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INNOVATION PROFILE

HealthPartners' Online Clinic For Simple Conditions Delivers Savings Of \$88 Per Episode And High Patient Approval

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ABSTRACT The delivery of health care online is relatively new. However, early indications suggest that it can improve the experience of care for patients and the health of populations, along with reducing per capita health care costs. HealthPartners in Minnesota launched an online clinic called *virtuwell* in late 2010. After more than 40,000 cases, we report an average \$88 lower cost per episode compared with care received in traditional settings, strong indicators of clinical effectiveness, and a 98 percent “would recommend” rating from customers. The possibility of extrapolating such savings to larger volumes of cases is compelling. We suggest a need for regulatory reform, particularly around state-level statutes that create barriers to the expansion of online care delivery, such as those that require clinicians to be located in the same state as the patient and those requiring clinicians to have had a previous face-to-face visit with a patient. Such reforms would encourage further innovation and lead to cost reduction and improvements in access and convenience for consumers throughout the health care system.

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Online health care delivery is a relatively new care option. Recent studies have compared quality between online and face-to-face clinical care,¹ e-visit use by physicians,² and cost comparisons between e-visits and care received in traditional settings.³ Within these studies, findings include comparable quality between online and face-to-face care for selected conditions and indications of cost savings. Other findings suggest less positive outcomes such as slow uptake by physicians and possible increased use of antibiotics.

Several fundamental questions drive such investigations. Can online care be performed safely, securely, and in compliance with regulations? Will consumers accept care delivered via these new channels, and will they find their

experiences satisfying? Can an online care business model deliver compelling cost savings? In short, can e-visits work?

Our organization, HealthPartners, is a Minnesota-based, consumer-governed, non-profit organization that provides health insurance through a health plan and care through a large integrated health system that includes four hospitals and more than seventy medical and dental clinics, as well as a network of contracted providers. In 2010 we launched an online clinic called *virtuwell*. Two years later, *virtuwell*'s early results suggest that online care has the potential to meet the “Triple Aim” goals of a better health care experience for patients, improved population health, and more affordable health care⁴—especially for conditions typically associated with primary care.

Examining *virtuwell* as a case study, this article reports on the cost savings, clinical effectiveness, and customer satisfaction that the service has so far demonstrated. We do not posit these results as generalizable findings, but we do suggest that they are relevant to providers, payers, employers, regulators, and consumers as online care continues to emerge.

About *virtuwell*

To help put our findings in context, we first briefly describe the service and the consumer experience of *virtuwell*.

THE MODEL Now available to residents of Minnesota and Wisconsin (and newly introduced in Michigan), *virtuwell* combines rigorous clinical protocols with a carefully designed online user experience and service guarantees. It is accessible at <http://virtuwell.com> around the clock and offers treatment for about forty simple conditions such as urinary tract infections, sinus infections, and conjunctivitis.⁵

The service uses sophisticated interview algorithms; makes patient- and clinician-initiated telephonic interactions available around the clock; and incorporates review by nurse practitioners or physician assistants, who then provide diagnoses and treatment plans, and, if appropriate, prescriptions.

CUSTOMER EXPERIENCE To begin, the customer visits <http://virtuwell.com> and answers questions about his or her condition and symptoms and provides information about medical history, allergies, and medications. A certified nurse practitioner reviews the information and writes a treatment plan. The customer receives notification by text or e-mail when the treatment plan is ready—usually in thirty minutes or less. If a prescription is warranted, it is sent electronically to the pharmacy of the customer's choice. Customers may speak to a nurse practitioner at any time during or after their visit, and *virtuwell* nurse practitioners also initiate outbound calls to customers in about half of the cases.

SCOPE OF SERVICE The clinical protocols used for *virtuwell* are tightly aligned with those developed by the Institute for Clinical Systems Improvement, a nonprofit collaborative co-founded by HealthPartners with representation from dozens of Minnesota-based care systems and payers that has worked to standardize best care practices since 1993.⁶

Conditions treated through *virtuwell* are those generally associated with high diagnostic accuracy and treatment efficacy in both traditional and online care venues. The service does not offer treatment, for example, for conditions in which the standard of care suggests the

provision of a lab test, imaging study, or physical exam. In the case of urinary tract infection, for example, we follow Institute for Clinical Systems Improvement best-practice guidelines, which direct that a low-risk patient with a typical constellation of symptoms may be safely treated without an exam or lab testing. This guideline has been the standard of practice in the Twin Cities market for nearly twenty years.

