



**Options to Increase E-Prescribing in Medicare:
Reducing Medication Errors and Generating Up to \$29 Billion in Savings
For the Federal Government**

Prepared for



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Introduction:

This report summarizes the findings of research undertaken by the Gorman Health Group (GHG) on behalf of the Pharmaceutical Care Management Association (PCMA) to estimate the savings and safety potential associated with government policies that could increase the use of electronic prescribing (e-prescribing). Based on a comprehensive literature review and structured interviews with more than 25 national experts, we outline policy options that move the health system toward the Institute of Medicine's (IOM) recommendation that e-prescribing be adopted system-wide by 2010.

Major Findings:

- Government options to increase e-prescribing could reduce federal health expenditures by up to \$29 billion over the next decade and help physicians to prevent nearly 1.9 million adverse drug events (ADE's) over the same time period, where individuals otherwise would have been sickened, hospitalized, or killed by serious medication errors.
- Approximately 70 percent of the safety and savings advantages of e-prescribing result from doctors being given immediate access to patient medication histories, safety alerts, preferred drug options, and pharmacy options so that they can better counsel patients on safe and affordable choices *before* prescriptions are transmitted to the pharmacy.
- Government action—including the three options below—could potentially expand e-prescribing to encompass nearly 80 percent of prescriptions by 2017—more than *double* the share of prescriptions expected to flow through e-prescribing systems by that time if no government action is taken.
 - ⇒ Option 1—Requirement and Incentive: Implementing *a requirement* that e-prescribing is used for all Part D prescriptions by 2010 *combined with annual incentives* for participating physicians equal to 1 percent of their allowed Medicare payments could reduce 2008-2017 federal healthcare costs by \$26 billion and help physicians avoid 1.9 million adverse drug events over the next ten years.
 - ⇒ Option 2—Requirement Only: Implementing *only a requirement* that all Part D prescriptions be written electronically by 2010 could reduce 2008-2017 federal healthcare costs by \$29 billion and help physicians avoid 1.6 million adverse drug events over the next ten years.
 - ⇒ Option 3—Incentives Only: Implementing *only incentives* for participating physicians equal to 1 percent of their allowed Medicare payments could reduce 2008-2017 federal healthcare costs by \$2 billion and help physicians avoid 300,000 adverse drug events over the next ten years.

Detailed Findings:

Full E-prescribing Supported by Four Pillars

“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.¹ In fact, electronic transmission is just one of *four* pillars that support full e-prescribing. Together, the four pillars of e-prescribing could bring new levels of safety and affordability to health care as the essential foundation of America’s 21st century health IT infrastructure. These pillars 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 cuts down wait times for patients, since pharmacies can start processing prescriptions immediately after they are written.

The American Medical Association (AMA) has acknowledged the benefits of e-prescribing functionalities including the ability to review patient medication histories, formulary information, and safety alerts in order to help reduce the risk of adverse drug events and out-of-pocket costs for patients. AMA characterizes e-prescribing as an “attractive first step” into health information technology (HIT) for “physicians who don’t want to bite off more than they can chew.”²

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

Providing prescribers real-time access to patient medication histories and prescription options through e-prescribing systems will also counterbalance the influence of pharmaceutical industry representatives and direct-to-consumer advertising. E-prescribing also promises to increase the number of patients that take necessary prescriptions by (a) ensuring that pharmacies receive prescriptions and (b) informing physicians if patients have not picked them up. While this will likely increase appropriate drug utilization for some patients, e-prescribing will nonetheless decrease drug and medical costs overall.

E-prescribing could help prevent millions of adverse drug events

A minimum of 1.5 million preventable medication errors occur each year in hospitals, nursing homes, and ambulatory care settings, according to the Institute of Medicine (IOM). IOM has recognized e-prescribing as one of the most promising tools to reduce such errors and recommends that all prescriptions be written electronically by 2010.³ We estimate that government options to increase e-prescribing in ambulatory care settings ***could help physicians prevent as many as 1.9 million adverse drug events over 2008–2017 period, where individuals would otherwise have been sickened, hospitalized, or killed by serious medication errors.***

