



“

Wherever the art of medicine is loved, there is also a love of humanity

Hippocrates



Inside the Issue

- 1- Alzheimer's disease Guideline 2021 P 1-5
- 2- .FDA Approved OTC Home Test for COVID-19 to Increase fast Testing for Consumers 2021 P 6
- 3- Leflunomide leaflets update 2021 According to (EDA) Egyptian Drug Authority P 7
- 4- Covid -19 and Vitamin-D correlation P 8-10
- 5- How to be a professional pharmacist ? P 11-12

CONTACT US

- ✉ info@fue.edu.egw
- 📘 www.facebook.com/FutureUniversityinEgypt.com
- ☎ 0226186100
- 📍 S Teseen, New Cairo 1, Cairo Governorate 11835
- 🌐 www.fue.edu.eg



EDITORS

Mohamed Salah Saeed	20170774
Mohammed Ehab	20172176
Moustafa Hamdy	20153118
Noha Raafat	20173191
Randa Mohamed	20173105

Under Supervision of Dr. Yasser Omar

Alzheimer's disease ¹

Abstract

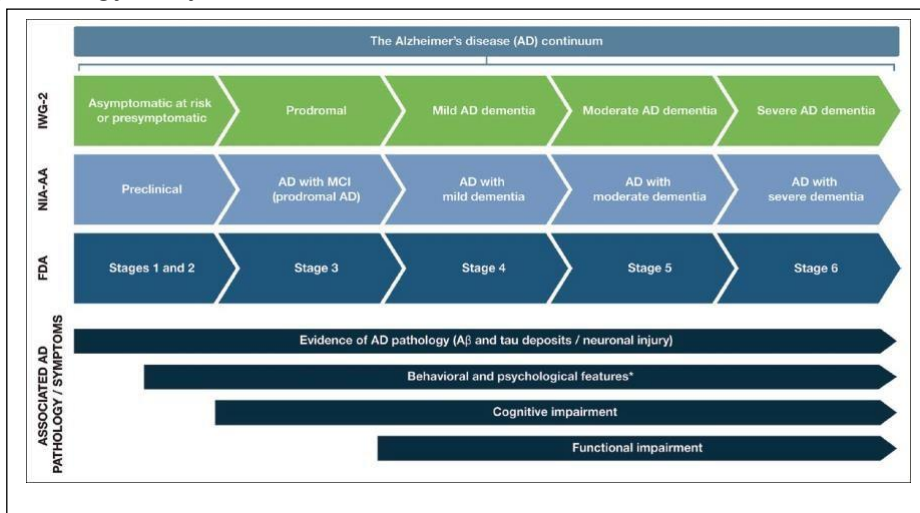
It's a progressive, irreversible neurodegenerative disease that affects cognition, function, and behavior. It proceeds from preclinical condition to mild cognitive and/or behaviour impairment, and finally to dementia. Clinicians have now been advised to detect Alzheimer's disease earlier, before patients evolve to Alzheimer's dementia. Detecting the disease pathology early and

accurately is critical for the screening diagnosis, and subsequent care of patients. It also allows patients and caregivers to make suitable lifestyle modifications that may help them maintain their quality of life for a longer period of time. Unfortunately, detecting early-stage Alzheimer's disease in clinical practice can be difficult and is hampered by a number of factors.



THE IMPORTANCE OF AN EARLY DIAGNOSIS :

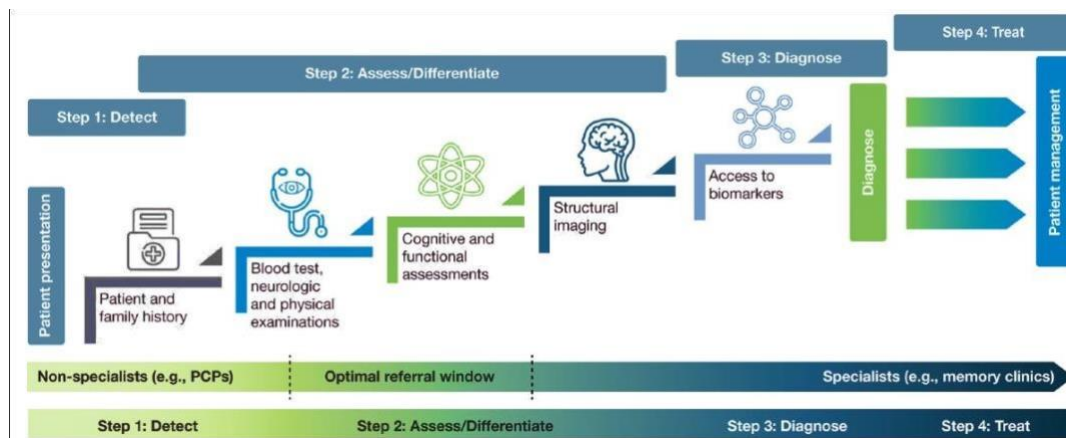
The early and precise recognition of Alzheimer's disease-related symptoms in clinical practice constitutes a vital but difficult step in Alzheimer's care. Typically, a patient with early signs/symptoms of Alzheimer's disease would arrive in a primary care environment. Minor changes in cognition and/or behaviour may be noted in some individuals during a normal wellness check or an appointment to discuss other comorbidities.