To date, more than 40,000 customers have received treatment plans from *virtuwell*, and some 56,000 others with symptoms beyond the scope of the service have been referred to appropriate in-person providers.⁷ Patients to date have been 78 percent female, 22 percent male, and most ages 24–45. Sinusitis, urinary tract infection, conjunctivitis, and viral upper respiratory infection are the most commonly treated conditions.

We attribute the preponderance of female use to several factors, including the fact that about 29 percent of our overall case volume is from female-only conditions such as urinary tract infections and yeast infections. Because women are the “chief medical officer” of most households, we also expected to see higher trial use by women in the early stages of *virtuwell*'s operation. Studies also suggest higher use of primary care clinic visits in general by women compared to men.⁸

Patient volume has been concentrated in the Minneapolis–St. Paul metro area, where our organization is headquartered and where we focused early promotion of *virtuwell*. However, *virtuwell* has treated patients in all 159 counties in Minnesota and Wisconsin.

The retail cost is \$40 per visit, with insurance coverage lowering the out-of-pocket fee for many customers per the terms of their benefit plans. Approximately 85 percent of *virtuwell* cases to date have involved an insurance claim. In 2011 *virtuwell* was the first online convenience care service to be authorized for Medicare coverage by the Centers for Medicare and Medicaid Services.⁹

Space limitations here preclude discussion of several aspects of *virtuwell* that may be of interest, such as its technological scope¹⁰ and the development of the *virtuwell* business and practice models, including testing, legal concerns, promotion and marketing, investment levels, and staff recruitment and training.

Another measure worthy of further study but beyond the scope of this article is that of clinicians' satisfaction with online care delivery. We observe, anecdotally, that physicians in HealthPartners are generally supportive of *virtuwell*, at least in part because physicians helped create it and continue to participate in its operation.

Study Results

CLAIMS COSTS We examined claims data to compare costs for episodes of care delivered via virtuwell compared with care delivered in traditional settings including clinic, urgent care, and emergency department settings. Medical and pharmacy claims for HealthPartners' commercially insured members incurred and paid between May 1, 2009, and April 30, 2012, were grouped using the Symmetry Episode Treatment Group (ETG) software, version 7.5. Total episode costs were measured using the amounts paid by HealthPartners to the provider, plus member cost sharing across the entire episode of care.¹¹

Compared with patients using traditional care settings, virtuwell patients within this study population of HealthPartners' commercially insured members were slightly younger (37.3 years versus 40.9 years), and a greater percentage were female (83.4 percent versus 76.9 percent). But the episode classification methodology we used established clinical homogeneity retrospectively by considering condition severity and patient-level comorbidities, thereby enabling valid

comparisons of cost.

Using the Wilcoxon-Mann-Whitney nonparametric test, we found that on average, acute sinusitis episodes treated through virtuwell cost \$78.90 less than acute sinusitis episodes treated in our other settings ($p < 0.0001$).¹² For lower genitourinary system infections, the cost was \$127.61 less per episode ($p < 0.0001$); for conjunctivitis episodes, it was \$69.00 less ($p < 0.0001$). When we looked at all episodes, we found that per episode treatment costs averaged \$88.03 lower for virtuwell-treated episodes (Exhibit 1).

Cost differentials observed for virtuwell are highly dependent on access to and availability of different venues for care. To understand the cost differentials per specific setting, we examined the origination of the episode.¹³

For each of the top three episode types listed above—acute sinusitis, conjunctivitis, and lower genitourinary system infections—we found that virtuwell treatment cost \$20–\$30 less than convenience clinics ($p < 0.0001$), \$80–\$142 less than office visits ($p < 0.0001$), \$82–\$124 less

EXHIBIT 1

Claims And Cost Differentials Between virtuwell- And Non-virtuwell-Treated Episodes, By Condition, 2009-12

