Of the 50 patients without visual representation of their attending physician’s name on a dry erase board, only 5 (10%; 95% CI, 3%-22%) were able to correctly identify the name of their attending physician. There was very strong evidence that this proportion was higher for patients with visual representation of their attending physician’s name \( (P < .001) \), of whom 94 of 96 patients (98%; 95% CI, 93%-100%) were able to correctly identify their attending physician’s name. This indicates that compared with patients with no visual representation, the proportion of patients who were correctly able to identify the name of their attending physician was 88% higher (95% CI, 76%-94%) for patients with visual representation of their attending physician’s name in their room. Of note, of the 4 excluded patients for whom the attending physician’s name was not written on the dry erase board, none were able to correctly identify the name of that physician.

Comment. Our results confirm that patient knowledge of their attending physician is poor, since only 10% of our control group was able to identify the name of their attending physician correctly. This is consistent with previous findings. With a simple modification of having the name reliably visualized in front of them, we improved this knowledge in virtually all patients interviewed (98%). Although this may have been expected, as the name was written for patient reference, previous studies have found that repeated visualization of medical information improved recall significantly even after the information was no longer visualized. One limitation of our study is that although the patients showed improved name recognition, we are unsure if this process would improve face recognition. Francis et al. found that the use of photographs helped patients identify hospital team members, and this led to higher overall patient satisfaction. A similar study using physician photographs posted on a patient room display would be an interesting next step.

On the basis of our findings, we conclude that a simple system that includes visual representation of all of the health care team’s names and responsibilities can help improve the awareness of patients’ identification of their medical providers.

### Author Affiliations
Division of Hospital Internal Medicine (Drs Maniaci and Dawson) and the Biostatics Unit (Mr Heckman), Mayo Clinic, Jacksonville, Florida.

### Correspondence
Dr Maniaci, Division of Hospital Internal Medicine, Mayo Clinic, 4500 San Pablo Rd, Jacksonville, FL 32224 (maniaci.michael@mayo.edu).

### Author Contributions
Study concept and design: Maniaci. Acquisition of data: Maniaci. Analysis and interpretation of data: Maniaci, Heckman, and Dawson. Drafting of the manuscript: Maniaci, Heckman, and Dawson. Critical revision of the manuscript for important intellectual content: Maniaci and Dawson. Statistical analysis: Heckman. Administrative, technical, and material support: Maniaci. Study supervision: Dawson.

### Financial Disclosure
None reported.

### Reasons for Discontinuation of Medication During Hospitalization and Documentation Thereof: A Descriptive Study of 400 Geriatric and Internal Medicine Patients

Medication is often changed or discontinued during hospital admission, and this is especially true for medications prescribed to elderly patients. However, after discharge further changes to medication regimens are not always intentional and may be due to poor communication. For example, in an earlier study, we found that adverse drug reactions detected during hospitalization and requiring cessation of the causative drug were poorly communicated to primary care professionals (general practitioners and pharmacists), leading to a rate of represcription of withdrawn medication of 27% during the first 6 months after discharge. The study highlighted the need for better communication of reasons for discontinuation of medication. Adequate communication of these reasons can only exist on the condition that these reasons are well documented. Our experience in daily practice is that such documentation is often inadequate. The objectives of the present study were to evaluate the frequency of reasons for discontinuation of medication and the documentation thereof in hospitalized patients.

### Methods
We studied the medical records (paper and/or electronic) of consecutive patients admitted to the geriatric and internal medicine wards of the University Medical Center Utrecht (n=200) and the Catharina Hospital in Eindhoven (n=200), the Netherlands, to determine which medications were used before hospitalization. Discontinuation was defined as stopping or switching to another drug within the same therapeutic range. Prescribed and discontinued medications and dates of discontinuation were extracted from electronic prescription programs, and then patient records were reviewed to determine whether the reasons for discontinuation of these medications at these dates had been recorded. Reasons for discontinuation were categorized as "adverse drug reaction," "contraindication," "no longer indicated," "interaction," "palliation," "ineffective," "no reason mentioned," "at request of patient," or "other." Discontinuation of antibiotics after completion of a course and of potassium supplementation after nor-
Eguale et al4 reported that reasons for discontinuation could have adverse repercussions on the patients’ health. In the patient records. Poor documentation and communication. We found that in more than a third of the discontinuation reasons for medication discontinuation during hospitalization and patient-level. We believe that using an electronic prescription program with a clinical decision support module that incorporates reasons for discontinuation will improve documentation and communication of reasons why medication is withdrawn, leading to better pharmacovigilance at a patient level.

