

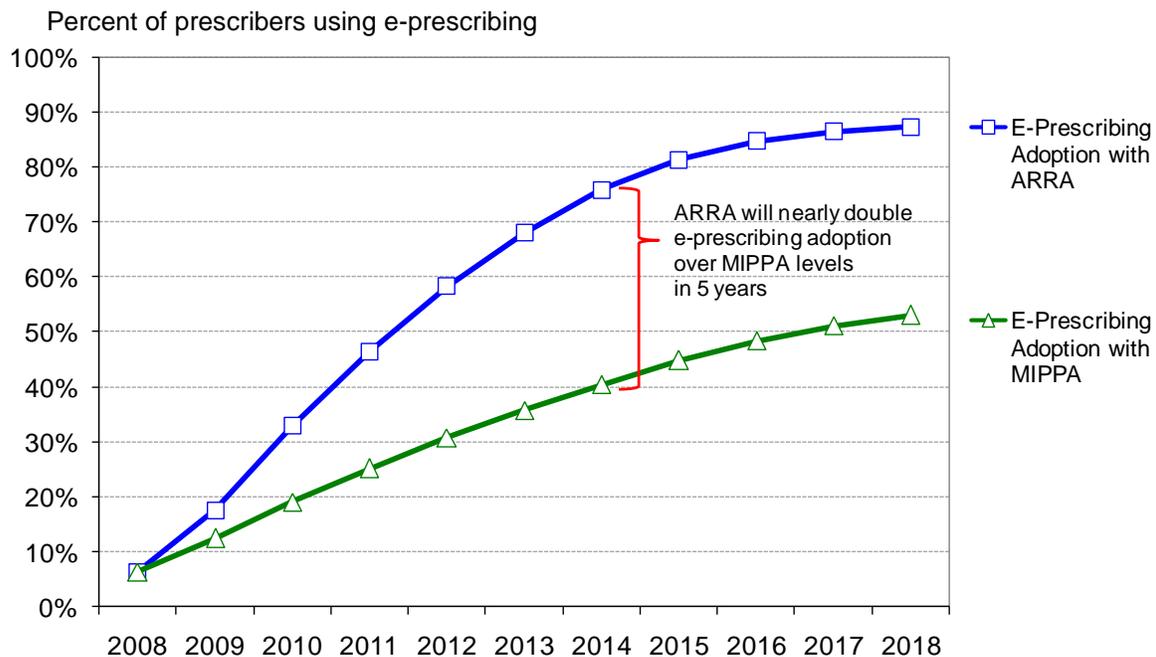


## American Recovery and Reinvestment Act Will Save Billions and Reduce Medication Errors by Accelerating E-Prescribing

At the request of the Pharmaceutical Care Management Association, Visante has estimated the impact of health care provisions in the American Recovery and Reinvestment Act of 2009 (ARRA) on the adoption of electronic prescribing (e-prescribing) and resulting savings and safety gains. ARRA provides grants and financial incentives for physicians and other providers to implement electronic health records (EHRs) that include e-prescribing functionality. These measures promise to encourage the adoption of e-prescribing beyond levels anticipated last year when a more targeted program to spur e-prescribing was passed as part of the Medicare Improvements for Patients and Providers Act of 2008 (MIPPA) (see Exhibit 1).

### Exhibit 1:

### ARRA Will Nearly Double E-Prescribing Adoption Over MIPPA Levels by 2014



### Major Findings:

- With increasing adoption under ARRA, e-prescribing alone will save the federal government \$22 billion in drug and medical costs during the next 10 years, which more than offsets the government's anticipated \$19 billion investment to modernize the nation's entire health information technology infrastructure.
- ARRA will increase e-prescribing adoption to more than 75 percent of prescribers in just five years, a more than four-fold increase from the usage rate today, and nearly double the rate anticipated after the passage of MIPPA.
- Under ARRA, e-prescribing will help prevent some 3.5 million serious medication errors known as adverse drug events (ADEs) that would have otherwise sickened, hospitalized, or killed patients over the next ten years (see Exhibit 2).