Episode type (severity level)	Treated episodes (claims)		Average cost (\$)		Differential
	virtuwell	Non-virtuwell	virtuwell	Non-virtuwell	
Acute sinusitis, w/o surgery (1)	1,308	22,455	87.70	166.60	78.90****
Lower genitourinary system infection, not sexually transmitted, w/o complication or comorbidity (1)	943	10,236	74.36	201.97	127.61****
Conjunctivitis (1)	471	13,176	61.30	130.30	69.01****
Chronic sinusitis, w/o comorbidity, w/o surgery (1)	368	16,292	302.79	332.13	29.34****
Monilial infection of vagina (yeast) (1)	201	1,858	58.99	142.13	83.13****
Otitis media, w/o complication, w/o comorbidity, w/o surgery (1)	163	28,206	77.85	158.88	81.02****
Lower genitourinary system infection, not sexually transmitted, w/o complication, w/ comorbidity (1)	102	1,773	104.50	219.12	114.62****
Lower genitourinary system infection, not sexually transmitted, w/o complication, w/ comorbidity (2)	86	1,584	134.54	262.41	127.88****
Chronic sinusitis, with comorbidity, w/o surgery (2)	80	2,921	573.27	584.32	11.05
Otolaryngology diseases signs and symptoms (1)	74	17,322	67.46	128.32	60.86****
Acne (1)	66	9,485	178.03	361.20	183.17****
Allergic rhinitis, w/o surgery (1)	49	7,616	137.69	307.20	169.50****
Acute bronchitis, w/o comorbidity (1)	35	15,971	131.81	181.87	50.06***
Other infections of ear/nose/throat, w/o surgery (1)	32	6,296	113.98	195.59	81.61****
Other inflammation of skin, w/o complication, w/o comorbidity (2)	30	20,487	130.57	237.84	107.28****
Overall (weighted for virtuwell episode type distribution)	4,008	175,678	113.13	201.16	88.03

SOURCE Member claims data analysis, HealthPartners Inc., May 1, 2009–April 30, 2012. **NOTES** We approached this analysis by looking at overall comprehensive experience in and outside of virtuwell. We included all episodes not seen by virtuwell in the comparison group as long as the episode did not meet the outlier criteria. In this approach, we leveraged the clinical homogeneity of the Symmetry Episode Treatment Groups (ETG) software that enables a valid comparison considering the condition severity and patient-level comorbidities at play. We also conducted parallel matched case control studies in a 5:1 and 25:1 control to case ratio using the episode type, age, and sex of the patient. The results had the same statistical significance and no material difference in cost differential by episode type. In the end, we used the population-based analysis approach as the best representation of the value statement. The weighting used in the overall cost differential was simply holding the non-virtuwell experience to the same distribution of care actually received by virtuwell. **** $p < 0.01$ **** $p < 0.001$

than urgent care visits ($p < 0.0001$), and \$159–\$469 less than emergency department visits ($p < 0.0001$) (Exhibit 2). Not only did virtuwell treatment for those three high-volume conditions cost less, but it also had an episode resolution rate—that is, no face-to-face follow-up care was required¹⁴—of 89–95 percent, a rate similar to those of convenience clinics (Exhibit 3).

NO EVIDENCE OF INCREASED PATIENT DEMAND

We are sometimes asked if virtuwell's around-the-clock availability increases patient demand for health care services, potentially eroding savings realized by the lower per episode cost. According to the postvisit patient surveys we have conducted since 2010, at least 90 percent of virtuwell visits displace in-person visits. Only about 6 percent of virtuwell cases to date have replaced a “watch and wait” or home care approach.

Given the cost of a virtuwell visit, we estimate that this slight increase in utilization reduces the cost differential between virtuwell- and non-virtuwell-treated episodes by about 10 percent.

AVOIDANCE OF ANTIBIOTICS IN TREATING

ACUTE BRONCHITIS Discussions of online care often prompt questions about clinical safety and effectiveness, particularly with regard to prescription medication. Virtuwell clinicians prescribe only simple medications such as antibiotics and antifungals—no narcotics or so-called lifestyle medications, those that treat nonpainful, non-life-threatening conditions such as baldness. Even so, compliance with prescribing guidelines is as important in the online care venue as it is in any other setting.

