

Does IHU Mediterranean Infection influence Gilead stock price?

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Abstract

During Covid-19 pandemic the Gilead stock prices rose sharply with large variations. These fluctuations have been tentatively related to communications, publications or leaks about Remdesivir or hydroxychloroquine/azithromycin treatment .

In December 2019, an outbreak of an emerging disease (COVID-19) caused by a novel coronavirus (named SARS-CoV-2 later) started in Wuhan (China) and rapidly spread in China and outside ^{1,2}. The WHO declared the epidemic of COVID-19 as a pandemic on March 12th 2020³. Two promising drugs against covid-19 rapidly emerged: Remdesivir and Chloroquine⁴. Remdesivir, a new antiviral drug developed by Gilead Science in 2017, is currently under clinical investigation as a treatment against Ebola virus infection⁵. Chloroquine is a very old, widely used and safe generic antimalarial drugs⁶.

Some early clinical Chinese studies suggested efficiency of chloroquine⁷. From this, IHU Mediterranean Infection (IHU-MI) chose to evaluate the association of hydroxychloroquine, a closely related molecule to chloroquine better tolerated, and azithromycin drugs. Azithromycin is a generic classical antibiotic, chosen for prevention of bacterial complications and also for these antiviral properties⁸. Despite some promising results, with a first clinical trial including 24 patients⁹ and another one including 80 patients¹⁰, the treatment associating hydroxychloroquine and azithromycin was strongly attacked. The first argument was that Clinical trials were not performed as conventional

27 RCT design. The second argument was the toxicity and side effects of these two molecules¹¹. Such
28 debate was surprising considering that these two generic drugs have been widely prescribed for a
29 longtime, are very safe and their side effects are well documented and limited¹². Conversely,
30 investors seem more optimistic with Remdesivir although there is still no publication demonstrating
31 efficiency about Remdesivir treatment and Remdesivir presents toxicity side effects. Meanwhile,
32 stock exchange of Gilead, the biopharmaceutical company developing Remdesivir molecule,
33 increased significantly in a period where numerous stock market prices fall including pharmaceutical
34 companies. Consequently, we decided to analyze the reasons and consequences.

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37 We compared the market trading price from January first to May 6th of several pharmaceutical
38 companies: Gilead, Sanofi, Roche, GlaxoSmithKline and Abbvie (figure 1). With the exception of
39 Gilead, all companies suffered from the COVID-19 crisis with a drastic decrease at the end of March
40 2020 followed by a steady increase thereafter. The absolute cumulated fluctuations day by day of
41 the stock price for these companies represent 2.4, 1.71, 1.65, 1.57, 1.29 times its value for Gilead,
42 Abbvie Sanofi, Roche and GSK respectively. Clearly, Gilead stock price presented the most variations.
43 They were also most exceptional as they were not due to the drastic drop and catching up as other
44 companies.

45 The capitalization of Gilead is about 100G\$. The share market trading price of Gilead from January
46 first 2020 is represented in figure 1¹³. It increased regularly from the end of January. The minimum
47 price of the share was 62.83\$ January 21st and reached up to 85.19\$ on April 17th. This corresponds
48 to a capitalization increase of about 35.6G€ in 3 months. The curve shows also large fluctuations
49 showing a quasi-perfect synchronization with declarations or publications about Remdesivir and IHU-
50 FMI (figure 1). Forces that increase the market price of Gilead are journal publications or leaks
51 related to the performance of the Remdesivir and information about the start of clinical trials. The
52 main elements decreasing the market price are weekly communication of the IHU-FMI about the

53 Remdesivir competitive hydroxychloroquine/azithromycine treatment, politic support or journal
54 publications about inefficiency of Remdesivir.

55 The main fluctuation was observed on March 16th with a market price increase of 13.7\$ in three days,
56 corresponding to an increase of the companies value of 21.8G\$. This huge increase followed Dr.
57 Fauci's lecture announcing, despite the scientific use and without any documentation, that
58 Remdesivir was only effective for the duration of hospitalization but not for mortality or clinical
59 improvement.