Exhibit 2:

**E-Prescribing to Prevent 3.5 Million Harmful Drug Errors and Save the Federal Government \$22 Billion Under Adoption Levels Reached With ARRA, 2009-2018**

	<b>Impact of E-prescribing Under ARRA</b>
<b>Drug and Medical Cost Savings</b>	
Federal Government (\$ billions)	\$22.0
All Payors (\$ billions)	\$56.2
<b>Adverse Drug Events Prevented</b>	3,510,000
<b>Hospitalizations Prevented</b>	585,000

Note: These estimates capture only the savings and safety gains associated with e-prescribing and not potential gains associated with other aspects of electronic health records. Also, estimated drug and medical cost savings do not reflect the \$19 billion anticipated federal investment in health IT under ARRA.

**Why E-Prescribing Saves Lives and Money: Four Key Components**

“E-prescribing is much more than the simple electronic transmission of a prescription between prescriber and pharmacy,” according to the Centers for Medicare and Medicaid Services. In fact, electronic transmission is just one of four key components of full e-prescribing. These four components include:

1. **Prescription Options:** Full e-prescribing provides physicians with clinical and cost information on prescription options that allows them to better counsel consumers on which medications—including generic drugs—will be the safest and most affordable choices. This information is provided to prescribers in real time by health plans and pharmacy benefit managers (PBMs).
2. **Patient Medication Histories and Safety Alerts:** Comprehensive patient medication histories tell prescribers not only what they have prescribed, but what other doctors have prescribed. E-prescribing systems make this crucial information available to doctors in real time so that they can help consumers avoid adverse outcomes from events such as drug-drug interactions. If such problems are detected, full e-prescribing systems automatically send prescribers electronic safety alerts before the prescription is sent to the pharmacy.
3. **Pharmacy Options:** Information on preferred pharmacy options—including both retail and mail-service options—tells prescribers which pharmacies will be least expensive for consumers in terms of out-of-pocket costs. Reduced out-of-pocket costs—particularly for Medicare beneficiaries with chronic conditions—have been shown to increase the likelihood that consumers will take their medication as prescribed.
4. **Transmittal to Pharmacy:** Electronic data entry and transmittal of the prescription to the pharmacy helps pharmacists to avoid transcription errors due to illegible handwriting. It also reduces wait times for patients, since pharmacies can start processing prescriptions immediately after they are written.

Approximately 70 percent of the safety and savings advantages of e-prescribing result from the first three components. Each of these components involves providing physicians with vital information *before* prescriptions are written in order to support sound clinical decision making in consultation with consumers.

**Exhibit 3:**

**E-prescribing Increases Use of Generics and More Affordable Brands**

Impact of e-Prescribing	Result On Costs	Key Studies Documenting the Impact of e-Prescribing
<p><b>Increased Use of Generics and More Affordable Brands</b></p>	<p>1% to 4% reduction in drug spend</p>	<ul style="list-style-type: none"> <li>• Electronic prescribers' pharmacy costs decreased 3-3.5% due to increased use of preferred formulary brands and generics in highly managed market. (Mass eRx Collaborative 2006)<sup>1</sup></li> <li>• E-prescribing was associated with a 3.3% increase in tier 1 prescribing (Archives of Internal Medicine, 2008)<sup>2</sup></li> <li>• Generic use increased 4.8% vs. control. (Sierra/SW Medical 2006)<sup>3</sup></li> <li>• Increased generic use from 56.7% to 67.6%. (HAP/HFMG 2006)<sup>4</sup></li> <li>• E-prescribing reduced drug costs 5.3%. (JMCP 2005)<sup>5</sup></li> <li>• Generic prescribing rates 3.7% higher than control group. Cost per prescription for the study group was 10.1% lower than the control group. (WellPoint/Wellinx analysis 2005)<sup>6</sup></li> <li>• Drug costs reduced 11% for eRx vs. control group. Average cost per Rx \$4.99 lower in the eRx group. (Ann Fam Med 2004)<sup>7</sup></li> <li>• Ability to transmit Rx directly to mail-service pharmacy via eRx increased use of mail-service 10%, twice the increase for control. (Drug Benefit Trends 2003)<sup>8</sup></li> <li>• E-prescribing increased formulary compliance by more than 5% and generic utilization by more than 7% (Aetna 2008)<sup>9</sup></li> </ul>

<sup>1</sup> eRx Collaborative Press release, eRx Collaborative Boosts Patient Safety with 8,000 Prescriptions Changed in June, September 5, 2006.