**Results.** The mean age of the 200 geriatric patients was 82 years, and of the 200 internal medicine patients, 57 years. The geriatric patients used a mean of 7.3 (range, 0-24) medications at admission, and the internal medicine patients used a mean of 4.8 (range, 0-20). The mean number of discontinued medications was 4.9 (range, 0-22) in geriatric patients and 2.8 (range, 0-26) in internal medicine patients. Of all the discontinued medications used in geriatric patients, 50% were prescribed before admission and 50% had been started during hospitalization. Among internal medicine patients, 33% of discontinued medications were prescribed before and 65% during hospitalization. The most frequently discontinued medications were cardiovascular drugs, antibiotics, and supplements (vitamins and minerals). In 39.8% of discontinued medications, no reason for discontinuation was documented (Table). Most frequently documented reasons for discontinuation were “no longer indicated” (27.5%), “palliation” (9.8%), “contraindication” (9.1%), and “adverse drug reactions” (5.2%). In geriatric patients “palliation” occurred more frequently as reason for discontinuation: 12.3% vs 5.5% in internal medicine patients. “No longer indicated” occurred more often in internal medicine patients (32.5% vs 24.5%). Frequencies of other reasons for discontinuation were not different between geriatric and internal medicine patients.

**Comment.** To our knowledge, this is the first study of reasons for medication discontinuation during hospitalization. We found that in more than a third of the discontinued medications the reason was not documented in the patient records. Poor documentation and communication of reasons for discontinuing medication may result in the represcription of withdrawn medications, which could have adverse repercussions on the patients’ health. Eguale et al11 reported that reasons for discontinuation can be accurately recorded in an electronic prescription program in primary care. We propose that reasons for discontinuation of medication should be recorded in electronic patient files, which are currently being introduced in the Netherlands and other countries.3,6 To facilitate this, we are developing an electronic clinical decision support module that forces physicians to document these reasons. In addition, this module will make the information available to other relevant health care providers, for example, general practitioners and pharmacies. A limitation of the present study is its small number of studied departments (internal medicine and geriatric wards) and hospitals (n = 2).

**Author Affiliations:** Department of Geriatrics (Dr van der Linden), Hospital Pharmacy (Dr Grouls), and Anesthesiology and Intensive Care (Dr Korsten), Catharina Hospital, Eindhoven, the Netherlands; Department of Geriatrics (Drs Jansen, van Geerenstein, and van Marum) and Hospital Pharmacy (Dr Egberts), University Medical Centre Utrecht, Utrecht, the Netherlands; Utrecht Institute for Pharmaceutical Sciences, Utrecht (Dr Egberts); and Signal Processing Systems, Eindhoven University of Technology, Eindhoven (Dr Korsten). Dr Marum is now with Jeroen Bosch Hospital, ’s-Hertogenbosch, the Netherlands.

**Correspondence:** Dr van der Linden, Catharina Hospital, PO Box 1350, Eindhoven 5602 ZA, the Netherlands (carolien.vd.linden@cze.nl).

**Author Contributions:** Dr van der Linden had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. **Study concept and design:** van der Linden, Jansen, van Marum, Grouls, Egberts, and Korsten. **Acquisition of data:** van der Linden and van Geerenstein. **Analysis and interpretation of data:** van der Linden, Jansen, van Marum, Grouls, and Korsten. **Drafting of the manuscript:** van der Linden. **Critical revision of the manuscript for important intellectual content:** Jansen, van Geerenstein, van Marum, Grouls, Egberts, and Korsten. **Administrative, technical, and material support:** van der Linden. **Study supervision:** van der Linden, Jansen, van Marum, Grouls, Egberts, and Korsten.

