

Understanding COVID-19 Vaccines and Their Safety

認識新冠疫苗及其安全性

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The Covid-19 pandemic has been spreading worldwide since last January, resulting in many deaths. On January 28-29, 2021, Mendocino County Health Department offered Covid-19 vaccines to residents of City of Ten Thousand Buddhas (CTTB). There were about 100 people who have received the first dose of Pfizer vaccine by the in-house nurse Donna Farmer, including elder monastics, caregivers, administrative office staff, kitchen workers and school teachers. All of them were voluntarily vaccinated.

Many residents have had some doubts about the vaccination and its safety. On January 31, CTTB invited Ms. Lee Min-chu to give the insights of Covid-19, vaccine development and their safety. Ms. Lee retired in 2014 from the US Food and Drug Administration (FDA) as the Director of Division of Pharmacovigilance. Due to her regulatory background and interest, she has been tracking the Covid-19 vaccine development and safety for a year. She is currently the attendant of Avatamasaka Vihara in Bethesda, Maryland.

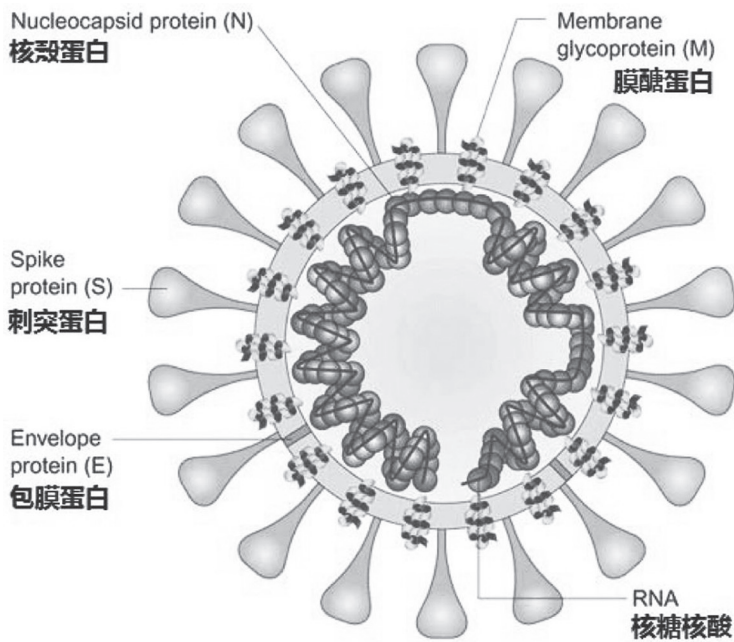
The title of her talk is “Understanding Covid-19 vaccines and their safety.” She indicated that Covid-19 virus has a critical part on the surface called spike protein, that will invade human cells to produce damages, including deaths. Due to the urgency of developing therapies for the virus infection, US government has supported many companies to develop the vaccines very quickly. There are many kinds of vaccines being developed worldwide. Moderna and Pfizer use the new scientific technology to encode the messenger RNA (mRNA) for the spike protein and injects to humans as antigen to generate antibodies to neutralize or kill the virus. This technology has been developed many years ago in the laboratory by Dr. Katelin Kariko.

While in general any new drugs or vaccines would take 10-15 years to develop successfully, within a year, vaccines developed by

新冠疫情自去年一月起橫掃全球，造成大量死亡。2021年1月28日至29日，曼都西諾縣衛生局提供疫苗給萬佛聖城住眾。駐城護士當娜·法摩為一百人完成第一劑輝瑞疫苗注射，包括老年法師、照顧人員、行政辦公室工作人員、齋堂工作人員、以及學校老師，都是自願接受疫苗注射者。

但許多住眾對新冠疫苗及其安全性尚有若干疑慮。萬佛聖城週日晚間線上講座於1月31日邀請李敏珠演講，說明新冠疫苗的發展及其安全性。李敏珠於2014年自美國聯邦食品藥物管理局藥物警戒部主任一職退休。由於她的法規背景以及興趣使然，這一年來，她持續追蹤新冠疫苗的發展及其安全性。李敏珠目前是馬利蘭州貝賽思達市華嚴精舍的護法居士之一。

她的講題為「認識新冠疫苗及其安全性」。李敏珠指出，新冠病毒表面具關鍵性的刺突蛋白會侵入人體細胞，造成傷害，甚至導致死亡。因為迫切需要找出治療這種病毒感染的方法，美國政府資助許多公司快速開發疫苗。全世界已開發多種疫苗。莫德納公司和輝瑞公司採用最新科技為刺突蛋白的信使核



The structure of 2019-Coronavirus :

- Spike protein is like offensive weapon, helping virus to enter human's cells.
- Envelope protein is like defense weapon, helping virus to survive longer,
- Nucleocapsid protein help virus effectively duplicate themselves.
- RNA is the true body of the virus.

2019-冠狀病毒結構：

刺突蛋白是進攻武器，幫助病毒進入人體細胞；

膜是防禦武器，幫助病毒存活更久；

核殼蛋白幫助病毒有效複製；

RNA基因是病毒真身。

Moderna and Pfizer were authorized by the FDA for use in December 2020. With full support in funding and clinical trial design from the NIH, FDA and the companies, the vaccines were widely tested in the world with different populations and age groups. With full compliance to FDA regulatory requirements, their studies have shown an efficacy of 95% to prevent Covid-19 infection after 2 doses with a very acceptable safety profile.

Based on the vaccine compositions, these 2 vaccines contain the mRNA (a synthesized protein) and other chemicals without any preservatives to make the formulations, but do not contain eggs, plasma or virus. In the future, there will be vaccines using other non-toxic virus as a vector to inject into humans. China's currently authorized product uses inactivated Covid-19 virus as vaccine.

