment, thus increasing morbidity and health resource utilisation.

2 screening tools developed by 19 experts from 13 European countries called STOPP (Screening Tool of Older Persons' Prescriptions) and START (Screening Tool to Alert doctors to Right, i.e. appropriate, indicated Treatment) can be used to assess an older person's drug regimen. The tools were validated using the Delphi consensus methodology. The function of STOPP is to screen potentially inappropriate drugs in an older person's prescription while START alerts doctors to potentially appropriate, indicated drugs that should be prescribed. There are several categories in STOPP/START criteria, namely cardiovascular system, central nervous system, musculoskeletal system and respiratory system to name a few.

This article will summarise the criteria for the cardiovascular system.

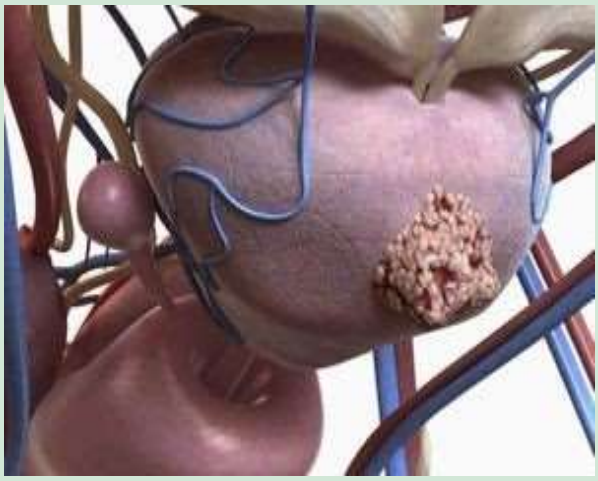
**STOPP START medication review screening tool (STOPP-Screening Tool of Older Persons Prescriptions; START -Screening Tool to Alert doctors to Right i.e. appropriate, indicated Treatments)**

| START medications (age ≥ 65 years) | Circumstances |
|---|---|
| **ACE Inhibitors** | Chronic heart failure<br>Following acute myocardial infarction<br>Diabetes with nephropathy (overt urinalysis, proteinuria or microalbuminuria) >30mg / 24 hours ± serum biochemical renal impairment |
| **Antidepressants** | In presence of moderate to severe depressive symptoms lasting at least three months |
| **Antihypertensives** | Systolic blood pressure consistently >160mm Hg |
| **Acetylsalicylic acid** | Documented history of atherosclerotic coronary, cerebral or peripheral vascular disease in patients with sinus rhythm<br>Following an acute MI |
| **Beta-blockers (oral)** | With chronic stable angina |
| **Clopidogrel** | For ischaemic stroke or PVD |
| **Statins** | Documented history of coronary, cerebral or peripheral vascular disease, where the patient's functional status remains independent for activities of daily living and life expectancy >5 years<br>Diabetes mellitus plus ≥ 1 co-existing major cardiovascular risk factor present |
| **Anticoagulators (warfarin or a NOAC)** | Chronic atrial fibrillation<br>Following diagnosis of DVT and PE if benefit outweighs the risk of treatment |

| STOPP medications (age ≥ 65 years) | Circumstances to review | Reason to review |
|---|---|---|
| Acetylsalicylic acid | • Dose >150mg / day, restart at 75mg if still indicated<br>• With a concurrent bleeding disorder<br>• Peptic ulcer disease without H2 receptor antagonist or PPI<br>• If being used as monotherapy for stroke prevention in AF | • Risk of bleeding; no evidence of increased efficacy<br>• High risk of bleeding<br>• Risk of bleeding |
| Beta blockers | • In combination with verapamil<br>• In those with diabetes mellitus and frequent hypoglycaemic episodes | • Can cause marked bradycardia and may depress ventricular contraction and increase the risk of AV block<br>• Can prolong, enhance or alter the symptoms of hypoglycaemia, potentially increase blood glucose concentrations and antagonise the action of oral hypoglycaemic drugs |
| Clopidogrel | • With a concurrent bleeding disorder | • High risk of bleeding |
| Calcium channel blockers | • If ankle oedema present, Verapamil and diltiazem should usually be avoided in heart failure | • May further depress cardiac function and cause clinically significant deterioration. |
| Digoxin | • At doses >125 microgram per day with impaired renal function (eGFR <50ml/minute) | • Can increase levels of toxicity (e.g. nausea, diarrhoea, arrhythmias) |
| Diuretics (loop) | • Dependent ankle oedema and no signs of heart failure<br>• As first line monotherapy for hypertension | • No benefit; compression hosiery more appropriate<br>• Safer, more effective alternatives available |
| Diuretics (thiazides) | • With history of gout | • Risk of exacerbating gout |
| SSRIs | • If sodium less than 130 in past 2 months<br>• Citalopram &escitalopram – risk of QT prolongation | • SSRIs can cause/worsen hyponatraemia<br>• Don't use in patients with congenital long QT syndrome or known pre-existing QT interval prolongation<br>• In combination with other drugs known to prolong the QT intervals |
| Statins | • Prognosis of less than six months unless there is an acute vascular syndrome<br>• In patients displaying symptoms of muscle weakness and pain | • Risk of myopathy and rhabdomyolysis. Check creatinine kinase if patient presents with muscular symptoms. |
| Warfarin | • For 1st uncomplicated DVT for longer than 6 months or PE for longer than 12 months<br>• Hepatic impairment with impaired clotting ability and raised INR | • No proven added benefit<br>• Increased risk of bleeding as a result of impaired ability to produce clotting factors |