We analyzed all claims incurred at virtuwell between October 1, 2010, and June 30, 2012, for the avoidance of antibiotics in the treatment of acute bronchitis. This metric of process quality, included in the commonly used Healthcare Effectiveness Data and Information Set, measures the avoidance of dispensing an antibiotic for patients who do not present with a comorbidity or infection that would otherwise indicate a prescription. Misuse and overuse of antibiotic treatment of adults with acute bronchitis is of clinical concern because it can lead to antibiotic drug resistance.¹⁵

Our study found that antibiotics were

EXHIBIT 2

Claims Cost Differentials Between virtuwell- And Non-virtuwell-Treated Episodes, By Condition And Origination Of Episode, 2009–12

Condition/origination of episode	Number of claims	Average cost (\$)	Differential to virtuwell (\$)	Median cost (\$)	Range (\$)	
					25th percentile	75th percentile
ACUTE SINUSITIS WITHOUT SURGERY						
Emergency department	77	373.33	293.49****	357.28	218.11	538.83
Urgent care	2,483	167.59	87.74****	135.82	115.97	187.21
Office visit	15,525	183.07	103.22****	154.77	125.64	212.84
Convenience clinic	3,935	99.88	20.04****	76.87	60.57	100.33
virtuwell	1,227	79.85	0.00	49.96	45.81	71.03
Other	516	150.59	70.74	102.42	44.70	214.36
INFECTION OF LOWER GENITOURINARY SYSTEM, NOT SEXUALLY TRANSMITTED, WITHOUT COMPLICATION, WITHOUT COMORBIDITY						
Emergency department	424	537.34	468.70****	517.17	377.75	698.37
Urgent care	1,866	192.53	123.88****	159.22	128.63	211.87
Office visit	5,884	210.48	141.84****	170.93	136.84	239.18
Convenience clinic	1,331	97.89	29.25****	70.95	61.18	96.79
virtuwell	914	68.64	0.00	43.65	42.14	72.60
Other	760	156.43	87.79	71.45	29.56	219.20
CONJUNCTIVITIS						
Emergency department	100	218.58	158.57****	221.96	151.56	278.47
Urgent care	1,878	141.54	81.53****	129.45	109.01	154.89
Office visit	9,308	139.53	79.52****	135.18	101.79	159.81
Convenience clinic	2,121	80.08	20.07****	67.32	59.16	77.61
virtuwell	465	60.01	0.00	51.73	49.00	53.93
Other	775	130.50	70.49	111.93	85.37	165.00

SOURCE Member claims data analysis, HealthPartners Inc., May 1, 2009–April 30, 2012. **NOTES** The Episode Treatment Groups (ETG) software ensures that episodes between virtuwell and non-virtuwell visits are clinically homogeneous. Cost data are highly skewed even after handling outlier cases, so we used the nonparametric test to determine significance. Means and medians by location were provided to give insight into the distribution, and 25th and 75th percentiles have been added for a range description. **** $p < 0.001$

Episode Resolution Rate Comparison Between *virtuwell* And Convenience Care Venues

Episode type	No. of episodes originating with <i>virtuwell</i>	<i>virtuwell</i> resolved	<i>virtuwell</i> resolution rate (%)	No. of episodes originating with convenience care	Convenience care resolved	Convenience care resolution rate (%)
Acute sinusitis without surgery	1,227	1,099	89.57	3,935	3,598	91.44
Infections of lower genitourinary system	914	843	92.23	1,331	1,182	88.81
Conjunctivitis	465	439	94.41	2,121	2,023	95.38

SOURCE Member claims data analysis, HealthPartners Inc., May 1, 2009–April 30, 2012.

appropriately avoided in eighty-one of the eighty-six acute bronchitis episodes treated by *virtuwell*, for an overall effectiveness rate of 94.2 percent. Investigation into the five episodes that did result in an antibiotic prescription showed that the patients in question received the prescription in another care setting subsequent to their *virtuwell* visit. In other words, only a small percentage of *virtuwell* patients with acute bronchitis received an antibiotic, and they did so only via another venue of care.

The rate of appropriate prescribing behavior for this condition in the *virtuwell* setting was significantly higher than in our commercially insured population. It was also higher than any of the national benchmarks available through the National Committee for Quality Assurance's Quality Compass, in which the 2011 national average, for example, was 22.0 percent.¹⁶

Caution is warranted, given the relatively small sample of cases we looked at, but this finding suggests that a well-designed online venue can provide appropriate care. Additionally, it may suggest that the online venue better supports providers trying to use antibiotics appropriately or that patients inclined to push clinicians for antibiotics may be less successful in doing so when treated online.

CUSTOMER SATISFACTION Each *virtuwell* customer who completes a visit and receives a treatment plan is sent a follow-up e-mail within a set period of time specific to his or her condition, usually within a few days. The message suggests that the customer should be feeling better and invites him or her to request a callback from a *virtuwell* nurse practitioner or physician assistant if not.

