with 1992, this represented a 65% decrease in ischemic stroke in the Medicare population. In contrast, the hemorrhagic stroke rate remained constant at nearly 2 per 1000 patient-years throughout the study period. Coincident with decreasing ischemic stroke rates was a trend toward greater use of anticoagulation among patients with prevalent AF; warfarin use among patients with prevalent AF increased from 26.7% in 1992 to 63.1% in 2007 (Figure).

Comment. The continued, steady decline in ischemic stroke rates between 1992 and 2007 in patients with prevalent AF is extremely encouraging. This decrease was associated with increasing warfarin use (26.7% in 1992; 63.1% in 2007), which is noteworthy. These data indicate continued dissemination of evidence-based medicine from clinical trials into routine practice. While causality cannot be established on the basis of these observational data, one can hypothesize that diffusion of warfarin into clinical practice likely contributed substantially to reduction in ischemic stroke rates in this time frame, in combination with better control of modifiable atherosclerotic cardiovascular risk factors.

Mercaldi et al[7] reported that 41.5% of Medicare patients with nonvalvular AF do not receive anticoagulation; this is concordant with our data showing that 37% of Medicare beneficiaries with AF did not receive warfarin for anticoagulation therapy in 2007. In this patient subset, substantial numbers likely had a personal preference to forego anticoagulation or logistical constraints, making warfarin therapy not feasible. This group of patients might benefit from the advent of newer anticoagulants that do not require frequent monitoring and have a lower reported risk of significant bleeding.

This study is limited owing to the observational design; the declining rates of ischemic stroke with increasing warfarin use reflect temporal associations and not necessarily the effect of anticoagulation. We used a surrogate method to ascertain warfarin use, which could result in underestimating numbers of individuals undergoing testing in alternative settings.

In conclusion, ischemic stroke rates continue to decrease in the Medicare population, parallel to increases in warfarin use, although these rates appear to have leveled off. On the basis of these data, the 37% of Medicare beneficiaries not currently receiving warfarin for anticoagulation may offer a window of opportunity for further reduction in ischemic stroke rates and should be targeted in future studies.

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Health Care Provider Satisfaction With a New Electronic Progress Note Format: SOAP vs APSO Format

Many health care organizations are deploying electronic health records (EHRs).[1] A health care provider's EHR progress notes are essential for effective communication. However, these notes may increase errors when they are difficult to read.[2] Billing requirements, regulatory statements, and extensive inclusion of test results detract from progress note brevity and clarity.[3] In our experience, EHR progress notes that include such elements can span 17 electronic pages, rendering actual clinical reasoning extraordinarily difficult to locate. Missing data can lead to lost productivity and increased cost.[4] Health care providers' frustration with EHR progress notes may interfere with EHR adoption[5,6] and deployment.[7] Although the traditional SOAP (Subjective, Objective, As-

sessment, Plan) format[8] mirrors the sequence of a clinical encounter, it translates poorly from paper medical charts to the EHR. Finding the Assessment and Plan requires considerable on-screen "scrolling." We examined the adoption of an alternate APSO (Assessment, Plan, Subjective, Objective) format, which places the Assessment and Plan at the top of the note, where it is readily located when the EHR note is opened. We hypothesized it would improve readability and satisfaction and shorten the time to answer clinical questions.

Methods. We introduced the APSO format to 13 outpatient clinics at a large academic medical center. All clinics used an EHR (Enterprise EHR V10.2; Allscripts) at baseline. We measured the adoption rate of health care providers using APSO notes 2 months after their introduction. We conducted an online satisfaction survey of health care providers who had written at least 1 note in APSO format. Using a prospective, observational design, we compared the time it took for health care providers to answer clinical questions from SOAP format notes vs APSO format notes. We compared mean time to respond to all questions using the paired *t* test and used linear regression to control for the order of questions. $P<.05$ was considered statistically significant. The institutional review board approved the study.

Results. Six primary care and 2 specialty clinics chose to mandate the APSO format, whereas 3 primary care and 2 specialty clinics chose a voluntary APSO format. All 47 health care providers in the "mandatory" clinics (100%) and 37 of 73 health care providers in the "voluntary" clinics (51%) adopted APSO after 2 months. Of the 84 who adopted APSO, 64 completed the satisfaction survey (76%) (**Table**). The majority of health care providers (73%) were "satisfied" or "very satisfied" with APSO as authors, and 82% were "satisfied" or "very satisfied" with APSO as readers of progress notes. Most respondents (72%) reported that the transition to using APSO was "easy" or "very easy." A majority (61%) noted no difference ("neutral") in the time it took to write APSO vs SOAP notes. Similarly, the most frequent response was "neutral" to questions comparing APSO and SOAP formats regarding the likelihood of "skipping around in EHR notes," "forgetting to complete segments of the note," and whether "the EHR note structure reflects how I think." Respondents reported that "finding clinically relevant data" was "easier" or "much easier" with APSO (APSO, 81%; SOAP, 0%). Similarly, respondents reported "faster" or "much faster" browsing through EHR notes with APSO (APSO, 83%; SOAP, 0%) and they "preferred" or "strongly preferred" reading notes with the APSO format (APSO, 75%; SOAP, 8%). When asked about "ease of following the flow of clinical reasoning across multiple notes," a majority supported APSO (54%). Seven health care providers were timed while reviewing 10 APSO notes followed by 10 SOAP notes, and 7 health care providers were timed reviewing 10 SOAP notes followed by 10 APSO notes (each set of 20 notes contained the same information). There was no statistically significant difference between the time taken to answer questions about APSO vs SOAP notes ($P=.37$). Of 120 questions, 4 were answered incorrectly from SOAP notes and 3 of 120 were answered incorrectly from APSO notes ($P=.54$).