Dementia is one of the most serious worldwide health concerns of the 21st century. More than 50 million people worldwide are already living with dementia, a figure that is expected to quadruple to 152 million by 2050 as the world's population ages. Alzheimer's disease (AD) is the most frequent cause of dementia, accounting for 60–80 percent of all dementia cases. For example: The overall yearly cost of Alzheimer's disease and other dementias in the United

States is currently \$305 billion, with an expected increase to more than \$1.1 trillion by 2050.





STEP 1: DETECT

The role of primary care in the early detection of AD

The progressive and unpredictable onset of symptoms associated with Alzheimer's disease and other dementias can make diagnosis exceedingly difficult, especially in a primary care context.

Clinicians frequently have little time with patients, so it is critical that they be able to spot the early signs and symptoms of Alzheimer's disease (Table 1), and training for nurses, NPs, and PAs whomay have greater time to watch patients should give significant advantages.

Although symptoms vary greatly, first signs may include short-term memory loss or psychological issues, such as depression and a loss of purpose.

STEP 2: ASSESS AND DIFFERENTIATE

1-Primary care: Initial assessment when a patient presents

When a patient first comes with symptoms associated with the early stages of Alzheimer's disease, a doctor must first perform a full clinical examination to rule out other potential non-AD causes of cognitive impairment (Figure 2). PCPs are well-positioned to undertake these first assessments since they may not necessitate the involvement of a specialist or the administration of hospital testing.

2-Primary care includes physical examinations and blood tests.

A physical examination and blood testing can reveal concomitant contributing medical illnesses as well as reversible causes of cognitive impairment. A physical examination, including a mental state and neurological evaluation, should be performed to detect illnesses such as depression and to search for indicators such as problems speaking or hearing,






During the first examination, the clinician's primary goal should be to rule out potentially reversible causes of cognitive impairment, such as depression or vitamin, hormone, and electrolyte deficits. The first examination should involve a detailed history to detect potential risk factors for Alzheimer's disease, such as a family history of Alzheimer's disease or similar dementias in first-degree relatives.

as well as signs that might signal a stroke. A physician may ask the patient about diet and nutrition as part of the physical exam, review all medications (to see if these are the cause of any cognitive impairment, such as anti-cholinergics, analgesics, or sleep aids and anxiolytics), check blood pressure, temperature, and pulse, and listen to the heart and lungs.

“ The person seeking a diagnostic assessment should anticipate questions about their psychological state.



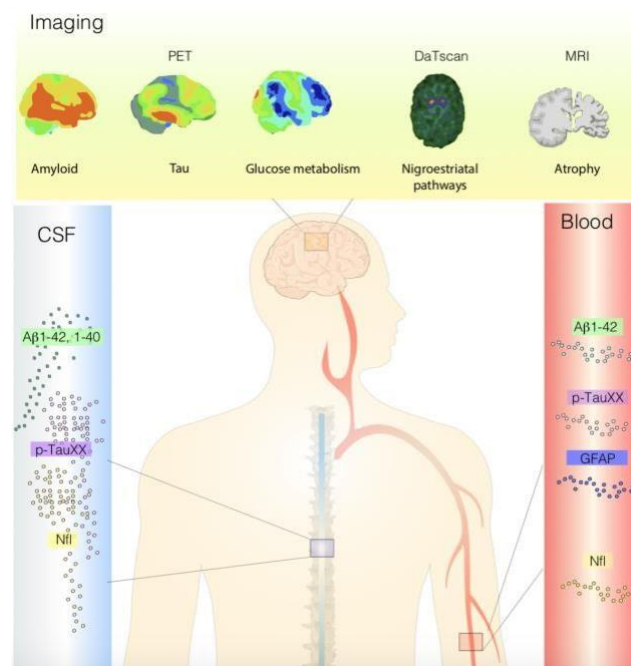
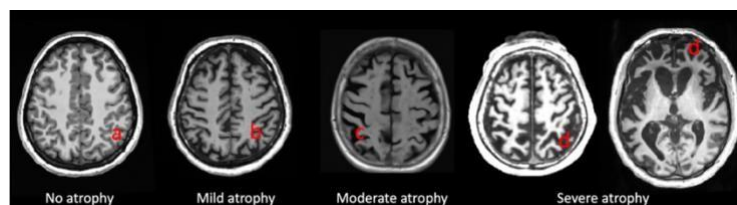
TABLE 1