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63 Publications about the efficiency of Remdesivir as a treatment against COVID-19 are not convincing
64 neither from a methodological nor from a medical point of view^{14,15}. Furthermore, a Chinese team
65 recently reported the absence of benefit of Remdesivir treatment against placebo¹⁶. Consequently,
66 the value of Gilead based on the potentially of Remdesivir is overestimated as it was pointed by
67 Gilead analyst¹⁷. Furthermore, we estimated from the ABC bourse¹³ that the total exchange of shares
68 from January first to May 6th represents 10.7G\$, a very high-level. Communication about Remdesivir
69 considerably influences stock change of Gilead. Given that, we can raise the issue of insider trading¹⁴.
70 Prior knowledge by certain Gilead shareholders of the publication of articles written by Gilead itself
71 or of statements or leaks from various institutions would allow them to obtain enormous benefits.

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73 **Materials and Methods.**

74 Cotation of pharmaceutical companies and volume shares exchanged from January first to May 6th
75 have been uploaded from ABC bourse website¹³

76 The total sum exchanged of share was calculated by multiplying the opening price of the share by the
77 number of share exchanged and sum over the period.

78 The cumulated fluctuations were the absolute difference between the price ($D_i - D_{i-1}$) and sum over
79 the period. This Sum was divided by the average price of the share over the period to compare the
80 cumulated fluctuations with the share value.

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88 Competing interests

89 Author declare to have no conflict of interest

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160 full-trial

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165 **Legend figure 1**

166 Cotation of some pharmaceutical companies (Opening price). Curves is the price of the stock price
167 left axis. Histogram is the volume of shares exchanged, right axis. a) Gilead, b) Sanofi, c) Abbvie, d)
168 Roche, e) Glaxosmithkline.

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171 **Legend figure 2.** Cotation of Gilead science. Opening price.

172 + Corresponds to elements susceptible to explain increase of the market price of Gilead

173 - Corresponds to elements susceptible to explain decrease of the market price of Gilead

174 **Increases**

175 +a. COVID-19 reaches Europe¹⁹

176 +b. February 13th first publication of “Prophylactic and therapeutic remdesivir (GS-5734) treatment in the rhesus macaque
177 model of MERS-CoV infection.” In PNAS²⁰

178 +c. Clinical trial of remdesivir to treat COVID-19 begins²¹

179 +d. Publication of the First patient healed with Remdesivir.²²

180 +e. Start of the European trial discovery²³

181 +f. Fake news about chloriquine toxicity²⁴

182 +g. Gilead initiates two studies of remdesivir for Covid-19 in UK²⁵

183 +h. Publication of the first clinical trial about Remdesivir.¹⁶

184 +i. A leak from Chicago hospital suggests patients are responding to Remdesivir²⁶.

185 +j. The health ministry is moving to approve the antiviral drug Remdesivir to treat domestic coronavirus patients²⁷.

186 +k. NIH claims Remdesivir Accelerates Recovery from Advanced COVID-19²⁸

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188 **Decreases**

189 -a IHU-MI suggest that hydroxychloroquine is a treatment for COVID-19²⁹

190 -b. IHU-FMI announce the beginning of the clinical trial with hydroxychloroquine³⁰

191 -c. IHU-FMI announce that it will treat COVID patient with hydroxychloroquine and azithromycine invoking Hyppocratic Oath³¹

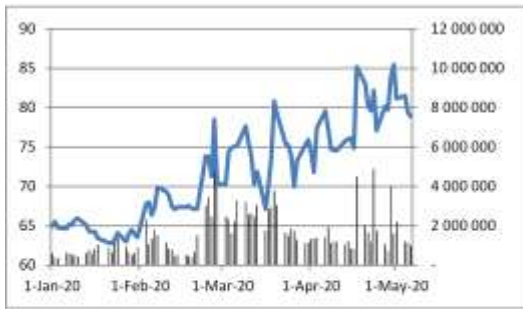
192 -d. Publication of First clinical trial of the IHU-MI⁹

193 -e. French president E Macron visits IHU-FMI (April 9th).

