When do your patients ask vaccination

민 주 홍
성균관의대 삼성서울병원

○ 우리나라에 도입 예정인 코로나19 백신에는 아스트라제네카, 얀센, 화이자, 모더나가 있습니다.

개발사	아스트라제네카	얀센	화이자	모더나
플랫폼	바이러스벡터 백신	바이러스벡터 백신	mRNA 백신	mRNA 백신
개발국	영국	미국	미국/독일	미국
수량	2,000만회분	600만회분	2,000만회분	4,000만회분
접종	1,000만명	600만명	1,000만명	2,000만명
접종 횟수	2회	1회* (임상결과에 따라 변경가능)	2회	2회
접종간격	28일	-	21일	28일
희석	불필요	불필요	필요	불필요
유통	SK바이오사이언스	SK바이오사이언스	SK바이오사이언스 또는 직접배송	미정
보관조건	2~8℃(6개월)	-20℃(24개월) 2~8℃(3개월)	-75℃±15℃(6개월) 2~8℃(5일)	-20℃(6개월) 2~8℃(30일)
국외 승인현황	영국, 인도, 모로코, 멕시코, 도미니카공화국, 아르헨티나, 엘살바도르, 브라질 등	미국·영국·유럽 등 사전검토 중 (미국, '21.2월 말 긴급사용 승인 예상)	EU, WHO, 영국, 미국, 캐나다, 바레인, 이스라엘, 카타르 등	미국, 캐나다, EU, WHO, 이스라엘, 스위스 등
국내현황	품목허가(2.10)	사전검토 중 ('20.12월~)	품목허가(3.5)	-

2021-04-03

NHS (National Health Service) ADVICE

NHS: COVID-19 vaccine (Astrazeneca, Pfizer, Moderna)

- Offer COVID-19 vaccine to people most at risk from coronavirus.
- It's being given to:
  - aged 55 and over
  - at high risk from coronavirus (clinically extremely vulnerable)
  - live or work in care homes
  - health and social care workers
  - a condition that puts them at higher risk (clinically vulnerable)
  - a learning disability
  - a main carer for someone at high risk from coronavirus
  - The order in which people will be offered the vaccine is based on advice from the Joint Committee on Vaccination and Immunisation (JCVI).

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COVID-19 Vaccine AstraZeneca (AZ)

- Indication **≥18 years old**
- Elderly population **≥65 years**
  - Efficacy and safety data, limited
  - No dosage adjustment is required
- Paediatric population **<18 years**
  - Safety and efficacy, have **not yet** been established.
  - No data are available.

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- Clinical efficacy, 4 RCT
  - Phase I/II Study, COV001, in healthy adults 18 to 55Y in UK
  - Phase II/III Study, COV002, in adults ≥18Y (including the elderly) in UK
  - Phase III Study, COV003, in adults ≥18Y (including the elderly) in Brazil
  - Phase I/II study, COV005, in adults 18 to 65Y in South Africa.

  - Exclusion,
    - history of anaphylaxis or angioedema
    - **severe and/or uncontrolled cardiovascular, gastrointestinal, liver, renal, endocrine/metabolic disease, and neurological illnesses**
    - **with immunosuppression**

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- Baseline demographics (N=5813)
  - 94.1%, 18 to 64Y (with 5.9% aged **65 or older**) N=343
  - 60.7%, female
  - 82.8%, White; 4.4%, Black; 4.6%, **Asian** N=267
  - 35.6%, one pre-existing **comorbidity** N=2070
    - defined as a BMI ≥30 kg/m2
    - **cardiovascular disorder**
    - **respiratory disease**
    - **Diabetes**
- Participants with one or more comorbidities had an efficacy of **62.7%** similar to the efficacy in the overall population
- The number of COVID-19 cases in participants ≥65YO were too few to draw conclusions on efficacy

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Table 2 COVID-19 Vaccine AstraZeneca efficacy against COVID-19

Population	COVID-19 Vaccine AstraZeneca		Control		Vaccine efficacy % (CI)
	N	Number of COVID-19 cases, n (%)	N	Number of COVID-19 cases, n (%)	
Interim analysis (cut-off date: 4 November 2020)					
Primary (see above)	**5,807**		**5,829**		
COVID-19 cases		30 (0.5)		101 (1.7)	70.4 (54.8, 80.6)[a]
Hospitalisations[b]		0		5 (0.1)	-
Severe disease[c]		0		1 (<0.1)	-
Updated analysis (cut-off date: 7 December 2020)					
Primary (see above)	**8,597**		**8,581**		
COVID-19 cases		84 (1.0)		248 (2.9)	66.7 (57.4, 74.0)[d]
Hospitalisations[b]		0		9 (0.1)	100 (50.2, NE)
Severe disease[c]		0		2 (<0.1)	-

N = Number of subjects included in each group; n = Number of subjects having a confirmed event; CI = Confidence Interval; NE = Not Evaluable; [a] 95.84% CI; [b] WHO severity grading ≥4; [c] WHO severity grading ≥6; [d] 95% CI.