Area	Cognition 	Behavior 	Psychological 	Physical 	Other 
Category	Shoít-teim memoíy loss • Woírd-finding difficulties (anomia) oí communication difficulties	Withdíawal fíom social activities ,Disinhibition and impulsivity	Depíession , Mood distuíbances, Apathy	Visuospatial problems ,Gait impairment	Sleep disoídeí
Examples	Foígetting appointments, names, and íecent events , Fíequently misplacing items , Tíouble finding exact woírd to expíess oneself, oí loss of woírd meaning	Inability to párticipate in meaningful social situations , Inappoípiáte social conduct such as eating fíom someone else's plate, oí inappoípiáte language ,Pooí oí decíeased judgment	Changes in mood oí peísonality , Feeling of helplessness and a loss of puípose in life , Loss of initiation	Fíequent falls	Rapid eye movement disoídeí, such as acting out díreams

STEP 3 : DIAGNOSE

Biomarkers for imaging

PET scanning has recently enabled clinicians to view the proteins linked with Alzheimer's disease, particularly A and tau. Amyloid PET is the only imaging method presently approved by the Alzheimer's Association and the Amyloid Imaging Task Force to aid in the diagnosis of Alzheimer's disease. Amyloid PET uses tracers that specifically bind to A within amyloid plaques (florbetapir, flutemetamol, and florbetaben); a positive amyloid PET scan will show increased cortical retention of the tracer in regions of A deposition within the brain, confirming the presence of A plaques in the brain and directly quantifying brain amyloid pathology, making it a useful tool to supplement a clinical battery to diagnose AD.



Fluid biomarkers

The collection and analysis of CSF for the presence of biomarkers associated with AD pathology is an extra or alternative approach to amyloid PET. Patients with symptoms indicative of Alzheimer's disease might be referred for a lumbar puncture to test their CSF for particular AD-associated biomarkers. CSF biomarkers are measurements of protein concentrations in lumbar sac CSF that represent the rates of protein synthesis and clearance at a certain timepoint.



Table 4. Cognitive, functional, and behavioral assessments to support the diagnosis of Alzheimer’s disease in a primary care and specialist setting

Primary Care									
Type of assessment	Assessment	Number of items (if appropriate)	Time taken to complete assessment (minutes)	Scoring system	Sensitivity and specificity	Available in different languages	Shortened version available	Scores can be demographically adjusted, e.g. education level	Justification for use
Cognitive	MMSE (28,102,103)	30	5-10	20-24	Sensitivity: 85-100% Specificity: 66-100%	Yes	Yes	Yes	Minimal training requirements
	MoCA (28,46,102,104)	12	10	<26 for MCI or dementia	Sensitivity: 79-100% Specificity: 65-94%	Yes	Yes	Yes	Minimal training requirements
	Mini-Cog (28,102,105)	3 item recall with clock drawing	2-3	Recall 2/3 items Clock drawing used to determine presence of cognitive deficits	Sensitivity and specificity comparable to MMSE	Yes	No	No	Brief assessment and easy to interpret No training requirements
	AD8 (28,106)	8	2-3	Scores greater than 2 signify impairment	Sensitivity: 90% Specificity: 66%	Yes	No	No	Brief assessment for cognitive impairment
	IQCODE (28,107)	16 or 26	10	Scores greater than 3.44 signify impairment	Sensitivity: 76-100% Specificity: 62-86%	Yes	Yes	No	Measures decline from premarket level
Functional	FAQ (46-48,108)	10 categories	5*	0-3 scale (0-normal; 3-dependent)	Sensitivity: 90% Specificity: 88%	Yes	No	No	Highly reliable assessment
Behavioral	GDS (28,49,109)	15 or 30	5-10	≥5 suggestive of depression; ≥10 significant of depression*	No data available	Yes	Yes	No	Reliable assessment for early stages of dementia
	NPI-Q (49-51,110)	12	5	0-3 scale (0-none; 3-severe)	Sensitivity: 86% Specificity: 76%	Yes	No	No	Brief and reliable assessment
Specialist									
Type of assessment	Assessment	Number of items (if appropriate)	Time taken to complete assessment (minutes)	Scoring system	Sensitivity and specificity	Available in different languages	Shortened version available	Scores can be demographically adjusted, e.g. education level	Justification for use
Cognitive	QDRS (28,52)	10	3-5	Scores of 2 or greater signify impairment	Sensitivity: 94% Specificity: 79%	Yes	No	No	Highly reliable assessment. No training requirements
Functional	A-IADL-Q (53,54,111)	≤70 items	10	5-point rating system	Sensitivity: 74% Specificity: 65%	Yes	Yes	No	Sensitive to early stages of AD
	HAST (55)	28	10-15	Yes/No for presence of behavioral concern	No data available	No	No	No	Useful test to assess behavioral concerns from multiple informants



STEP 3: TREAT

A doctor treating a patient with early-stage Alzheimer's disease should closely monitor the patient's disease with regular follow-up consultations (e.g., every 6–12 months); clinicians and caregivers should motivate patients to participate in these appointments to make additional follow-up appointments,

especially if symptoms worsen. Routine cognitive and functional evaluations (Table 4) should be performed to monitor disease development; these techniques can be used to uncover unexpected patterns, such as fast deterioration, that may necessitate additional medical examination, such as blood tests, imaging, or biomarker

studies. The results of such tests might aid in the management and/or therapy decisions made for the patient along the course of the disease.

