safety communications on common social media platforms such as Twitter and Facebook would broaden the virtual reach of the agency's messages.

Another approach to promoting accurate dissemination of drug-safety information is active participation in the online curation of medical information. In 2008, the FDA partnered with WebMD to bring public health announcements to all registered users and to quickly integrate this information into WebMD's suite of Web pages. A digital strategy for drug safety could expand this model to include other sites that are highly frequented by the public, including websites for disease-specific patient-support and patient-advocacy organizations. Our findings also suggest that there may be a benefit to enabling the FDA to update or automatically feed new safety communications to Wikipedia pages, as it does with WebMD.

Clinicians and researchers could contribute to this effort. In September 2013, the University of California, San Francisco, became the first U.S. medical school to offer academic credit for editing medical content on Wikipedia, a project that could be scaled to the national level to include other medical schools and universities. Encouraging trainees to participate in Wikipedia-page editing might ensure that important pages are updated quickly as evidence evolves and might engage physicians in the process of developing medical informatics. Such participation could be further motivated by granting continuing medical education credit for the updating of Wikipedia pages relevant to a practitioner's specialty.

New media provide new opportunities for the FDA and patient- and consumer-safety organizations to communicate public health messages. Given the frequency with which patients seek information outside the clinic, and particularly on the Internet, taking advantage of those media appears to be a promising means for the FDA to ensure that patients have ready access to accurate and comprehensive information, including timely updates pertaining to drug-safety issues. Integrating online public health communication into medical training and consumer-facing websites could be an important step toward more fully realizing the Internet's potential in the promotion of public health.

Given the frequency with which patients seek information on the Internet, taking advantage of electronic media appears to be a promising means for the FDA to ensure that patients have ready access to accurate and comprehensive information, including timely updates pertaining to drug-safety issues.

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From the Blackstone Group, London (T.J.H.); and the Children's Hospital Informatics Program and the Division of Emergency Medicine, Boston Children's Hospital (F.T.B.), the Department of Pediatrics (F.T.B.) and the Division of Pharmacoepidemiology and Pharmacoeconomics, Department of Medicine (J.D.S.), Harvard Medical School, and Brigham and Women's Hospital (J.D.S.) — all in Boston.

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Shifting toward Defined Contributions — Predicting the Effects

Kevin A. Schulman, M.D., Barak D. Richman, J.D., Ph.D., and Regina E. Herzlinger, D.B.A.

When Representative Paul Ryan (R-WI) attracted national attention by joining Senator Ron Wyden (D-OR) in proposing a sweeping privatization of Medicare, he was variously vilified and praised for suggesting that Medicare should be converted from a defined-bene-

fit program to a defined-contribution program. Although there has been little congressional action to advance the Wyden–Ryan plan, defined-contribution programs are becoming increasingly prevalent in employer-sponsored health insurance and may ultimately bring about substantial changes in U.S. health care.

A defined-benefit program provides specific benefits to enrollees when those benefits are needed. For example, a defined-benefit pension program provides payments of specified amounts to retirees. Defined-benefit health insurance, such as Medicare and most private plans, pays for specific health care services when eligible beneficiaries demand such services. In contrast, a defined-contribution program — like most typical 401(k) retirement plans — provides certain financial support to beneficiaries before any benefits are consumed, and beneficiaries then spend those funds to meet their eventual expenses. In defined-contribution pension plans, only the financial contribution is defined, and the extracted benefits are determined by the payment and investment preferences of the beneficiary.

Economists have posited that defined-contribution health insurance plans offer two key benefits. First, enrollees in such plans receive more choice than they would in the one-size-fits-all plans typically offered by employers. They can thus consider the quality of plans and express their preferences for various features of benefits packages, such as open or limited provider networks and low or high deductibles. Second, defined-contribution plans can give employers greater certainty about costs, insulating them from unpredictable health care inflation. Such plans might also curb or reverse the trend toward employees' passively shouldering the growing costs of employer-based defined-benefits plans. (Between 2003 and 2013, employer spending increased by 77%, while employees' costs increased by 89%.[1]) In a competitive labor market, with the transparency of a defined-contribution plan, employers would have to compensate employees through higher wages for any shifting of additional health care costs, although increased compensation might only need to match employees' perceptions of the value of the lost benefits.

One largely overlooked attraction of defined-benefit plans is related to the political economy of firms. Because the tax exemption for employer-provided health insurance often hides what employers pay for employees' health insurance, many employees demand costly plans without realizing that the employer's contribution ultimately reduces their own take-home pay. A defined-contribution plan, in contrast, makes insurance premiums more transparent, thereby inducing employees to demand more affordable health plans because they are aware of the full amount they pay. For example, when human resources consultancy Aon Hewitt helped companies implement insurance plans under a defined-contribution system in 2013, 42% of employees purchased less expensive plans, 32% purchased coverage similar to what they had previously had, and only 26% bought more expensive coverage.[2,3]

The intellectual appeal of the Wyden–Ryan plan rested on this logic. Its supporters argued that because the risk of higher-than-expected health care inflation would be shifted onto Medicare enrollees, who would be empowered to exercise consumer choice, the market dynamics would change. On one hand, there would be greater cost consciousness behind consumer demand; on the other hand, supply would reflect greater competition for consumers' premium dollars.