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COVID-19 Priority Risk Group

1	Residents in a care home for older adults and staff working in care homes for older adults
2	All those 80 years of age and over and frontline health and social care workers
3	All those 75 years of age and over
4	All those 70 years of age and over and clinically extremely vulnerable individuals (not including pregnant women and those under 16 years of age)
5	All those 65 years of age and over
6	Adults aged 16 to 65 years in an at-risk group (see clinical conditions below) [footnote 1]
7	All those 60 years of age and over
8	All those 55 years of age and over
9	All those 50 years of age and over
10	Rest of the population (to be determined)

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Group 4: clinically extremely vulnerable

- solid organ transplant recipients
- specific cancers:
  - cancer undergoing active chemotherapy
  - lung cancer undergoing radical radiotherapy
  - cancers of the blood or bone marrow such as leukaemia, lymphoma or myeloma who are at any stage of treatment
  - immunotherapy or other continuing antibody treatments for cancer
  - other targeted cancer treatments that can affect the immune system, such as protein kinase inhibitors or PARP inhibitors
  - bone marrow or stem cell transplants in the last 6 months or who are still taking immunosuppression drugs

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- severe respiratory conditions
  - cystic fibrosis, severe asthma and severe COPD
- rare diseases that significantly increase the risk of infections (such as severe combined immunodeficiency (SCID), homozygous sickle cell disease)
- on immunosuppression therapies sufficient to significantly increase risk of infection
- problems with your spleen, for example splenectomy
- adults with Down's syndrome
- adults on dialysis or with chronic kidney disease (stage 5)
- women who are pregnant with significant heart disease, congenital or acquired
- other people who have also been classed as clinically extremely vulnerable, based on clinical judgement and an assessment of their needs. GPs and hospital clinicians have been provided with guidance to support these decisions

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Group 6: Clinical conditions:

- Chronic respiratory disease
- Chronic heart disease and vascular disease
- Chronic kidney disease
- Chronic liver disease
- **Chronic neurological disease**
- Diabetes mellitus
- **Immunosuppression**
- Asplenia or dysfunction of spleen
- Morbid obesity
- Severe mental disease

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- Chronic neurological disease

Stroke, transient ischaemic attack (TIA). Conditions in which respiratory function may be compromised due to neurological disease (e.g. polio syndrome sufferers). This includes individuals with cerebral palsy, severe or profound learning disabilities, Down's Syndrome, multiple sclerosis, epilepsy, dementia, Parkinson's disease, motor neurone disease and related or similar conditions; or hereditary and degenerative disease of the nervous system or muscles; or severe neurological disability.

- Immunosuppression
  - Immunosuppressive or immunomodulating biological tx
    - ✓ **Alemtuzumab, ofatumumab, rituximab**
  - Steroid sparing agents
    - ✓ **Cyclophosphamide, mycophenolate mofetil, cyclosporin, azathioprine, methotrexate**
  - **Systemic steroids** for >1month (20mg/d)
  - Some immunosuppressed patients may have a suboptimal immunological response to vaccine; Not known

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COVID-19, Who gets vaccine?

- Contraindications
  - Hypersensitivity to the active substance
- Concurrent illness
  - should be postponed in individuals suffering from an **acute severe febrile illness**.
- should be given with caution
  - **Thrombocytopenia and coagulation disorders** (as with other IM injection)
- Duration and level of protection
  - **not yet** been established.
- Interaction with other medicinal products and other forms of interaction, No interaction studies

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- Pregnancy
  - Preliminary animal studies, no direct or indirect harmful effects
  - Definitive animal studies have **not been completed**
  - Administration of AZ vaccine in pregnancy should only be considered when the **potential benefits > potential risks**
- Breastfeeding
  - **unknown** whether AZ vaccine is excreted in human milk.
- Fertility
  - Preliminary animal studies, **no direct or indirect harmful effects**

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CDC, Centers for Disease Control and Prevention

Interim Clinical Considerations for Use of COVID-19 Vaccines Currently Authorized in the United States (Mar 5th 2021)