Table. Health Care Provider Satisfaction With APSO Format

Survey Response	Satisfaction Rating, No. (%)		
As an author of EHR notes, changing to writing in APSO format was:	Easy/very easy 46 (72)	Neutral 12 (19)	Difficult/very difficult 6 (9)
As an author of EHR notes, writing in APSO format is:	Easy/very easy 47 (74)	Neutral 12 (18)	Difficult/very difficult 5 (8)
As an author, the time it takes to write EHR notes is:	APSO faster/much faster 17 (27)	Neutral 39 (60)	SOAP faster/much faster 8 (13)
As an author, skipping around in the EHR note is:	More/much more likely with APSO 18 (28)	Neutral 22 (34)	More/much more likely with SOAP 24 (38)
As an author, forgetting to complete segments of the note is:	More/Much More Likely with APSO 18 (28)	Neutral 39 (61)	More/much more likely with SOAP 7 (11)
As an author, the EHR note structure reflects how I think:	Better/much better with APSO 20 (31)	Neutral 31 (49)	Better/much better with SOAP 13 (20)
As a consumer of EHR notes, finding clinically relevant data are:	Easier/much easier with APSO 51 (81)	Neutral 12 (19)	Easier/much easier with SOAP 0
As a consumer, browsing through EHR notes is:	Faster/much faster with APSO 52 (82)	Neutral 11 (18)	Faster/much faster with SOAP 0
As a consumer I prefer reading EHR notes in the following format:	Prefer/strongly prefer APSO 47 (75)	Neutral 11 (17)	Prefer/strongly prefer SOAP 5 (8)
As a consumer, following the flow of clinical reasoning across multiple notes is:	Easy/very easy with APSO 34 (54)	Neutral 26 (41)	Difficult/very difficult with APSO 3 (5)
As an author of APSO notes I am:	Satisfied/very satisfied 46 (73)	Neutral 14 (22)	Dissatisfied/very dissatisfied 3 (5)
As a consumer of APSO notes I am:	Satisfied/very satisfied 52 (83)	Neutral 10 (15)	Dissatisfied/very dissatisfied 1 (2)

Abbreviations: APSO, Assessment, Plan, Subjective, Objective; EHR, electronic health record; SOAP, Subjective, Objective, Assessment, Plan.

Comment. We provide the first estimates of readability and health care provider satisfaction for EHR notes in the relatively novel APSO format. Despite the inconvenience of adopting a new method to assemble progress notes, a majority of health care providers did so voluntarily. Most health care providers favored the change, both as authors and as readers of APSO notes in the EHR. Particularly, 83% reported that APSO was faster, and 81% noted that it was easier to find data in APSO notes. However, in our small sample, we were unable to

detect a difference in the time health care providers took to answer questions from APSO vs SOAP notes. Further studies are needed to determine whether these outpatient findings at one center can apply to another, or to inpatient or emergency department settings, or even to radiology and pathology reports. Readability of EHR notes will be increasingly important as more organizations adopt EHRs. This study demonstrates that a structural change in the health care provider EHR progress note, from SOAP to APSO format, is feasible and generally well received.

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Hypertriglyceridemia and Acute Pancreatitis

Acute pancreatitis (AP) is common and potentially serious.[1] Common causes are gallstones and alcohol abuse; other causes include medications, common bile duct obstruction, trauma, and hypertriglyceridemia.[2] Although the association between hypertriglyceridemia and AP is well established, estimates of risk are based on case series and studies of high-risk groups.[3-5] The risk of AP from hypertriglyceridemia in the general population is not well characterized. We report results from a cohort study using record-linkage methods to estimate the risk and relative burden of AP in patients with differing degrees of hypertriglyceridemia.

Methods. We used databases in the Medicines Monitoring Unit of our institution that included dispensed community prescriptions, hospital discharge data, regional laboratory data, and other data. The study population consisted of residents of Tayside, Scotland, who were registered with a primary care physician between 1993 and 2007 and remained resident in Tayside or died during the study period. Study subjects had at least 1 serum triglyceride measurement between 1993 and 2007, entered the study on the date of their highest triglyceride measurement during the study period, and were categorized by triglyceride concentration into 1 of the following 3 cohorts: 149 mg/dL or lower (group 1); 150 to 499 mg/dL (group 2); or 500 mg/dL or higher (group 3). (To convert triglycerides to millimoles per liter, multiply by 0.0113.)

The primary study outcome was incident AP during follow-up (hospitalization with a primary diagnosis of AP or serum amylase activity of 300 U/L or higher during follow-up [reference interval, 0-100 U/L]). Data were summarized as mean (SD), or number of subjects (percentage).

A Cox regression model was constructed to adjust for potential confounders; data were expressed as hazard ratios (HRs) with 95% CIs. Covariates were age at study entry; sex; socioeconomic status; concentrations of total and high-density lipoprotein (HDL) cholesterol; comorbidities of gallstones, other biliary disease, diabetes, alcohol-related liver disease, alcoholic cirrhosis, alcoholic hepatitis,[6] alcohol hospitalization, chronic pancreatitis, and renal failure; and use during follow-up of gastrointestinal drugs, diuretics, lipid-regulating drugs, analgesics, sodium valproate, antibacterial drugs, corticosteroids, estrogens and hormone therapy, and musculoskeletal and joint disease drugs. The Scottish Index of Multiple Deprivation[7] was used as a measure of socioeconomic status. Population-attributable risks (PARs) were calculated for each triglyceride group and other AP risk factors. Sensitivity analyses were performed by (1) excluding subjects with hospitalization for gallstones, chronic pancreatitis, renal failure, alcohol morbidities, other biliary disease, and not adjusting for concentrations of