Physician adoption of e-prescribing falls far short of IOM recommendations

Despite clear safety and cost advantages, GHG estimates less than 30,000 of the more than 900,000 prescribers in the United States actively use full e-prescribing systems. Although this market penetration is low, it is increasing. If current marketplace trends continue, we estimate that e-prescribing will expand to encompass 7 percent of prescriptions by 2010, 18 percent by 2013, and 34 percent of prescriptions by 2017. Obviously, this falls far short of IOM's recommendation that *all* prescriptions be written electronically by 2010. We estimate that ***with government policies to increase physician adoption, e-prescribing could expand to encompass 64 percent of prescriptions by 2013, and 79 percent of prescriptions by 2017.***

E-prescribing could save the federal government almost \$30 billion during next decade

In addition to reducing errors, e-prescribing also promises to have a “profound impact” on reducing costs, according to the Centers for Medicare and Medicaid Services.⁴ Numerous studies show that e-prescribing is associated with reduced medication errors, the use of more cost-effective medications such as generics, improved patient compliance, and other savings.

⇒ We estimate that government options to increase e-prescribing could reduce federal health expenditures by up to \$29 billion over the 2008-2017 period.

These estimates are supported by evidence from e-prescribing programs already implemented in the private sector. For example, the Massachusetts eRx Collaborative, which includes more than 3,000 active e-prescribers generating more than 400,000 e-prescriptions each month, has increased safety as more than 2 percent of electronic prescriptions were changed as a result of drug-drug or drug-allergy alerts. In addition, e-prescribing reduced drug costs by 3–3.5 percent.⁵

In the Detroit area, the three major automakers banded together to create financial incentives for physicians to use electronic prescribing. The greatest success was created with Henry Ford Medical Group and Health Alliance Plan, where the health plan fully funded the costs of e-prescribing, and the medical group made e-prescribing a requirement for the 800 physicians practicing in the group. Henry Ford physicians have generated more than 2 million electronic prescriptions, and increased generic utilization from 56.7 percent to 67.6 percent. Approximately 1 percent of prescriptions are changed or cancelled during the e-prescribing process due to drug/drug or drug/allergy warnings. Seventy-two percent of Henry Ford physicians use e-prescribing for more than 80 percent of their scripts, and 85 percent agree that e-prescribing has improved the practice of medicine.⁶

Both of these programs were successful, in part, because the payer(s) implementing them were dominant in their region. Other regions are now attempting to replicate this “collaborative payer-sponsored model,” but find it difficult to get all the major health plans to work together with a common funding/incentive program that creates a clear and compelling reason for physicians to utilize e-prescribing. Physicians often complain that they are dealing with 10 or 20 different health plans, each of which is asking for something different.

Medicare uniquely positioned to spur broader adoption of e-prescribing

As discussed above, the most successful private-sector e-prescribing initiatives have been regional and typically only achieve significant physician adoption when they are backed by that area’s dominant health plan or payer. With the implementation of Medicare Part D, the federal government now is the dominant national payer for prescription drugs prescribed by most physicians and uniquely positioned to dramatically accelerate physician uptake of e-prescribing.

Historically, Medicare has provided powerful impetus for the adoption of health information technology. For example, due to regulatory administrative simplification requirements nearly all Medicare Part B reimbursement claims are now filed by physicians electronically. Likewise, pharmacy reimbursement claims were required to be filed electronically due to provisions passed in the 1988 Medicare Catastrophic Coverage Act. Although the Catastrophic Coverage Act was subsequently repealed, it nonetheless led to virtually all pharmacy claims becoming electronic.

Fortunately, CMS has been working to establish and test e-prescribing standards for the Medicare Part D program that could serve as a model for the entire market. These standards help ensure the ability of e-prescribing systems to work together and deliver accurate and unambiguous information. CMS is expected to finalize Medicare’s e-prescribing standards in April 2008.

Although the Medicare Modernization Act required all participating prescription drug plans to support e-prescribing and to adhere to the standards established by CMS, the final law passed by Congress does not place any requirements on physicians to use e-prescribing. Congress debated such a requirement on physicians and such a provision actually was passed by the House of Representatives, but was not included in the final law.

Medicare as the e-prescribing standard for the commercial sector

Medicare's uniform e-prescribing standards will work for Medicare prescription drug plans, in part, because the federal law preempts conflicting state laws. The Medicare Modernization Act provided that the e-prescribing standards shall supersede any State law or regulation that is contrary to the federal standards. This federal preemption includes any State law or regulation that pertains to e-prescribing, the electronic transmission of medication history, and information on eligibility, benefits, and prescriptions for covered part D drugs.