Covid-19, Pfizer/Moderna/Janssen

- Authorized age groups to receive vaccination
  - **Pfizer-BioNTech: ages ≥16 years**
  - **Moderna: ages ≥18 years**
  - **Janssen: ages ≥18 years**
- Children and adolescents outside these authorized age groups should not receive COVID-19 vaccination at this time

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Patient counseling

- **mRNA COVID-19 vaccines (Pfizer-BioNTech and Moderna)**
  - High vaccine efficacy of two doses
    - Pfizer-BioNTech**: 95.0%** vs Moderna: **94.1%**
  - Post-vaccination symptom
    - Local (80-89%): pain, swelling, erythema at the injection site, localized axillary axillary lymphadenopathy on the same side as the vaccinated arm

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- **Systemic (55-83%)**
  - **fever, fatigue, headache, chills, myalgia, arthralgia**
  - **mild to moderate in severity, occur within the first three days of vaccination, and resolve within 1–3 days of onset.**
- **more frequent and severe following the second dose and among younger people**
- **with prior SARS-CoV-2 infection, more likely to experience symptoms such as fever, chills, and myalgia after the first dose**

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- **Viral vector COVID-19 vaccine (Janssen)**
  - Overall efficacy **66.3%**
  - Post-vaccination symptom
    - Local, 50%
      - pain, swelling, erythema at the injection site
    - Systemic, 55%
      - fever, fatigue, headache, chills, myalgia, arthralgia
      - Most, mild in severity and resolve within 1–2 days after vaccination
    - Overall, more frequent in younger people than older people (≥60Y)

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- **Management of post-COVID-19-vaccination symptoms**
  - Antipyretic or Analgesic medications (acetaminophen, NSAIDs) can be taken for tx of post-vaccination local or post-vaccination local or systemic symptoms
    - **Routine prophylactic** administration to prevent post-vaccination symptoms is **not currently recommended**
    - information on the impact of such use on COVID-19 vaccine-induced antibody responses is not yet available. available.

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COVID-19 vaccination and SARS-CoV-2 infection

- **People with prior or current SARS-CoV-2 infection**
  - **Viral testing** for prior infection is not recommended
  - While there is no recommended minimum interval
    - risk of reinfection is low in **the months** after initial infection
  - **should be offered vaccination**
- **People who previously received passive antibody therapy**
  - monoclonal antibodies or convalescent plasma as COVID-19 treatment
    - **vaccination should be deferred for at least 90 days**
  - antibody therapies not specific to COVID-19 treatment (IVIG, RhoGAM)
    - no recommended minimum interval
- **Vaccinated people who subsequently develop COVID-19**
  - prior receipt of a COVID-19 vaccine should **not affect treatment decisions** or timing of such treatments treatments

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Considerations for vaccination of people with certain underlying medical conditions

- **COVID-19 vaccine can be administered to people with underlying medical conditions who have no Contraindication**
- **Clinical trials, similar safety and efficacy profiles in people with some underlying medical conditions, including those that place them at increased risk for severe COVID-19, comorbidities.**

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Underlying medical conditions

- Cancer
- Chronic kidney disease
- COPD (chronic obstructive pulmonary disease)
- Down Syndrome
- Heart conditions, such as heart failure, coronary artery disease, or cardiomyopathies
- Immunocompromised state (weakened immune system) from solid organ transplant
- Obesity (body mass index [BMI] of 30 kg/m2 or higher but < 40 kg/m2)
- Severe Obesity (BMI ≥ 40 kg/m2)
- Pregnancy
- Sickle cell disease
- Smoking
- Type 2 diabetes mellitus
- Asthma (moderate-to-severe)
- Cerebrovascular disease (affects blood vessels and blood supply to the brain)
- Cystic fibrosis
- Hypertension or high blood pressure
- Immunocompromised state (weakened immune system) from blood or bone marrow transplant, immune deficiencies, HIV, **use of corticosteroids, or use of other immune weakening medicines**
- **Neurologic conditions, such as dementia**
- Liver disease
- Overweight (BMI > 25 kg/m2, but < 30 kg/m2)
- Pulmonary fibrosis (having damaged or scarred lung tissues)
- Thalassemia (a type of blood disorder)
- Type 1 diabetes mellitus

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- **Immunocompromised people**
  - **immunosuppressive (IS) medications or therapies**
  - No data are available for COVID-19 vaccine safety and efficacy
  - Insufficient data for optimal timing of COVID-19 vaccination

✓ **Currently, authorized vaccines are not live vaccines !**

✓ **Can be safely administered to immunocompromised people**
- Ideally, should be completed at least 2 weeks before initiation of IST
- On IST, can still receive COVID-19 vaccination