REFERENCES:
•Lim, L. M., McStea, M., Chung, W. W., Nor Azmi, N., Abdul Aziz, S. A., Alwi, S., ...Rajasuriar, R. (2017). Prevalence, risk factors and health outcomes associated with polypharmacy among urban community-dwelling older adults in multi-ethnic Malaysia. *PLoS ONE, 12*(3), e0173466. http://doi.org/10.1371/journal.pone.0173466
•Gallagher P, Ryan C, O'Connor M, Byrne S, O'Sullivan D, O'Mahony D. STOPP (Screening Tool of Older Persons' Prescriptions)/START (Screening Tool to Alert Doctors to Right Treatment) criteria for potentially inappropriate prescribing in older people: version 2. Age and Ageing 2014; O: 1-6

## What is Castrate Resistant Prostate Cancer (CRPC)?



CRPC is an advance prostate cancer, which is defined by disease progression despite castrate level of testosterone and may present as either a continuous rise in serum prostate-specific antigen (PSA) levels, the progression of pre-existing disease, and/or the appearance of new metastases. It is previously known as hormone-resistant prostate cancer (HRPC) and androgen-insensitive prostate cancer (AIPC).

Castration has been established as a treatment approach in prostate cancer since 1942. However, many prostate cancers remain dependent on androgen receptor (AR)-mediated signaling and activation of downstream genes despite the development of castrate resistance. There are several mechanisms leading to the AR activation including overexpression of the AR, de novo synthesis of intratumoural androgens, alteration of the AR or its cofactors such as AR splice variants, ligand-independent activation by growth factors or cytokines, or continued uptake of subcastrate levels of circulating androgen. AR therefore remains an important target in CRPC.

# KETOCONAZOLE

## for Castrate Resistant Prostate Cancer (CRPC)

By: Siti Amira Izzati binti Shah Azam

## Treatment of metastasis CRPC

* Androgen receptor (AR) signaling therapeutic options (Abiraterone 1000 mg/day, Enzalutamide 160 mg/day or Ketoconazole 200-400 mg three times a day)
* Chemotherapy (Docetaxel 75 mg/$m^2$)
* Bone-targeted therapy (Radium-223)
* Other supportive care therapies (systemic corticosteroid therapy and palliative radiation)

## Ketoconazole in CRPC

Apart from being used as an antifungal, Ketoconazole is one of the treatments that can be use as off-labelled indication in patients with metastatic CRP without symptoms or in minimally symptomatic patients. This is because, in prostate, it exhibits an anti-prostate cancer effects by inhibiting andrenal androgen synthesis. This will eventually reduce the prostate-specific antigen (PSA) level which is important in the expression of AR. Besides that, the cost of Ketoconazole treatment is cheaper as compared to the drug of choice, Abiraterone and Enzalutamide.

**References:**

1Sridhar SS, Freedland SJ, Gleave ME, Higano C, Mulders P, Parker C, Sartor O, Saad F (2014). Castration-Resistant Prostate Cancer: From New Pathophysiology to New Treatment. European Urology, 65, 289–299.