Non-pharmacologic therapies (e.g., diet and exercise) may be used to preserve or even strengthen cognitive function and capacity to conduct activities of daily living in people with early Alzheimer's disease.

Pharmacologic Treatments

A lot of treatments have been approved to treat the symptoms of mild to severe AD dementia.

Acetylcholinesterase inhibitors (rivastigmine, donepezil and galantamine) and N-methyl-D-aspartate receptor antagonists (memantine) can be prescribed to patients to temporarily ameliorate the

symptoms of AD dementia such as functional decline and cognitive. Meta-analyses of donepezil, rivastigmine, and galantamine, shown that patients with mild-to-moderate AD dementia appear some benefits in cognitive function, activities of daily living, and clinician-rated global clinical state. Furthermore, acetylcholinesterase inhibitors and/or memantine has also

been clearly shown raise measures of global function moderately and briefly stabilize measures of daily life activities . It is essential to note, however, that these medications only provide temporary, symptomatic relief and that not all patients respond properly to therapy.



Treatment For Mild To Moderate Cases

Cholinesterase inhibitors such as galantamine, rivastigmine, and donepezil are administered. These medications may help decrease or control some cognitive and behavioural symptoms.

Aducanumab is the only disease-modifying medicine licenced to treat Alzheimer's disease at the moment. This medicine is a human antibody, or immunotherapy, that targets the protein beta-amyloid and aids in the reduction of amyloid plaques, which are brain lesions linked to Alzheimer's disease. Only persons with early-stage Alzheimer's or moderate cognitive impairment were studied in clinical trials to establish the efficacy of aducanumab.

Treatment For Moderate To Severe Cases

Memantine is an N-methyl D-aspartate (NMDA) antagonist drug.

For the treatment of moderate to severe Alzheimer's disease, the FDA has also licensed donepezil, the rivastigmine patch, and a combination therapy of memantine and donepezil.





FDA Approved OTC Home Test for COVID-19 to Increase fast Testing for Consumers ³

The FDA has approved the use of the Flowflex Home Test for COVID-19, an over-the-counter COVID-19 antigen test. This adds to the growing range of tests that may be used at home without a prescription, allowing us to expand consumer access to testing.

The Flowflex COVID-19 antigen Home Test will expand the availability of quick home tests; the company expects to produce more than 100 million tests per month, and this number will rise to 200 million by February 2022.

Since March 2020, the FDA has approved more than 400 COVID-19 tests and sample collection devices, including approved of fast, At-home OTC test COVID-19 diagnostic tests performed at home are deemed critical by the FDA



Most at-home antigen tests are authorized for serial testing, which means testing the same person multiple times within a few days. Following the revelation of a streamlined approach to aid in the permission of fast tests for use with serial testing programmes, which has expanded consumer ability to test, the Flowflex received approval. Serial testing is not required for the COVID-19 Home Test. The FDA wants to make Patients should be aware that all tests can produce false-negative or false-positive results.

People who have positive results should separate themselves and seek extra medical help. People who test negative but have COVID-like symptoms should see their doctor, as negative results do not exclude the possibility of a COVID-19 infection. We are confident that these at-home diagnostic tests will aid in the fight against COVID-19. We will continue to provide assistance in the creation of accurate and dependable tests



Leflunomide: safety updates 2021 ⁴



The MAH, in collaboration with the Egyptian Pharmaceutical Vigilance Center (EPVC), would like to notify you of significant contraindications, enhanced warnings, and drug-drug interactions.

As the leaflets in the packs of Leflunomide tablets are now undergoing essential and necessary modifications, we would want to keep you informed of these modifications until they are included in the packets.

1- Indications

Leflunomide is used to treat adult patients with:

- Active rheumatoid arthritis as a "disease-modifying antirheumatic drug" (DMARD),
- Active psoriatic arthritis.

2- Contraindications

- If the patient is allergic to Teriflur he or she SHOULD NOT take Lefl (used to treat multiple sclerosis)



3- Precautions & Special Warnings:

- Before using Leflunomide, the patient should notify his doctor if any of the following conditions exist:
- If the patient has previously experienced lung disease (interstitial lung disease).
- If the patient has ever had TB or has had close contact with someone who has or has had tuberculosis. The patient's doctor may order tests to determine whether or not the patient has TB.
- If the patient is scheduled for a specific blood test (calcium level). Calcium levels that are

falsely low can be identified.