In this same message, customers are invited to respond to an online survey about their experience with the service. Most questions ask for simple yes-or-no answers, although we also invite open-ended comment. The overall response rate to the survey has been approximately 11 percent.¹⁷ We do not connect customers' responses to their cases or health information, nor do we

make multiple requests for feedback.

The survey responses from the time the service launched have consistently suggested high rates of customer satisfaction across key metrics such as whether the service is simple to use (93.5 percent "yes, definitely"; 6.0 percent "yes, kind of"; and 0.6 percent "no") and whether the customer would highly recommend the service to friends and family (94.2 percent "yes, definitely"; 3.4 percent "yes, kind of"; and 2.4 percent "no").

Other questions indicate similarly strong acceptance of the service, including whether participants received enough information in their treatment plan (95.9 percent "yes, definitely"; 2.8 percent "yes, kind of"; and 1.3 percent "no") and whether they have confidence and trust in the quality of care received (92.7 percent "yes, definitely"; 5.4 percent "yes, kind of"; and 1.9 percent "no"). We also ask customers to estimate how much time they saved by using *virtuwell*; on average, *virtuwell* customers report that using the service saved them approximately 2.5 hours per visit.

Discussion

Again, although we do not present these findings as generalizable to all online care delivery models, in our view they suggest that thoughtful, well-designed online care can save health care costs and increase patients' access to health care.

The displacement of a primary care case from other traditional venues to *virtuwell* has resulted in an average claims cost differential of \$88.03 and an estimated time savings to the patient of 2.5 hours. The possibility of extrapolating such savings to larger volumes of cases is compelling.

We find that large employer groups, for example, are particularly intrigued by the possible cost and productivity savings for their populations on aggregate, if more of the simple cases within their populations were to be diverted to a service such as *virtuwell*. Even though employers' cost concerns tend to focus on the prevention and management of higher-cost chronic conditions such as cardiovascular disease,

diabetes, and cancer, the possibility of reducing the cost of treating urinary tract infections, sinusitis, and other simple conditions is welcome.

Also, given that a typical primary care visit can result in missed work time for employees, the potential of major increases in productivity is similarly appealing.

Some of the most enthusiastic consumer responses to *virtuwell* have come from patients in areas, both urban and rural, where bricks-and-mortar convenience care options, such as retail clinics, are limited or nonexistent. Patients tell us, for example, that before *virtuwell* their only option for off-hours care for a urinary tract infection was an emergency department twenty miles or more away, with resulting costs in time, inconvenience, and expense associated with that care venue.

Although lower-cost, more convenient options have always been attractive to consumers, we believe that this is especially true now, given the growing number of consumers with high-deductible health plans that require them to pay for much of the cost of care from their own pockets. Even at the full retail price of \$40 per visit, a *virtuwell* visit costs far less than an in-person visit and, especially, an emergency department visit.

We routinely hear from patients, both insured and uninsured, that the availability of *virtuwell* made the difference as to whether they could obtain or afford convenient, high-quality care for themselves or their children. These examples and others like them underscore the potential of well-designed online care venues to increase care access by lowering cost and improving convenience.

But for online care to deliver on its potential, a reexamination of the regulatory environment is required. Following the launch of the service in Minnesota and Wisconsin, we have routinely received inquiries from large employer groups, with employees located in other states, about when the service might be available nationally.

We will soon extend the service to consumers in a number of additional states, despite the fact that variations in state regulations governing a service such as *virtuwell* have presented barriers to doing so. Statutes in many states appear to discourage a service such as *virtuwell* in allowing legal prescribing only during a face-to-face clinical encounter or when an existing clinician-patient relationship exists. Some state statutes require clinicians to be located in the same state as the patient, or require the involvement of an in-state supervising physician.

We acknowledge and support the importance of regulations addressing abuses associated with

health care in online environments, such as unsafe and irresponsible online pharmacies. In that sense, however, we also believe that it is useful to consider how the evolution of care innovations tends to prompt review of existing regulations. For example, we applaud the trend toward multi-state licensing strategies for clinicians—a trend that recognizes how thoughtfully applied technological advancements can break down outmoded or unnecessary geographic barriers.¹⁸

We believe that as services such as *virtuwell* continue to establish a track record for safety, effectiveness, affordability, and consumer acceptance, policy makers at federal, state, and local levels should review and consider revising statutes governing this category of care to enable prudent advancements. As referenced above, for example, Medicare now authorizes *virtuwell* for patients in our Medicare health plan, but we believe that the fee-for-service Medicare program and state Medicaid plans have much to gain by considering how to use online care delivery such as ours to lower costs for common conditions.

