

Moderna shows the value of bulk-buying



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The new price for its Covid-19 vaccine is lower than earlier deals - but arguably not by much.

Last week Moderna said the small deals it had done for its Covid-19 vaccine [mRNA-1273 came in at \\$32-37 per shot](#), markedly higher than any of the other major candidates. It also said bulk sales might allow it to offer the vaccine at a lower price, and true to its word yesterday's 100 million dose commitment by the US government sees the vaccine priced at around \$15 per dose. Investors were thrilled, and Moderna opened up 7.6%, but was later trading up only 1%.

But this price per dose ignores the \$955m Moderna has already received from the US taxpayer. If the funding the group has received under the Warp Speed programme is factored in, the US government will actually be paying closer to \$25 per shot once this tranche of doses is delivered.

According to Leerink analysts, the US government's agreement with Moderna includes incentive payments for timely delivery, with some portion of the agreed price at risk should mRNA-1273 fail to secure emergency use authorisation or BLA approval by the end of January 2021. EUA is certainly possible within this time frame given the flexibility of US and global regulatory bodies concerning Covid-19 vaccine candidates.

The risk comes in if trials are delayed or if the interim phase III data expected later this year disappoint. Still, having at least started this phase of testing, Moderna appears to be closer to the goal of US authorisation or approval than any of the other so-called "top six" candidates for which the US government has placed dose orders.

Phase III trials for two others, those from Biontech/Pfizer and Astrazeneca/Oxford University, are imminent, and following early data on Novavax's NVX-CoV2373 last week that project is slated to enter phase III in September ([Novavax claims its place in Covid-19 vaccine race, August 5, 2020](#)). Two of these vaccines, those from Johnson & Johnson and Glaxosmithkline/Sanofi, have not even generated phase I data yet.

The "top six": US government funding for Covid-19 vaccines

Company/org	Vaccine	Type	Detail	US government financing	
				Development	Dose orders
Moderna/NIAID	mRNA-1273	mRNA	Ph1 data reported; ph3 under way	Up to \$955m	\$1.5bn (100m doses)
Biontech/Pfizer	BNT162b1	mRNA (modRNA)	Ph1 data reported	-	\$1.95bn (100m doses)
Biontech/Pfizer	BNT162b2	mRNA (modRNA)	Tolerability better than BNT162b1; ph3 protocol open		
Astrazeneca/ Uni of Oxford	AZD1222	Chimp adenovirus	Ph1 data reported; ph3 Aug 2020	\$1.2bn (300m doses; split not specified)	
Novavax	NVX-CoV2373	Nanoparticle	Ph1 data reported; ph3 Sep 2020	Up to \$1.6bn (100m doses; split not specified)	
Johnson & Johnson	Ad26.COV2-S	Adenovirus type 26	Ph1 started Jul 2020; ph3 Sep 2020	\$456m	\$1bn (100m doses)
GSK/Sanofi	?	S-protein antigen	Ph1 starting Sep 2020; ph3 end 2020	\$1.1bn*	\$1bn (100m doses)

Source: WHO list, EvaluatePharma & company statements.

At \$15 per dose, or \$25 if the Warp Speed funding is included, Moderna's vaccine is still one of the more expensive options. The contract the US has arranged with Pfizer and Biontech for their two candidates - or which BNT162b2 appears the more promising - pegs this at nearly \$20 per shot. The vaccine under development by Glaxo and Sanofi comes in at over \$20 if the Warp Speed funding is included in the calculation.

By far the best value option, on current showing, is AstraZeneca's. In May the UK group agreed to provide 300 million doses of AZD1222 in exchange for \$1.2bn Warp Speed funding for advanced trials and scaled-up manufacturing. This works out at \$4 per shot, in line with the company's pricing announcement in July ([Astra shakes things up with Covid-19 pricing disclosure, July 30, 2020](#)).

Best of the rest

Beyond the top six there are several other vaccines in development - and one has just moved up a step. Arcturus Therapeutics has dosed the first cohort in the [phase I/II trial of ARCT-021](#), formerly designated Lunar-COV19.

This trial is being conducted in Singapore, and comprises two parts. In phase I escalating doses will be administered as a single injection to three cohorts made up of adults between 21 and 55 years old. Based on safety, immunogenicity and T-cell response seen in this group, dose regimens will be chosen for the phase II section, which will also include subjects aged 56 to 80.

This study should yield data in the fourth quarter, but Arcturus seems to be trailing a handful of other potential vaccines, not least that from Merck & Co/lavi. V590 is the only project outside the top six known to have received funding from Barda - a modest \$38m.

The smaller fish: other selected Covid-19 vaccine programmes

Company/org	Vaccine	Type	Detail
Merck & Co/lavi	V590	rVSV	Ph1 starting in 2020
Inovio	INO-4800	DNA	Immune responses claimed in ph1
Cansino Biologics	Ad5-nCoV	Adenovirus type 5	Ph1 data reported
Dynavax/ Clover/GSK	SCB-2019	Trimerised fusion	Ph1 data possible Aug 2020
Curevac	CVnCoV	mRNA	Ph1 started Jun 2020
Arcturus	ARCT-021/ Lunar-COV19	mRNA	Ph1 started Jul 2020
Zyodus Cadila	ZyCoV-D	DNA	Ph1 started Jul 2020
GSK/Medicago (M Tanabe)	?	Coronavirus-like particles	Ph1 started Jul 2020
IMV	DPX-COVID-19	Peptide	Ph1 starting "summer" 2020
Merck & Co (ex Themis)	V591	Measles virus vector	Ph1 starting Q3 2020
Translate Bio/ Sanofi	?	mRNA	Ph1 starting Q4 2020

Source: WHO list, EvaluatePharma & company statements.

The race to the US market is going to be contested fiercely. The global race, however, has already been won by Russia, with the country's Ministry of Health saying yesterday it had approved a vaccine developed by the Gamaleya Research Institute of Epidemiology and Microbiology in Moscow after testing in just 76 people.

The so-called Sputnik V vaccine will initially be given to a small number of vulnerable people, with widespread use banned until 2021, presumably so larger trials can be conducted in the meantime. A phase III trial involving more than 2,000 people is to begin this month in Russia, the United Arab Emirates, Saudi Arabia, Brazil and Mexico.

Mass production of the vaccine is to begin in September, but mass production has a different meaning in Russia versus the US: Sputnik V's manufacturer, Zelenograd-based Binnopharm, says it can make just 1.5 million doses per year.

There is no information available on what kind of governmental funding this project received.

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