Despite its appeal, the Wyden–Ryan plan had a fatal flaw: it proposed to base the government's defined contribution on current Medicare costs and to increase the contribution at an annual rate of 1% above the growth in the gross domestic product (GDP) — a generous contribution, from a public perspective, since it would outpace economic growth. But whereas the GDP has historically grown at a rate of approximately 2.5% annually, Medicare has grown at a rate of 8.2% annually over the past 15 years. The subsidy under Wyden–Ryan would therefore have left Medicare beneficiaries with substantial financial shortfalls. In 2022, for example, when the average Medicare expenditure per beneficiary is projected to be $28,875, beneficiaries would receive only $15,752 in annual contributions, according to the Congressional Budget Office. If Medicare reforms do not adequately address the excessive costs of health care, converting the program to a defined-contribution plan could leave many seniors uninsured or exposed to unaffordable health care bills, thereby undermining one of the fundamentals of the Medicare program — protection against financial risk — while leaving providers with major revenue shortfalls.

Although Medicare seems un-

likely to be transformed into a defined-contribution program in the immediate future, the private insurance market is shifting toward defined contributions. Many large companies — including IBM, Duke Energy, and Time Warner — are now pursuing defined-contribution strategies for their retirees; others, including Walgreens, are doing so for current workers. Some companies have designed private insurance exchanges through which workers and retirees can purchase insurance plans, and others may encourage retirees to purchase insurance through private exchanges or the public exchanges established under the Affordable Care Act. A recent survey suggests that 58% of employers have confidence in private exchanges as a viable alternative to the plans they currently offer employees and that "employers are intrigued by the potential of private exchanges to control cost increases, reduce administrative burdens and provide greater value."[4]

Some observers have expressed legitimate concerns that employers could limit their payments for health benefits by increasing wages by amounts less than those of employees' medical costs. In theory, a competitive labor market would ensure that total employee compensation remained at competitive levels, thereby preventing employers from using defined-contribution mechanisms in this way. But competitive labor markets require compensation to reflect productivity. In rigid sectors of the economy, defined-contribution strategies could burden employees disproportionately with the weight of medical inflation.

Yet the appeal of defined-contribution plans — whether as part of Medicare reform or in the form of changing benefits for retirees and workers — remains potent. Defined-contribution strategies reveal to employees and health insurance customers any cost increases that exceed the growth of wages, and individuals purchasing insurance on exchanges have shown a growing preference for lower-priced plans that increase cost sharing for health expenditures. In 2013, for example, Aon Hewitt found that the proportion of employees who selected high-deductible plans (most of which included a contribution to a health savings account) increased from 12% to 39%, while enrollment in preferred provider organizations decreased from 70% to 47%.[3]

Whether or not providers and consumers are ready, defined-contribution benefit plans are growing in popularity. They will unquestionably have both short- and long-term consequences for providers.

Defining the contributions to health care expenditures before containing health care costs might be placing the cart before the horse. On the other hand, making such inflation visible and painful to consumers is one tool for bringing costs under control.

Whether or not providers and consumers are ready, defined-contribution benefit plans are growing in popularity. They will unquestionably have both short- and long-term consequences for providers. They will bring greater transparency to health care costs and health care inflation, and they will probably give insurance purchasers greater motivation to attend to insurance prices, stimulating the provision of lower-cost insurance.

Because insurance premiums are ultimately the primary source of revenue for providers, cost consciousness among consumers will impose new fiscal constraints on providers. For some highly leveraged providers — especially those who expanded costly infrastructures that relied on lucrative fee-for-service revenue models — even small changes in the private health insurance market could have substantial financial effects. In this world, providers' future success will depend on their ability to sustain themselves on a flattening allowance.

Over the long term, greater consumer sensitivity to insurance premiums will affect all providers. It is a truism that the growth of health care costs — or, phrased differently, the growth of provider resources — will be bounded by the growth of health care revenue. A dramatic shift in the revenue available to providers will impose strong cost pressure. And such pressure, in turn, can be seen as a new opportunity for developing more cost-efficient delivery mechanisms.

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From the Duke Clinical Research Institute and Department of Medicine, Duke University School of Medicine (K.A.S.), the Fuqua School of Business, Duke University (K.A.S.,

B.D.R.), and the Duke University School of Law (B.D.R.) — all in Durham, NC; and Harvard Business School, Boston (K.A.S., R.E.H.).

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INTERACTIVE PERSPECTIVE

Drug Development and FDA Approval, 1938–2013

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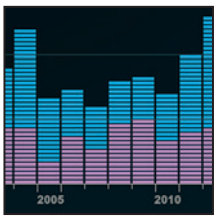

This interactive graphic shows major legislative and regulatory events related to approval of new drugs by the Food and Drug Administration (FDA), drug approvals by year and by therapeutic category, and trends in the use of the FDA's various programs for expedited approval.