✓ **Decisions to delay IS therapy to complete vaccination should consider the person's risks related to underlying condition.**

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- **People with autoimmune conditions**
  - No available data on the safety and efficacy of vaccines
  - Eligible for enrollment in mRNA COVID-19 vaccine clinical trials
  - No imbalances in the occurrence of symptoms consistent with autoimmune conditions or inflammatory disorders or inflammatory disorders in clinical trial participants who received COVID-19 vaccine compared to placebo compared to placebo

✓ **People with autoimmune conditions may receive any authorized COVID-19 vaccine.**

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- **People with a history of Guillain-Barré syndrome**
  - No cases of GBS were reported following vaccination among participants in the mRNA COVID-19 vaccine clinical COVID-19 vaccine clinical trials
  - One case of GBS in the Janssen COVID-19 vaccine group and one GBS case in the placebo group. placebo group.
  - With few exceptions, ACIP do not include history of GBS as a contraindication or precaution to vaccination precaution to vaccination

✓**People with a history of GBS may receive COVID-19 vaccination.**

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- **People with a history of Bell's palsy**
  - Bell's palsy cases were reported following vaccination in clinical trials
  - FDA has not concluded that these cases were causally related to vaccination.

✓In the absence of such evidence, **people with a history of Bell's palsy can receive a COVID-19 vaccine. COVID-19 vaccine.**

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Health conditions and coronavirus (COVID-19) vaccination

Epilepsy

- All COVID-19 vaccines are safe for people with neurological conditions such as epilepsy.
- COVID-19 vaccines are not expected to interact with epilepsy medicines.
- COVID-19 vaccines can cause mild or moderate side-effects including fever.
  - fever can make them more likely to have a seizure.
  - If you are concerned about fever, take paracetamol for 48 hours

✓ For most people, the risk of serious illness from COVID-19 infection far outweighs the risk of side-effects from the COVID-19 vaccine

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Stroke

- Are the vaccines safe for stroke survivors who are taking statins or other anticoagulants?
  - If you are taking anticoagulation medication your doctor will check that it's ok
  - If you have any concerns, please discuss them with your doctor
- Can I choose which arm to have the vaccine in?
  - You can choose which arm to have your vaccine in and discuss with doctor
  - If you have paralysis in one arm, your doctor might recommend that you have it in your good side, especially if the muscle in your affected arm appears to be wasted.

✓ The Stroke Association encourages everyone who is eligible for the vaccine

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Multiple Sclerosis
A National MS Society in UK and USA

- **IFN, GA, Teriflunomide, DMF, natalizumab, diroximel fumarate,**
  - no adjustment are needed
- **Fingolimod, siponomid, ozanimod,**
  - complete vaccine injections 4 weeks or more prior to starting DMT
- **Ocrelizumab, rituximab, ofatumumab, alemtuzumab, cladribine**
  - Complete vaccine inj 4 weeks or more prior to starting DMT
  - On ocrelizumab, rituximab, start the vaccine inj 12 weeks or more after last DMT
  - On alemtuzumab, cladribine, start vaccine inj at least 12 weeks or closer to 24 weeks
  - Ofatumumab, monthly inj, wait until prior to next DMT to initiate vaccines
  - Avoid resuming DMT until 4 weeks following the second vaccine inj.

✓ **Fever** after vaccine can make your MS symptoms worse temporarily, but return to prior levels
✓ Should consider **vaccine timing**

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Neuromyelitis optica and MOGAD

- NMO
  - Vaccine timing should be considered for rituximab and inebilizumab
  - No vaccination restrictions on eculizumab
- MOGAD
  - The CDC published a list of contraindications and among them was previous serious reaction to a vaccine (March 2021)
    - If a vaccine triggered a relapse in the past, you should NOT get the COVID vaccine, just in case.
    - However, each person needs to weigh the risks of getting a relapse from the vaccine versus a bad outcome from the infection. It's a balance of risks.

✓ Generally, recommend taking the COVID vaccine if they are stable on preventive therapy and if there have not previously relapsed after a vaccine (MOGAD).

2021-04-08 Ju-Hong Min KoreaN NeuroImmune Association CDC

Dementia

- Should people affected by dementia have the vaccine?
  - Vaccination is voluntary and should decide whether to have it or not.
  - at highest risk (older people and with underlying health conditions)
  - Decisions on vaccination may raise issues of mental capacity and consent.
- There is some evidence that dementia itself may add a further risk on top of age and these other health conditions.

✓ People with dementia are '**vulnerable**' on health grounds, but not generally 'clinically extremely vulnerable'.

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Now