<sup>2</sup> Fischer, et. al., "Effect of Electronic Prescribing With Formulary Decision Support on Medication Use and Cost," *Archives of Internal Medicine*, 168 (22), 2008, pages 2433-2439.

<sup>3</sup> Morrow C, Coleman M. The Role of eRx in Lowering Physician Drug Expenses. White paper published by Southwest Medical Associated, 2006.

<sup>4</sup> Walsh M. ePrescribing Initiative Update. Presentation to Health Alliance Plan & Henry Ford Medical Group, Detroit, MI, January 2007.

<sup>5</sup> McMullin et al. Twelve-Month Drug Cost Savings Related to Use of an Electronic Prescribing System With Integrated Decision Support in Primary Care. *Journal of Managed Care Pharmacy* 2005; 11(4):322-332.

<sup>6</sup> ePrescribing's Impact on Cost and Quality: Implications for Pay-for-Performance Initiatives. Presentation by Leo Barbaro, Vice President, Anthem BCBS Connecticut, Health Information Technology Summit, March 2005.

<sup>7</sup> McMullin ST, Lonergan TP, Ryneerson CS, et al. Impact of an evidenced-based computerized decision support system on primary care prescription costs. *Ann Fam Med*. 2004;2(5):494-498

<sup>8</sup> Wogen SE, Fulop G, Heller J. Improving the Efficiency of the Prescription Process and Promoting Plan Adherence. *Drug Benefit Trends*, 2003,15(9):35-40.

<sup>9</sup> Aetna's New Jersey E-Prescribing Pilot Shows 5-7 Percent Increase in Use of Generic and Formulary Drugs, Aetna, October 8, 2007.

Exhibit 4:

**E-prescribing Increases Adherence, Reduces Errors, and Prevents Hospitalizations**

Impact of e-Prescribing	Result On Drug and Medical Costs	Key Studies Documenting the Impact of e-Prescribing
<p><b>Increased Patient Adherence, Disease Management, and Coordinated Care</b></p>	<ul style="list-style-type: none"> <li>0.25% reduction in hospital, ER, and physician costs</li> <li>1% increase in utilization of target chronic drug categories, with resulting 0.4% increase in total drug costs</li> </ul>	<ul style="list-style-type: none"> <li>Chronic disease accounts for 83% of health care expenditures, focused in the top 4-5 conditions and in patients with multiple chronic conditions, where eRx can have enormous positive impact.<sup>10</sup></li> <li>\$40 billion in annual savings for US from improved chronic care and preventive care from EHR. (RAND 2005)<sup>11</sup></li> <li>Diabetes disease management saves 15% of medical/hospital costs for diabetic patients. (HealthPartners 2007)<sup>12</sup></li> <li>Patients with hyperlipidemia had a medication compliance rate of 90% compared to a 50% benchmark. (Project ImPACT 2000)<sup>13</sup></li> <li>E-prescribing helped increase use of ACE-inhibitors for hypertensive diabetics by 86%. (CITL 2003)<sup>14</sup></li> </ul>
<p><b>Prevention of ADE-related Hospitalization, ER &amp; Physician Visits</b></p>	<ul style="list-style-type: none"> <li>Full adoption of e-prescribing could avoid 35% of preventable ambulatory ADE, or 286 ADE per 1 million Rx filled</li> <li>ADE avoidance reduces hospital, ER, and physician costs by 0.05%</li> </ul>	<ul style="list-style-type: none"> <li>1.5 million preventable ADE's per year, with a cost of \$1,983 per ADE. Could avoid 35% of ambulatory preventable ADE's with e-Prescribing. (IOM 2006)<sup>15</sup></li> <li>0.4% hospital admissions and 2.6% of ED visits due to preventable ADE's, with costs of \$10,375 per hospitalization and \$1,444 per ED visit. (IOM 2006)<sup>16</sup></li> <li>8 million adverse drug events occur in the outpatient setting each year; 30-50% could be avoided with computerized physician order entry (CPOE). Approx 2 million ADEs avoided for total savings of \$3.5 billion. (RAND 2005)<sup>17</sup></li> <li>1,700,000 total e-prescriptions with over 150,000 Rxs changed or cancelled due to drug to drug interaction warnings, and over 11,000 prescriptions changed or cancelled due to drug/allergy warnings, for a total of 9.5% of New Rx. (HAP/HFMG 2006)<sup>18</sup></li> </ul>

<sup>10</sup> Anderson, G., Analysis of Medical Expenditure Panel Survey (MEPS) data, Johns Hopkins Bloomberg School of Public Health, 2001.

