What’s It Worth? Pricing Remdesivir

By Chuck Dinerstein, MD, MBA — May 5, 2020

Remdesivir appears to be our first promising treatment for COVID-19. It is certainly neither a cure nor a preventative. But it seems to reduce the length of hospital stays, and thus, increases the health systems’ capacity by about a third. So if you were in charge of selling this drug, what price would you set?

Pricing a new drug is not an easy task, Gilead who is producing remdesivir is no stranger to pricing controversy, the release of Solvaldi, their drug to cure Hepatitis C, had a list price of $84,000 for a full treatment course. An Indian generic runs at $1344 for the same treatment course, and in China, it was selling for around $8600.

The Institute for Clinical and Economic Review, ICER, is an independent agency [1] that helps price drugs based on their cost and efficacy. They perform a function similar to the UK’s NICE or National Institute for Health and Care Excellence, which in addition to doing the analysis, acts as a gatekeeper approving or disapproving drugs for the National Health Services formulary. ICER has released a tentative analysis of remdesivir to help guide policy discussion putting forward two models - characterizing the range of costs they see as acceptable.

In the first model, the low-end cost is based on a study that calculated the cost of materials and processing; the economic term is the marginal cost. It is a minimum cost because it does not take
into account the value of the manufacturing plant, the research, and development costs, merely the cost of turning out one more pill in a system that is already in place. A 10-day treatment course of remdesivir, in this scenario, runs $10 – a bargain in any world. [2] Now, before getting too excited, remember that this model has some assumptions, the most important of which is that there are no R&D costs and no profit.

The second model, reflecting what might be the upper limit of acceptable pricing, is $4,460 for a full treatment course – and it comes with many more assumptions. Let’s take a look at just a few of them. First up, a standard assumption is these types of studies, what is the value of a quality-adjusted life year or QALY? The usual amount is set at $100,000 for every year of additional quality life, but because this is a pandemic, the modelers set the value lower at $50,000. Using the $100,000 figure increased remdesivir’s acceptable cost to $28,670. More pertinent to our discussion is whether or not remdesivir saves lives. In the only study we have available, 11% of patients in the control group died, while only 8% of patients in the treatment group died. There is a difference, and you can describe it in absolute terms as a 3% improvement or relative terms as 27%; for the additional survivors, this is a significant number, but it may not hold up to be clinically significant. If there is no survival benefit, only the reduction in length of stay, then remdesivir’s appropriate price drops to $390.

Using the available literature, they also characterized the likelihood of needing hospital admission, 66%, as well as needing ICU care with ventilatory life support, 28%. Those values affect the length of stay and are open to interpretation. Without testing, we have no real sense of how many COVID-19 patients stayed home and got better on their own; a more frequently offered number at this point is 80%, which reduces those admitted to the hospital significantly. Having assigned values to the length of stay, they could also assign values to the probability of going home alive and “well.” These assumptions are also up for discussion, especially there assumption that 69% of patients requiring ventilators will survive – the current snapshot of data puts that survival at 20% or less.

Their model also considers the cost of hospitalization based on average median costs by private insurers for the treatment of pneumonia. To give you a sense, they range from $12,692 for a simple admission to $61,169 for being in ICU on a ventilator. Finally, they include what is termed disutility, a reduction in the value of life because of complications from the care. These are values we can argue over, mainly because there is no data yet on either the long-term problems for these patients or the short-term costs involved in skilled nursing care and rehabilitation in their recovery.

One factor they did not model was research and development costs. Most of the R&D for remdesivir was performed when it was being studied as a treatment for Hepatitis C; in economic terms, it is money already spent, a sunk cost. Gilead will have additional costs for the studies necessary to gain FDA approval on a non-emergent basis. And as with all R&D, Gilead didn’t do all the research, some of it came from universities funded by government grants. Should the government get a piece of the price as a return on our tax-payer investment?
I bring all of this to your attention, not to belittle their work; in fact, I think it is a good initial starting point. But as we move to discuss the pricing of remdesivir, an informed public needs to understand the models and the assumptions – certainly, the predictions of COVID-19 have taught us that level of due diligence.

_Gilead’s pricing “could either provide us with a further reprieve or hasten our demise.” [3]_

Gilead is under a lot of pressure on this decision. Come in with a low number, and they instantly improve the reputation of Big Pharma big time. Come in with a high number, and there will be a great deal of shaming and blaming. So, where is the sweet spot? ICER, for their part, has opened the discussion and made its assumptions front and center. They recognize that this is a changing target and that the model will need to be updated and perhaps refashioned as more data becomes available. They should be commended for their efforts on our behalf. One area that has been ignored is whether payment need only be in the form of cash payments. Perhaps the government can offer tax inducements and forgivable loans to Gilead and the other pharmaceutical companies to further reduce the costs, from benefits and out-of-pocket costs to patients.

[1] They are funded [2] by various stakeholders, including insurance companies, philanthropies, pharmaceutical manufacturers, and academics.

[2] Studies of the necessary treatment length are ongoing, and the initial study showed no difference in outcomes for a five-day versus a ten-day course. In this instance, the price would drop to $5.