Currently there is no federal standard for e-prescribing in the commercial market. Absent a federal, uniform rule that mirrors Medicare e-prescribing, each of the 50 states can establish electronic transaction standards and requirements that would impose obligations on commercial entities engaged in national e-prescribing. Duplicative and conflicting State laws and regulations would increase costs and delay timely implementation of nationwide e-prescribing.

Three options to increase the adoption of e-prescribing in Medicare

Below we model three potential options policymakers could consider to increase physician adoption of e-prescribing. These are simply three of many possible scenarios. In modeling these options, we have attempted to use assumptions that would be consistent with bill scoring methodologies employed the Congressional Budget Office (CBO). Two options we have modeled include financial incentives for physicians that use e-prescribing. All published evidence suggests that the cost of incentives will be more than offset by the savings achieved by e-prescribing even under the most conservative assumptions. Moreover, *the incentives are contingent upon physician use, such that only physicians who utilize e-prescribing will receive the incentives.*

Option 1: Medicare Condition of Participation (CoP) Requirement Plus Incentives

Under federal law, providers must meet certain requirements as a condition of participation (CoP) in Medicare. These minimum health and safety standards are the foundation for improving quality and protecting the health and safety of beneficiaries. Based on the IOM recommendation that e-prescribing should be used for all prescriptions by 2010, e-prescribing could be included as a requirement for 2010 in Medicare CoPs for physicians. Such a requirement could be accompanied by financial incentives to physicians that actually implement e-prescribing that would offset the cost of the technology, training, and support necessary to implement e-prescribing systems in their offices.

As an option, we have modeled incentives that could be implemented over 10 years with Sustainable Growth Rate (SGR) changes at the end of 2007. These incentives would equal 1 percent of physician payments per year over the 2008-2017 period for participating physicians. We believe an incentive payment at this level would not only fully cover the cost to physicians for e-prescribing technology, training, and support but also provide a modest financial inducement for physicians to adopt it.

Based on the prevailing cost trends of e-prescribing software, hardware, in-office start-up assistance, training, and on-going technical support and upgrades, we estimate implementation costs of \$2,700 per prescriber in their first year of adoption and \$700 per adopting prescriber in each subsequent year. These costs are expected to total \$7 billion over ten years (adjusted for inflation) for physicians that use e-prescribing under this option. The cost of a 1 percent incentive paid only to physicians that use e-prescribing over the same period is expected to equal about \$9 billion.

- ⇒ **By 2017, we expect e-prescribing could approach 80 percent of prescriptions as a result of physician incentives starting in 2008 being combined with a Medicare CoP requirement starting in 2010. This option *more than doubles* the projected rate of e-prescribing penetration anticipated in the absence of such measures.**
- ⇒ **We estimate that a Medicare CoP requirement plus incentive combination could deliver net savings of \$26 billion in federal healthcare expenditures for 2008-2017. For Medicare Part D alone, drug costs would be reduced by \$15 billion.**
- ⇒ **We estimate that up to 1.9 million adverse drug events could be avoided due to the increasing use of e-prescribing as a result of a Medicare CoP requirement combined with physician incentives.**

Option 2: Condition of Participation (CoP) Requirement Only

Another option would be to implement a Medicare CoP requirement for e-prescribing without any financial incentives. We estimate that e-prescribing would not increase as much or as rapidly under this scenario as option 1, but that savings to the federal government would be somewhat greater than under option 1 as the result of no outlays being needed to cover physician incentive payments.

- ⇒ **By 2017, we would expect e-prescribing to exceed 70 percent if it were made a CoP requirement in Medicare.**
- ⇒ **We estimate that a Medicare CoP requirement would reduce federal healthcare expenditures by \$29 billion over the 2008-2017 period. For Medicare Part D alone, drug costs would be reduced by \$13 billion.**
- ⇒ **We estimate that a Medicare CoP requirement would increase e-prescribing such that 1.6 million adverse drug events could be avoided over the next ten years.**

Option 3: Incentives Only

The federal government could provide physicians with an incentive to adopt e-prescribing, but not require it as a condition of participation in Medicare. A 1 percent incentive, similar to the incentive described in Option 1, would fully cover the cost of e-prescribing technology, training, and support.