2Saad FC (2015). The 2015 CUA-CUOG Guidelines for the Management of Castration-Resistant Prostate Cancer (CRPC). Canadian Urological Association Journal, 9(3-4), 90–96.

3 Virgo KS, Basch E, Loblaw DA et al. (2017). Second-Line Hormonal Therapy for Men with Chemotherapy-Naïve, Castration -Resistant Prostate Cancer: American Society of Clinical Oncology Provisional Clinical Opinion. Journal of Clinical Oncology, 35(17), 1952-1964.

# MYCOPHENOLATE MOFETIL

## for scleroderma with interstitial lung disease

By: Nur Ezzaty Rizdiana binti Che Ridzuan

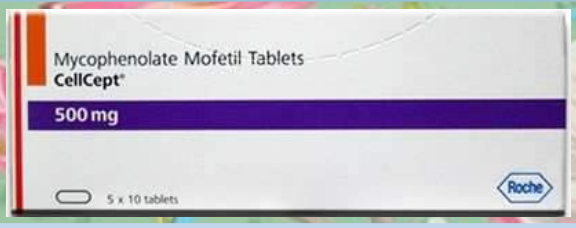
## What is Interstitial lung disease (ILD)?

Interstitial lung disease (ILD) is a term that is widely use to describe a diverse collection of more than 200 lung disorders. These diseases are classified together as they affect the tissue and space around the alveoli, which is also known as interstitium. Involvement of other compartments of the lung such as the alveoli, the airways, the blood vessels and the pleura are depending on the specific disease. It is characterised by four manifestations and they are respiratory symptoms such as shortness of breath and cough, specific chest radiographic abnormalities, typical changes on pulmonary function tests in which the lung volume is decrease, and characteristic microscopic patterns of inflammation and fibrosis.

ILD is common in scleroderma whereby in early studies, it was found that up to 100% of the patients were found to have parenchymal involvement. About 90% of the patients may have interstitial abnormalities on high-resolution computed tomography (HRCT) and 40-75% will have changes in pulmonary function tests (PFTs). Parenchymal lung involvement often appears early after the diagnosis of systemic scleroderma, with 25% of patient developing clinically significant lung disease within three years as defines by psychological, radiographic or broncho-alveolar lavage (BAL) abnormalities.

## Treatment of scleroderma with ILD

* Mycophenolate mofetil 1.5-3 g daily in two divided doses orally
* Cyclophosphamide 50-150 mg/day initially and gradually increase over three months to a maximum dose of 1.8-2.3 mg/kg orally
* Azathioprine 2.5 mg/kg/day up to a maximum dose of 150 mg/day




## Mycophenolate mofetil in scleroderma with ILD

Mycophenolate mofetil is a prodrug that is rapidly metabolized to mycophenolic acid. It is a potent, selective, non-competitive, and reversible inhibitor of inosine monophosphate dehydrogenase. It exerts antiproliferating properties by downregulating the expression of several fibrotic growth factors such as transforming growth factor (TGF)-β making it suitable to be used as off-labelled for the treatment of scleroderma with ILD.

Mycophenolate mofetil was found have better efficacy and safety properties as compared to Cyclophosphamide. Besides that, Azathioprine was found to be less efficacious as compared to Cyclophosphamide and it is reserved to be used in patients who are unable to tolerate Mycophenolate mofetil as a maintenance therapy after receiving initial Cyclophosphamide treatment.

**References:**

[1] Medication information: Mycophenolate mofetil. https://www.thoracic.org/patients/patient-resources/breathing-in-america/resources/chapter-10-interstitial-lung-disease.pdf.

2Retrieved from: https://www.uptodate.com/contents/treatment-and-prognosis-of-interstitial-lung-disease-in-systemic-sclerosis-scleroderma

3Solomon, J. J., Olson, A. L., Fischer, A., Bull, T., Brown, K. K., & Raghu, G. (2013). Scleroderma lung disease: Eur Respiratory Soc.

4Cappelli, S., Guiducci, S., Randone, S. B., & Cerinic, M. M. (2013). Immunosuppression for interstitial lung disease in systemic sclerosis. European Respiratory Review, 22(129), 236-243.

5Baqir, M., Makol, A., Osborn, T. G., Bartholmai, B. J., & Ryu, J. H. (2017). Mycophenolate mofetil for scleroderma-related interstitial lung disease: A real world experience. PLoS One, 12(5), e0177107.