

Study shows financial engineering could make life-saving drugs more available, affordable

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Pills. Credit: Public Domain

At a time when breakthrough therapies for certain cancers, hepatitis C, and rare diseases remain out of reach for many patients due to their prohibitive cost, new research by Dana-Farber Cancer Institute and MIT Sloan School researchers offers a potential remedy: securitized consumer healthcare loans (HCLs).

HCLs, the equivalent of mortgages for large healthcare expenses, spread the cost of curative therapies over many years, making them more affordable to the people who need them. Financing HCLs through securitization—a financial engineering technique that involves pooling loans and converting them into securities—would allow more patients to have access to the drugs while generating attractive returns to investors, the study authors say. Conducted by Dana-Farber's David Weinstock, MD, MIT Sloan Professor Andrew W. Lo, PhD, and MIT post-doctoral fellow Vahid Montazerhodjat, PhD, the research is published today in *Science Translational Medicine*.

Scientists have recently developed several breakthrough cures for diseases, but often the medicine's cost is stratospheric. Case in point: Glybera, a gene therapy that cures the highly rare disease lipoprotein lipase deficiency, was recently approved in Germany. Its price tag: nearly \$1 million. The benefit from Glybera may last for the patient's remaining lifetime but the entire cost is paid upfront.

"The stark reality is that many patients don't have access to transformative therapies like Glybera solely due to affordability," said Weinstock. "This is a problem that will only grow as scientists create

more cures. In the next five to seven years we could see cures for diseases like [amyotrophic lateral sclerosis](#), Duchenne muscular dystrophy, and many types of cancer, but those therapies could be too expensive for the average patient."

"This is an instance where financial engineering could benefit the entire ecosystem," said Lo. "It helps patients by providing them with affordable access to therapeutic drugs and cures. It helps biopharmaceutical companies by enabling them to get paid back for the substantial investments in R&D they make to develop the therapies in the first place. And it helps insurance companies by linking payment to ongoing benefit."

Securitized HCLs may also be profitable investments. Based on numerical simulations and statistical models, a large, diversified fund of HCLs generated hypothetical annual returns of 12%. For comparison, over the ten-year period from January 2006 to December 2015, the Standard & Poor's 500 Index saw a compound annual return of only of 7.3%.

Weinstock and his co-authors acknowledge that using financial engineering techniques in healthcare is not without risk—especially as securitization was chief among the techniques that precipitated the recent global financial crisis. While securitization is actively used in many markets today and plays a critical role in financing mortgages, student loans, and consumer credit, it can still be abused if proper protections, including regulatory oversight, are absent.

"But to argue that securitization is simply 'too risky' without a reasonable alternative is to relegate patients in desperate need to the status quo," said Lo. "Securitized HCLs make expensive breakthrough therapies more affordable right now. The science is here and it's moving at breakneck speed. Now we need the financial models to catch up."

More information: "Buying cures versus renting health: Financing health care with consumer loans," [DOI: 10.1126/scitranslmed.aad6913](https://doi.org/10.1126/scitranslmed.aad6913)

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