- ⇒ **By 2017, we would expect e-prescribing penetration to reach 44 percent of prescriptions if the government provided physicians with incentives that fully covered the cost of technology, training, and support. This is approximately 10 percentage points higher than the projected penetration rate in the absence of such funding.**
- ⇒ **We estimate that these incentives would increase e-prescribing and reduce federal healthcare expenditures by \$2 billion over the 2008-2017 period. For Medicare Part D alone, drug costs would decrease \$2.5 billion during the 10 year period.**
- ⇒ **We estimate that incentives alone would increase e-prescribing such that 300,000 adverse drug events could be avoided over the next ten years.**

Note that the federal savings are less than the Part D savings in this scenario because the cost of incentives counts only against federal expenditures, not the Part D program (Part D does not reimburse for physician services). The cost of incentives was treated similarly in Option 1.

Exhibit 1 on the following page summarizes the effect of each option on the share of prescriptions expected to flow through e-prescribing systems. Exhibit 2 summarizes the financial savings and reduced adverse drug events projected under each option. Exhibit 3 summarizes key estimates and supporting documentation.

Exhibit 1: Government Action Could Dramatically Increase E-Prescribing

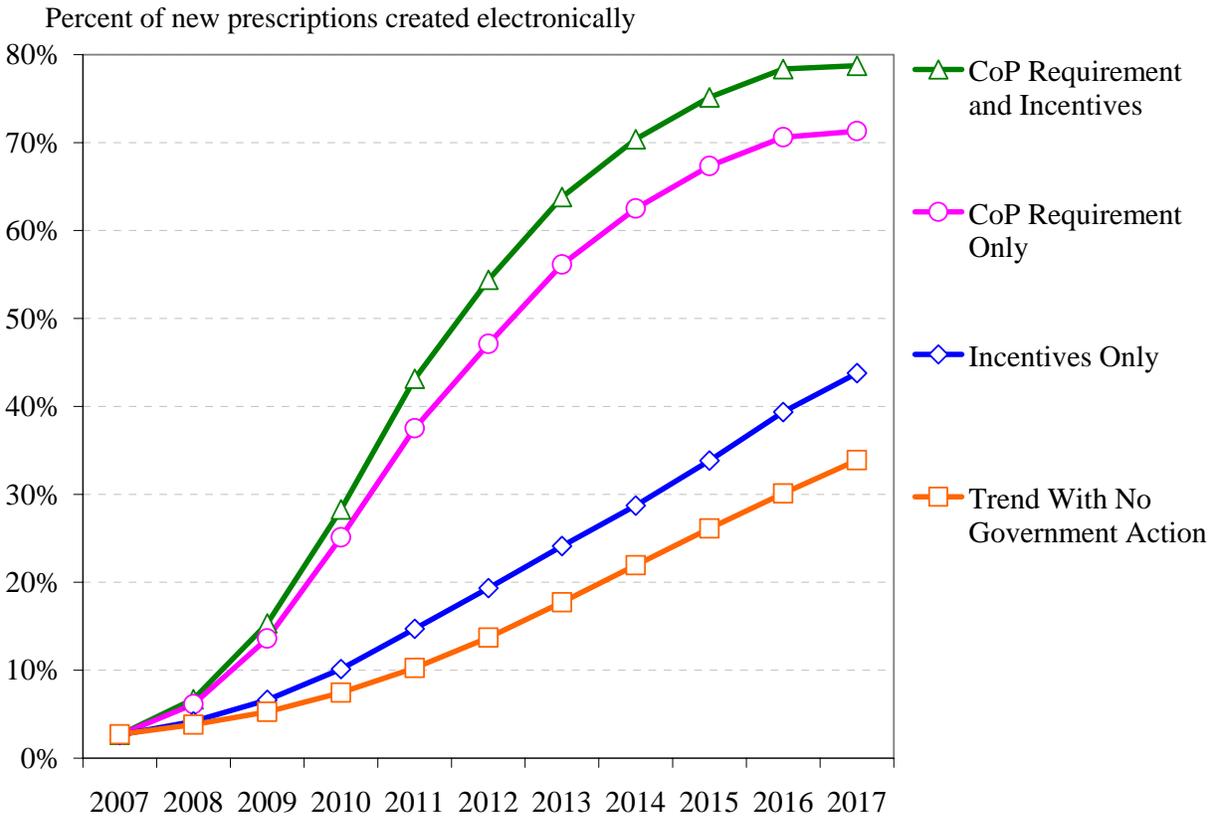


Exhibit 2: Impact of Policy Options on Adverse Drug Events, Federal Savings, and Part D