- RESS, which may be caused by Leflunomide, presents as flu-like symptoms and a rash on the face, followed by an extended rash with a high temperature, high levels of liver enzymes shown in blood tests, an increase in a kind of WBCs (eosinophilia), and enlarged lymph nodes.
- If the patient has unexplained persistent diarrhoea, he or she should immediately inform the doctor; the doctor may order more testing to clear out other possibilities.

If the patient is recently taken or might take any other medicines. This includes medicines obtained without a prescription. Must inform his doctor

8. Warfarin
9. Teriflunomide for multiple sclerosis
Repaglinide, pioglitazone, nateglinide, or rosiglitazone for diabetes
10. Daunorubicin, doxorubicin, paclitaxel, or topotecan for cancer
11. Duloxetine for depression, urinary incontinence or in kidney disease in diabetics
12. Alosetron for the management of severe diarrhoea
13. Theophylline for asthma
14. Rosuvastatin, simvastatin, atorvastatin, pravastatin for hypercholesterolemia (high cholesterol) or Sulfasalazine for inflammatory bowel disease or rheumatoid arthritis

1. A medicine called colestyramine (used to reduce high cholesterol) or activated charcoal as these medicines can reduce the amount of leflunomide which is absorbed by the body."
2. Tizanidine, a muscle relaxant
3. Oral contraceptives (containing ethinylestradiol and levonorgestrel)
4. Cefaclor, benzylpenicillin & ciprofloxacin
5. Indomethacin, ketoprofen
6. Furosemide (diuretic, water pill)
7. Zidovudine for HIV infection



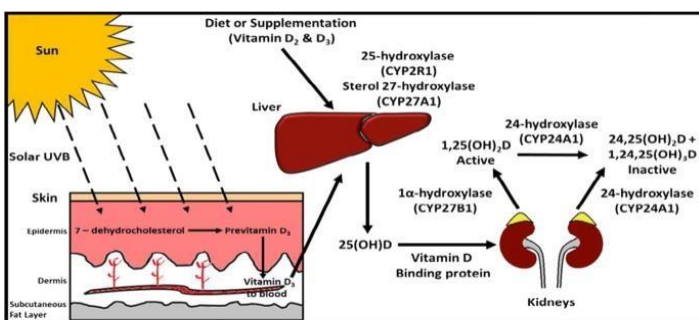
4- Very rare side effects (may affect up to 1 in 10,000 people): Pulmonary hypertension



COVID-19 and Vitamin D

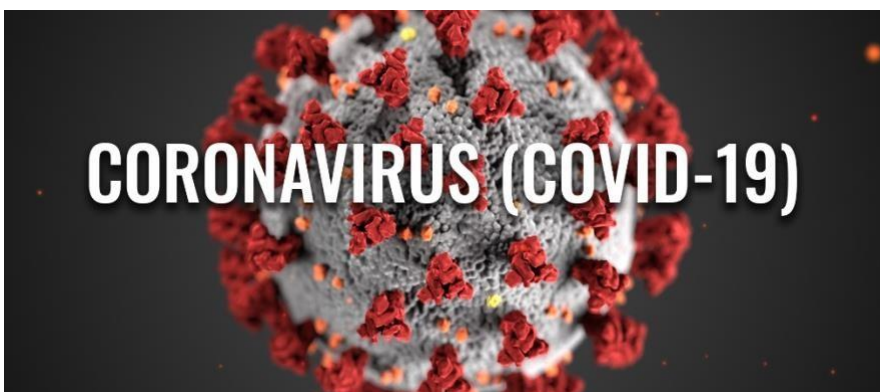
Introduction:

1-Vitamin D is a fat-soluble vitamin that synthesized endogenously when UV rays from sunlight hit the skin and trigger the formation of vitamin D, also, people can intake it in their diets, supplements and food such as cod liver oil, salmon, tuna, milk, and eggs in two main forms, D2 (ergocalciferol) and D3 (cholecalciferol).



2- Vitamin D needs to be activated by 2 Hydroxylation pathways first in the liver, its converted to 25-hydroxy vitamin D known as (Calcidiol) with the help of an enzyme coded for by CYP2R1 gene, second in the kidney and formation of active 1,25 dihydroxy vitamin D known as (Calcitriol) by the help of key enzyme coded for by CYP27B1 gene

3- Vitamin D has a role in reducing inflammation and modulation of cell growth, immunefunction as it increases the innate immunity by secretion of peptides which produces mucosal defenses, and neuromuscular process



4- In 2019, a new virus discovered in China namely novel corona virus disease 2019 (COVID-19) and rapidly expanding in the countries.

5- There have been 254,256,432 confirmed cases of COVID-19 globally till now, including 5,112,461 deaths reported to WHO, it's characterized as a pandemic disease.