Conclusion

Online care delivery remains novel to many physicians and consumers. As with any health care innovation, it is common for there to be a “wait and see” period during which clinicians, payers, consumers, and others gauge the promise of the new approach.

As an integrated care organization, HealthPartners appreciated the opportunity to hear firsthand from many constituents when we first started talking publicly about the idea of *virtuwell*.

Patients wanted to know they could receive truly safe and effective treatment without a face-to-face encounter. Our employer groups and other health plans were concerned about cost savings, legality, consumer acceptance, and, as suggested above, whether an inexpensive and easily available primary care service might actually increase utilization and cost. Further questions were raised about appropriate prescription practices, privacy and security concerns, technological impediments to the care experience, and other aspects of the service.

In the two years since the launch of *virtuwell*, as we continue to refine and improve the care experience, we have gradually been able to provide meaningful answers to these questions by sharing results. We believe that our experience is an indicator that, given sufficient attention to experience design, clinical rigor, and quality, the core challenges surrounding online care delivery are surmountable and that industry efforts

to accelerate similar innovations are warranted.

It is the role and responsibility of health care providers to develop and implement the tools that support meaningful patient engagement and decision making, and for regulatory bodies to work speedily to enable their responsible implementation.

Unlike some types of online businesses that can focus on price alone, or quality alone, online

care venues must provide safe, effective care; good customer experiences; and affordability simultaneously. Continued thoughtful work and design in this arena are warranted and important. We believe that this will contribute to creating the effective, accessible, and affordable health solutions that our nation so badly needs. ■

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NOTES

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- In referred cases, the customer is asked for his or her ZIP code and presented with a list of convenient primary care providers. The service does not ask for registration, payment, or insurance information until the customer's answers suggest that his or her condition is within the scope of the service, our intention being to allow any user to test the service before committing to payment. Today we see a much lower proportion of triaged cases to paid cases than we did in *virtuwell*'s early months (approximately 1.4:1 versus 3:1), which we attribute to customers' learning more about *virtuwell* over time.
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- As have others in consumer sectors that have migrated a portion of their consumer transactions online, we have incorporated hundreds of e-commerce security protocols into the system design. We chose to construct the entire system in-house, in partnership with experienced interactivity developers, instead of selecting an off-the-shelf system upon which to base the service.
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- Interestingly, chronic sinusitis with comorbidity was the only condition where the difference is not statistically significant. We believe that this is a function of two things: (1) the ETG software and how an acute sinusitis visit is longitudinally linked with subsequent care, which could convert the *virtuwell* visit to chronic sinusitis; and (2) the higher degree of variability in treatment and costs associated with chronic sinusitis. Despite the nonsignificant result, the direction of the cost differential is consistent.
- After we confirmed that the average episodic costs per setting were not equal using the Kruskal-Wallis test ($p < 0.0001$), the Wilcoxon-Mann-Whitney non-parametric test was applied with the Bonferroni adjustment for the number of comparisons.
- The resolution rate represents episodes that have no additional face-to-face visits associated with them after the initial encounter. If a *virtuwell* visit or other visit requires additional care beyond the first visit, the episode is classified as "not resolved." In this way, the inverse of the "resolved" rate is not a measure of adverse events, rather simply that more care was sought to resolve the issue.
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- Although we recognize that this is a relatively low response rate and susceptible to selection bias, we believe that the strength of the results is noteworthy and suggestive, at a minimum, as an indicator of highly favorable customer response. We are moving to make changes to our methodology to increase response rates (by implementing multiple requests to answer our survey) and to link responses back to individual demographics.
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In this month's *Health Affairs*, Patrick Courneya and coauthors, all associated with HealthPartners in Minnesota, report on initial results of an online clinic service called *virtuwell* that was launched in 2010. After more than 40,000 cases, they found an average \$88 lower cost per episode compared with care received in traditional settings, plus strong indicators of clinical effectiveness and consumer satisfaction. They see growing demand for such services, but also a need for regulatory reform to remove outmoded barriers to innovations that may lead to cost reduction and improvements in access and convenience.

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