The most notable side effects observed during clinical trials and after more than 50 millions of vaccination in the US are the injection site related reaction that includes muscle pain, swelling, fatigue and other non-serious side effects that can usually be alleviated by over-the-counter medications. Rare severe allergic reactions, such as difficulty in breathing, sudden drop of blood pressure leading to dizziness or fainting, and

糖核酸基因編碼，當作抗原注入人體以產生抗體，進而中和或消滅病毒。這種技術已在凱特琳·柯瑞蔻博士領導的實驗室中研發多年。

一般而言，新藥或疫苗通常需要10至15年的時間才能研發成功。由於來自美國國家衛生署、聯邦食品藥物管理局、以及各家藥廠在資金方面的全力支持，和臨床試驗設計，輝瑞和莫德納疫苗得以在全球不同人口和不同年齡層中，進行廣泛的測試，順利在一年之內，即於2020年12月，獲得聯邦食品藥物管理局授權使用。在完全符合食藥局規定的情況下，這兩家藥廠的研究顯示，疫苗的有效性為施打兩劑即可達到95%預防感染新冠病毒的效果，其安全程度也非常令人能接受。

這兩種疫苗含有信使核糖核酸（一種合成的蛋白質）和其他化學成份，但配方中不含防腐劑，也不含蛋、血漿、或病毒。未來將有新冠疫苗使用其他不具毒性的病毒當作載體注入人體。中國目前已批准的產品，則使用滅活的新冠病毒來製作疫苗。

在臨床實驗中，以及全美已經施打五千萬劑疫苗的實際觀察發現，最明顯的副作用就是注射點的相關反應，包括肌肉疼痛、腫脹、疲倦、及其他不嚴重的副作用，通常可藉成藥減

skin rashes, called anaphylactic reactions, may occur to some people with a history of the reactions to certain medications or foods. Accordingly, people with the history should consult with the Doctor to see if it's appropriate to get vaccines. If the benefit of vaccination outweighs the risk of serious Covid-19 infection, closely monitor the reactions after vaccination is very important and seek medical treatment immediately when needed.

Worldwide there has been no reported deaths directly related to the vaccines, but the unfortunate deaths were mostly from complications of underlying diseases in the elderly, which did not exceed the expected incidence rate of the disease related death in general populations. Currently companies have been collecting up to 2 years any potential long term side effects, so the public will be informed if any new safety concerns arise.

It's known that Covid-19 has emerged with new mutations related strains or variants everywhere. Currently authorized vaccines may not be completely effective against the new variants, but should be very effective against most of the variants. Companies are continuing to develop the most updated vaccines to fight against the current virus strains. As for how long the vaccine generated antibodies will work against Covid-19 infection, the currently available information indicates about at least more than 9 months.

Change of different brands of Covid-19 vaccines after first dose is not recommended by CDC. Additionally, when there is a need to have another vaccine administered, such as flu shots, CDC recommends to keep them at least 14 days apart.

It is common knowledge that each individual may have different antibody response to the vaccination. There is no certainty that one would not get infection after vaccination. The CDC guideline should be still followed, wearing masks, social distancing and sanitization practices. It is very important to build up the innate immune system from within to be prepared for any invading diseases. These include eating and sleeping well, regular exercises, and practicing Buddhism' cultivation to keep right mindset always.

Covid-19 pandemic has created a disaster in the world, there is no guarantee that it will disappear soon or forever. As we understand more, and prepare in advance with right mentality and pathway, human wisdom will conquer it! ❀

輕不適症狀。少數嚴重的過敏反應包括呼吸困難、血壓陡降造成暈眩或昏倒、皮膚出疹，可能會發生在某些對特定藥品或食物過敏的人身上。有這樣病史的人，應先諮詢醫生以確認自己是否適合注射疫苗。如果注射疫苗的好處大過感染新冠病毒的風險，那就要在注射疫苗後，密切注意反應，這點很重要。若有需要，必須立即尋求醫藥治療和處理。

就全球而言，尚無疫苗直接導致死亡的報告，但有些人注射疫苗後不幸死亡，大多為老年人已有痼疾造成併發症而導致死亡。這些死亡例子在一般大眾中，尚未超過這些痼疾的預期死亡率。目前藥廠正在蒐集兩年的潛在長期副作用，若疫苗有任何新的安全顧慮，將會通知大家。

眾所週知，新冠病毒已有新的突變病毒株或病毒變種遍佈各地。目前已批准的疫苗或許無法完全有效對抗新的病毒變種，但對抗大部份的病毒變種應該還是相當有效的。藥廠繼續研發新版疫苗以對抗目前的病毒株。至於疫苗產生的抗體能防範新冠病毒感染多久？目前的資料顯示，至少在九個月以上。

美國疾病管制中心不建議在注射第一劑新冠疫苗後，第二劑改打不同廠牌的新冠疫苗。此外，若需要打其他疫苗，例如流感疫苗，美國疾病管制中心建議至少要相隔14天再接受注射。

常識告訴我們，每個人對疫苗可能有不同的抗體反應。注射疫苗後，並不保證絕對不會感染病毒。因此美國疾病管制中心的指導方針仍須遵循，包括戴口罩，維持社交距離，保持衛生習慣等。很重要的是，建立體內免疫系統，以防任何疾病的入侵，這些包括吃好、睡好、規律運動、和佛教的修行，以維持正確的心態。

新冠疫情已在全球釀成災難，並且無法保證它將很快或永久消失。當我們瞭解更多，並以正確的心態和方向提前防範時，人類的智慧終將克服這場百年大疫。❀