6- People infected by SARS-COV 2 virus experience severe symptoms such as shortness of breath, chest pain, confusion, fever, cough, tiredness, fatigue and loss of taste or smell. COVID-19 can spread through inhalation of the droplets as a result of coughing or sneezing. It attaches by the help of the spikes to the angiotensin converting enzyme 2 (ACE -2) that founded on the surface of the



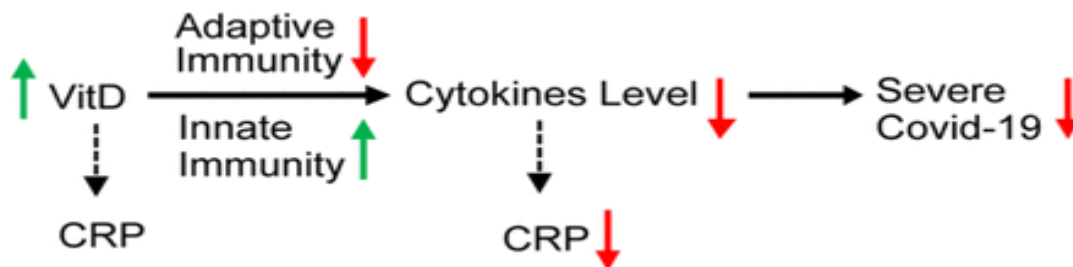
THE CORRELATION BETWEEN VIT. D & COVID-19



7-It's important to fully elucidate the virulence mechanisms of COVID-19, some of the cellular mechanisms including mediated transcription of papain -like protease (PLPro), dipeptidyl receptor binding peptidase-4 (DPP4/CD26), M protein and type 1 inducible MDA5-mediated IFN and RIG-I host recognition evasion have been recognized in the closely – related COVID-MERS virus. [11](#) [12](#)

8-There are also indications that maintenance of vitamin D may reduce some of the adverse immune sequels in the rear of that are thought to lead to poorer clinical outcomes with COVID-19 infection , such as increased Interleukin 6 , slow response of interferon gamma and a negative prognosis marker in subjects with acute pneumonia including those having COVID-19 . [11](#) [12](#)

Vitamin D has an immunomodulatory effects in pulmonary infection by downregulation of pro-inflammatory cytokines . Also it has a role in decrease the expression of IL-6 as it is thought to play an important role in the cytokines storm with serious side effects . Patients infected with SARS-CoV-2 pneumonia have low number of NK cells .



9- There are ongoing clinical trails of vitamin D in prevention and treatment of COVID-19 as it might help in the inhibition of the cytokine storm and abnormal immune-response . In randomized trails and meta analysis studies vitamin D was shown to be effective in protection against respiratory tract infections , therefore individuals at greater risk of vitamin D deficiency during this global pandemic should consider taking vitamin D supplement to maintain circulating 25 (OH) D at optimal levels (75-125nm/l),. However, There is insufficient evidence, of an association between Vitamin D levels and the severity and mortality of COVID-19 . Therefore randomized controlled trails and large cohort studies are needed to test this hypothesis . [11](#) [12](#)



References of the studies:	Design of the study:	The Outcomes:
Tan et al, 2020	Cohort observational (15 Jan–15 April 2020)	1-Patients receiving vitamin D, Mg, and vitamin B12 were less likely to require subsequent oxygen therapy than the control group (3 per 17 vs, 16 per 26, $p = 0.006$). 2- In a multivariate analysis, treatment of patients receiving vitamin D, Mg, and vitamin B12 had a big protective effect against clinically exacerbated after adjusting for age, sex, and comorbidities ($p = 0.041$).
Present study	Retrospective (as of 20 May 2020)	A major negative correlation was showed for levels of mean vitamin D with COVID-19 cases ($p = 0.033$) but deaths per million inhabitants ($p = 0.123$) was not observed.
Ilie et al, 2020	Retrospective (as of April 8, 2020)	A negative correlation was observed between levels of mean vitamin D and COVID-19 cases ($p = 0.050$) and death ($p = 0.053$) per million people.
Alpio 2020	Retrospective multicentre study	1-Differences in the mean levels of vitamin D were significant within the mild, ordinary, severe and critical cases of COVID-19 ($p < 0.001$) 2-Vitamin D was status significantly associated with clinical outcome ($p < 0.001$)
Lau et al, 2020	Retrospective observational study (27 March–21 April 2020)	Intensive Care Unit patients (84.6%) had higher Vitamin D deficiency than in the floor patients (57.1%) ($p = 0.29$)
Glicio et al, 2020	Retrospective (as of May 5, 2020)	1-Severe patients had a low level of vitamin D than mild patients 2-Subjects with pre-existing medical conditions had a low Vitamin D level
Hastie et al, 2020	Cross-sectional March ,16–14 April 2020)	1-Vitamin D levels showed a major association with COVID 19 infection in univariate analysis ($p = 0.013$) However, not after adjusting for confounding factors ($p = 0.208$) 2-Race clearly showed a significant association with COVID 19 infection.