<sup>11</sup> Hillestad R et al. Can Electronic Medical Record Systems Transform Health Care? Potential Health Benefits, Savings, and Costs, *Health Affairs*, 2005; 24(5):1103-1117.

<sup>12</sup> Beaulieu et al.: The Business Case for Diabetes Disease Management for Managed Care Organizations. Forum for Health Economics & Policy, Volume 9, Issue 1. Berkeley Electronic Press, 2006

<sup>13</sup> Bluml BM, McKenney JM, Cziraky MJ. Pharmaceutical care services and results in project ImPACT: hyperlipidemia. *J Am Pharm Assoc.* 2000;40(2):157-165.

<sup>14</sup> Johnston D, Pan E, Middleton B, Walker J, Bates DW. The value of computerized order entry in ambulatory settings. Boston, MA: Center for Information Technology Leadership; 2004.

<sup>15,16</sup> Institute of Medicine, Preventing Medication Errors, National Academies Press, Washington, DC, 2006.

<sup>17</sup> Hillestad, R., et al. 2005.

<sup>18</sup> Walsh, M., Health Alliance Plan, 2007.

## Methodology

Visante modeled the impact on the adoption of e-prescribing of approximately \$19 billion in health information technology (HIT) investments by the federal government, including incentives being paid to physicians and other providers by Medicare and Medicaid, with penalties for non-adopters starting in 2015.

Based on estimates by the Congressional Budget Office (CBO) and American Academy of Family Physicians (AAFP), the cost for electronic health records for providers is roughly \$25,000 to \$50,000 in startup expenses during the first year plus \$3,000 to \$9,000 per provider per year in maintenance costs in subsequent years. Given the overall downward trend in the cost of computer technology, competition from new market entrants such as Wal-Mart, and increasing economies of scale in the HIT industry as the EHR technology becomes more diffuse, we assume average start-up costs during the 2009-2018 period will be \$20,000 to \$40,000 per provider, with an additional \$2,000 to \$6,000 in maintenance costs during subsequent years.

Provisions in ARRA will provide up to \$44,000 per provider in federal incentive payments. While these incentives may not fully cover the entire cost of EHR systems, pay-for-performance measures implemented by the private sector will likely provide further financial inducement for providers to adopt the technology. Likewise, changing practice guidelines and standards of care may also induce providers to adopt EHRs.

Consistent with CBO estimates, we assume that nearly 90 percent of providers will have adopted EHR technology by 2018. In 2009, we estimate that less than 20 percent of practicing physicians are using full-function e-prescribing, either as a stand-alone system or within an EHR. We anticipate that larger practices will generally adopt the technology prior to smaller and solo practices. Likewise, we anticipate that the greatest resistance to technology adoption will likely come from physicians anticipating retirement within 5 years or less.

Based on these assumptions relative to physician adoption of EHRs, we have estimated savings expected to result from the corresponding increase in the use of e-prescribing technology imbedded in such systems. As detailed in exhibit 3, the cost of prescriptions flowing through e-prescribing systems is reduced by 1 percent to 4 percent due to the greater use of generics and preferred brands. To be conservative, we have assumed a 1 percent decrease in drug costs for prescription volume expected to flow through e-prescribing systems during the 2009-2018 period.

In addition, we have estimated a 0.3 percent reduction in projected expenditures on hospital and physician services for patients receiving care from physicians that have adopted e-prescribing during 2009-2018. As detailed in exhibit 4, e-prescribing reduces medical costs by eliminating prescription errors that cause adverse drug events and improving patient adherence, disease management, and care coordination.