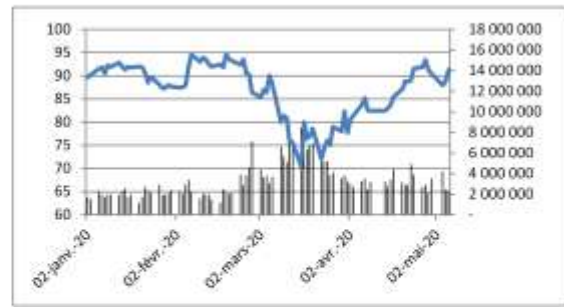
194 -f. WHO Leak “First trial for potential Covid-19 drug shows it has no effect”³².

195 -g A clinical trial published by the lancet show no benefit for the Remdesivir¹⁵

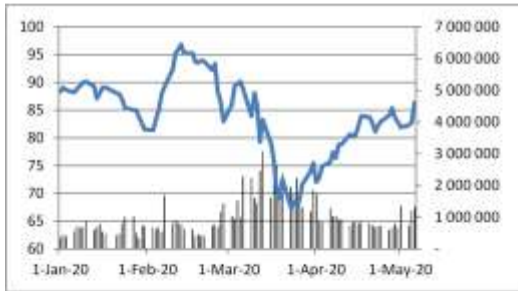
a) Gilead



b) Sanofi



c) Abbvie



d) Roche



e) GSK



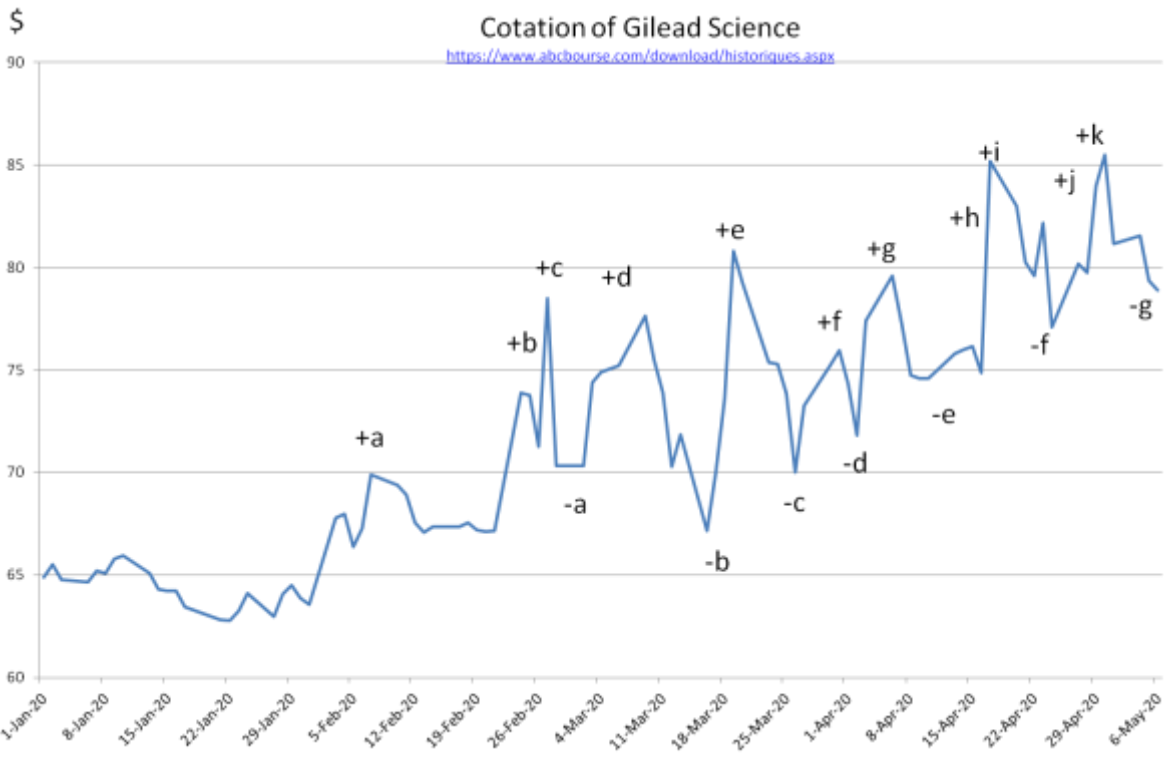
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200 Figure 2



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