References of the studies:	Design of the study:	The Outcomes:
Darling et al, 2020	Retrospective	(1)No significant difference was observed for vitamin D levels between COVID-19 cases and control group (2) Significantly lower vitamin D status in individuals of Asian descent, skin black and mixed ($p < 0.0010$) compared with those of white ethnicity. (3) Vitamin D levels were significantly lower in obese patients ($p < 0.001$) overweight or obese; live in London If you are male, Asian, black, or of mixed race, you are more likely to develop a positive case. (4) In the regression model, the interaction of BMI and vitamin D status did not predict test results of the available data sets.
Li et al, 2020	Retrospective (22 January –23 May, 2020)	(1) Latitude was slightly associated with cases ($p = 0.0792$) and death ($p = 0.0599$). (2) Latitude-based sunlight and vitamin D, COVID 19 cases and may be associated with reduced risk of both mortality
De Smet et al, 2020	Retrospective observational (1 March –7 April, 2020)	(1)Patients with COVID-19 had significantly lower median of vitamin D levels and higher vitamin D deficiency compared to control subjects ($p = 0.0016$, $p = 0.0005$, respectively) (2) This difference was more pronounced in male COVID-19 patients than in male controls who gained weight as the radiation stage progressed and could not be mistaken for a disorder of comorbidity.
Daneshkhah et al, 2020	As of March 21, 2020	About 15% reduction in severe cases of COVID-19 if the population had normal vitamin D status
Raharusuna et al, 2020	Retrospective cohort study (2 March 2–24 April 2020)	(1) Elderly and male cases with pre-existing disease and below normal vitamin D levels in univariate analysis died. (2) After adjusting for factors influencing factors (age, sex, and comorbidities), vitamin D levels were strongly associated with mortality from COVID-19.



How to be professional pharmacist ^{13, 14} ^{15, 16, 17}

Ethics

Pharmacists are expected to practise ethically. They are required to keep patient information confidential. Pharmacists write prescriptions for individuals who have a variety of medical ailments and are undergoing various treatments. As a result, it's critical that they operate ethically and discreetly while handling confidential patient information.

This is especially crucial if you live in a small community where most people know each other; pharmacists should never reveal facts about a patient's health — instead, they should respect their right to privacy.

Skills of pharmacist

• Accuracy ^{13, 14}

Pharmacists work with drugs in all aspects of their lives, from production to marketing to dispensing.

As pharmacists, we are aware that drugs can be hazardous if they are misused or distributed incorrectly.

Pharmacists are supposed to deliver medications in a timely and error-free way.

They must be able to read the handwriting of others.

Ability to multitask ^{13, 14}

Not only are pharmacists busy performing tasks that can potentially have life-or-death ramifications but they're also answering calls, dealing with other patients and ensuring strict regulatory protocols are being followed. This means being able to not only multitask but multitask with 100% accuracy

Ability to communicate

This is an important aspect of a pharmacist's job. They must be able to communicate clearly with the patient and prescriber.

To the patient: explain how and when they should take their medication, then double-check that they understand. It might often be difficult to explain why a patient is taking a certain drug.

To prescribers: If a prescription order is unclear or could be hazardous to a patient, the pharmacist should check the dosage and formulation (e.g., liquid or tablet), as well as whether a brand name medicine is required or if a generic version can be substituted.

Providing guidance to patients ^{13, 14}

It is the most crucial of all the abilities. Patient counselling is the process of delivering important information, advice, and assistance to patients who are having trouble with their prescriptions. Despite the fast-paced nature of the profession, pharmacists should take the time to thoroughly explain a patient's medicine and address the potential side effects. For example, if a patient forgets to take specific pills on a regular basis, a pharmacist should try to figure out why (it could be more than mere forgetfulness) and give a solution that would help the patient

Listening attentively

You must be attentive to your patients as a pharmacist. To do so, you must be a good listener who is focused on your patients and ready to offer them with the care they require to improve their diseases. Having a dismissive attitude and failing to listen properly to what your patients are saying will not only get you a terrible reputation, but it may also put you in danger, as your lack of active listening may result in you missing vital clues that could lead to the correct prescription.



[15](#), [16](#), [17](#)

A pharmacist must be well-versed in a wide range of topics

Editing and Proofreading

Doctors may overlook drug-drug interactions when prescribing such drugs. Then pharmacists can act as proofreaders, informing back doctors and suggesting prescription adjustments. However, pharmacists must first conduct extensive research on the subject.

Three Rs

The "three Rs" of right medicine, right patient, and right dose are the ultimate obligation of pharmacists. In order to fulfil this responsibility, you must supervise and mentor pharmacy technicians, student interns, and residents. Owners and supervisors of pharmacies are also responsible for hiring decisions as well as establishing and enforcing workplace standards.