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2008-2017
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Option 1: CoP Requirement and Incentives

ADEs Avoided (thousands)	12	44	95	157	203	240	263	279	287	278	1,857
Federal Savings (billions)	\$0.1	\$0.5	\$1.1	\$2.0	\$2.7	\$3.3	\$3.8	\$4.1	\$4.4	\$4.3	\$26.3
Part D Savings (billions)	\$0.1	\$0.2	\$0.6	\$1.0	\$1.5	\$1.9	\$2.2	\$2.5	\$2.7	\$2.7	\$15.3

Option 2: CoP Requirement Only

ADEs Avoided (thousands)	10	36	81	130	166	200	221	234	241	232	1,550
Federal Savings (billions)	\$0.1	\$0.5	\$1.3	\$2.1	\$2.9	\$3.6	\$4.2	\$4.6	\$5.0	\$4.9	\$29.2
Part D Savings (billions)	\$0.0	\$0.2	\$0.5	\$0.9	\$1.2	\$1.5	\$1.8	\$2.1	\$2.3	\$2.3	\$12.8

Option 3: Incentives Only

ADEs Avoided (thousands)	2	6	12	21	28	33	37	44	55	61	300
Federal Savings (billions)	\$0.0	\$0.0	\$0.1	\$0.1	\$0.2	\$0.2	\$0.2	\$0.3	\$0.4	\$0.5	\$2.0
Part D Savings (billions)	\$0.0	\$0.0	\$0.1	\$0.1	\$0.2	\$0.3	\$0.3	\$0.4	\$0.5	\$0.6	\$2.5

Exhibit 3: Summary of Key Estimates and Supporting Documentation

Impact of e-Prescribing	Estimated Effect On Drug and Medical Expenditures	Key Studies Documenting the Impact of e-Prescribing
Reduced Drug Costs	<ul style="list-style-type: none"> • 4% reduction in drug spend 	<ul style="list-style-type: none"> • 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)⁷ • Generics increased 4.8% vs. control. (Sierra/SW Medical 2006)⁸ • Increased generics from 56.7% to 67.6%. (HAP/HFMG 2006)⁹ • eRx reduced drug costs 5.3%. (JMCP 2005)¹⁰ • 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)¹¹ • Drug costs reduced 11% for eRx vs. control group. Average cost per Rx \$4.99 lower in the eRx group. (Ann Fam Med 2004)¹² • 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)¹³
Increased Patient Adherence, Disease Management, and Coordinated Care	<ul style="list-style-type: none"> • 0.5% reduction in med/hosp costs • 1% increase in utilization of target chronic drug categories, with resulting 0.4% increase in total drug costs 	<ul style="list-style-type: none"> • 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.¹⁴ • \$40 billion in annual savings for US from improved chronic care and preventive care from EHR. (RAND 2005)¹⁵ • Diabetes disease management saves 15% of medical/hospital costs for diabetic patients. (HealthPartners 2007)¹⁶ • Patients with hyperlipidemia had a medication compliance rate of 90% compared to a 50% benchmark. (Project ImPACT 2000)¹⁷ • E-prescribing helped increase use of ACE-inhibitors for hypertensive diabetics by 86%. (CITL 2003)¹⁸
Prevention of ADE-related Hospitalizations, ER & Physician Visits	<ul style="list-style-type: none"> • Full adoption of eRx could avoid 35% of preventable ambulatory ADE, or 286 ADE per 1 million Rx filled • ADE avoidance reduces hospital, ER, and physician costs by 0.1% 	<ul style="list-style-type: none"> • 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)¹⁹ • 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)¹⁹ • 8 million adverse drug events occur in the outpatient setting each year; 30-50% could be avoided with CPOE. Approx 2 million ADEs avoided for total savings of \$3.5 billion. (RAND 2005)²⁰ • 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)²¹

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