Must be able to think critically.

It's hard to know everything about how pharmaceuticals interact with the body and with each other, even if you're an expert on the subject. Pharmacists must approach their work with an analytical mindset, referring to the appropriate sources when necessary, and making logical and accountable decisions regarding a patient's prescription.

Professional pharmacy's attitude

pharmacists conduct themselves in professional situations, implying a demeanor that is created through a combination of behaviors including courtesy and politeness when dealing with patients, peers and other health care professionals. Pharmacists should consistently display respect for others and maintain appropriate boundaries of privacy and discretion. Professionalism is determined by the way we look and we act like the way of professional introduction to the patient

- Introduce yourself
- Identify to whom you are speaking- use patient name
- Explain purpose of counseling
- Assess the patients understanding of the reasons for therapy
- Assess any concerns or problems of importance to the patient
-

Appropriate attire is required.

Whether you like it or not, your look, including your level of professionalism, has an impact on how others see you. The way you speak and how you dress are both markers of your professionalism.



References:

1. <https://link.springer.com/article/10.14283/jpad.2021.23>
Porsteinsson, A.P., Isaacson, R.S., Knox, S. *et al.* Diagnosis of Early Alzheimer's Disease: Clinical Practice in 2021. *J Prev Alzheimers Dis* **8**, 371–386 (2021). <https://doi.org/10.14283/jpad.2021.23>
2. <https://www.alzint.org/u/World-Alzheimer-Report-2021.pdf>
3. <https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-additional-otc-home-test-increase-access-rapid-testing>
4. <https://www.edaegypt.gov.eg/media/oc0awdfw/ca-of-pharmaceutical-care-newsletters-leflunomide-safety-udates-dhpc-3-2021.pdf>
5. <https://doi.org/10.1093/nutrit/nux034> .
Mariana Costa Silva, Tania Weber Furlanetto, Intestinal absorption of vitamin D: a systematic review, Nutrition Reviews, Volume 76, Issue 1, January 2018, Pages 60–76,
6. [Dietary Reference Intakes for Calcium and Vitamin D - PubMed \(nih.gov\)](#)
Institute of Medicine (US) Committee to Review Dietary Reference Intakes for Vitamin D and Calcium. Dietary Reference Intakes for Calcium and Vitamin D. Ross AC, Taylor CL, Yaktine AL, Del Valle HB, editors. Washington (DC): National Academies Press (US); 2011. PMID: 21796828
7. <https://doi.org/10.1074/jbc.C109.071225>
tian-Tian Wang, Basel Dabbas, David Laperriere, Ari J. Bitton, Hafid Soualhim, Luz E. Tavera-Mendoza, Serge Dionne, Marc J. Servant, Alain Bitton, Ernest G. Seidman, Sylvie Mader, Marcel A. Behr, John H. White, Direct and Indirect Induction by 1,25-Dihydroxyvitamin D3 of the NOD2/CARD15-Defensin β 2 Innate Immune Pathway Defective in Crohn Disease, Journal of Biological Chemistry, Volume 285, Issue 4, 2010, Pages 2227-2231, ISSN 0021-9258,*
8. <https://doi.org/10.1080/07391102.2020.1758788>
Boopathi, S., Poma, A. B., & Kolandaivel, P. (2021). Novel 2019 coronavirus structure, mechanism of action, antiviral drug promises and rule out against its treatment. Journal of biomolecular structure & dynamics, 39(9), 3409–3418
9. <https://covid19.who.int/>
10. <https://doi.org/10.1080/07391102.2020.1758788>
Boopathi, S., Poma, A. B., & Kolandaivel, P. (2021). Novel 2019 coronavirus structure, mechanism of action, antiviral drug promises and rule out against its treatment. Journal of biomolecular structure & dynamics, 39(9), 3409–3418.
11. <https://doi.org/10.1016/j.jiph.2020.06.021>
12. (<https://www.sciencedirect.com/science/article/pii/S1876034120305311>)
Nurshad Ali, Role of vitamin D in preventing of COVID-19 infection, progression and severity, Journal of Infection and Public Health, Volume 13, Issue 10, 2020, Pages 1373-1380, ISSN 1876-0341
13. <https://www.careeraddict.com/pharmacist-skills>
14. <https://www.pharmatutor.org/pharmapedia/blog/what-are-the-skills-required-to-be-a-pharmacist-top-10-pharmacist-skill>
15. <https://www.rasmussen.edu/student-experience/college-life/four-reasons-why-you-need-to-be-professional/>
16. <https://pharmacylibrary.com/doi/abs/10.21019/9781582121031.ch5>
17. <https://www.thebalancecareers.com/top-9-pharmacist-responsibilities-2663854>



Medicines cure diseases , but only doctors can cure patients

Carl jung