**Financial Disclosure:** None reported.

**Funding/Support:** Dr van der Linden was financially supported by Catharina Hospitals Science Fund.

**Role of the Sponsors:** The Catharina Hospitals Science Fund had no role in the design and conduct of the study; in the collection, management, analysis, and interpretation of the data; or in the preparation, review, or approval of the manuscript.

---

**Table. Reasons for Discontinuation of Medication**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Medication Used on Admission</th>
<th>Medication Prescribed During Admission</th>
<th>All Discontinued Medication</th>
</tr>
</thead>
<tbody>
<tr>
<td>No reason mentioned</td>
<td>373 (54.4)</td>
<td>238 (28.0)</td>
<td>611 (39.8)</td>
</tr>
<tr>
<td>No longer indicated</td>
<td>52 (7.6)</td>
<td>371 (43.6)</td>
<td>423 (27.5)</td>
</tr>
<tr>
<td>Palliation</td>
<td>45 (6.6)</td>
<td>106 (12.3)</td>
<td>151 (9.8)</td>
</tr>
<tr>
<td>Contraindication</td>
<td>93 (13.6)</td>
<td>47 (5.5)</td>
<td>140 (9.1)</td>
</tr>
<tr>
<td>Adverse drug reaction</td>
<td>58 (8.5)</td>
<td>22 (2.6)</td>
<td>80 (5.2)</td>
</tr>
<tr>
<td>Ineffective</td>
<td>26 (3.8)</td>
<td>40 (4.7)</td>
<td>66 (4.3)</td>
</tr>
<tr>
<td>At request of patient</td>
<td>2 (0.3)</td>
<td>2 (0.2)</td>
<td>4 (0.3)</td>
</tr>
<tr>
<td>Interaction (drug-drug)</td>
<td>1 (0.1)</td>
<td>0</td>
<td>1 (0.1)</td>
</tr>
<tr>
<td>Other</td>
<td>36 (5.2)</td>
<td>25 (2.9)</td>
<td>61 (4.0)</td>
</tr>
<tr>
<td>All</td>
<td>686 (100)</td>
<td>851 (100)</td>
<td>1537 (100)</td>
</tr>
</tbody>
</table>

©2010 American Medical Association. All rights reserved.
Epigenetic mechanisms have also been proposed as a factor in the deterioration of the epigenome, contributing to the degenerative diseases of aging. For example, epigenetic drift leading to hypomethylation of repeat elements and the hypermethylation of the promoters of tumor-suppressor genes is believed to play a role in cancer. Much more research needs to be done to study whether exercise can slow the decline of the body and mind by slowing the deterioration of the epigenome. Some research hints at the possibility that the benefits of exercise are derived in part from epigenetic mechanisms. For example, cancer researchers have found a possible inverse relationship between CACNA2D3 methylation and physical activity. In an animal model, exercise influences histone H3 phosphoacetylation in the brain.

Could exercise slow the decline of the body and mind by slowing the deterioration of the epigenome? Some research hints at the possibility that the benefits of exercise are derived in part from epigenetic mechanisms. For example, cancer researchers have found a possible inverse relationship between CACNA2D3 methylation and physical activity. In an animal model, exercise influences histone H3 phosphoacetylation in the brain.

More research needs to be done to study whether the epigenetic drift component of aging is influenced by exercise.

Celia Mary Ross, MS

Author Affiliation: Franciscan Care Center, Hockessin, Delaware.

Correspondence: Ms Ross, 36 Ridgewood Cir, Wilmington, DE 19809 (celiamaryross@aol.com).


Appropriate Discard of “Best” Practice Guidelines for Acute Low Back Pain

Evidence-based guidelines for acute low back pain (LBP) are clearly appropriately viewed by clinicians as recommendations as opposed to rigid mandates. Practitioners use training, wisdom, experience, and logic to accurately redefine “best practice care” by occasionally rejecting “expert” guidelines.

Precedent is exemplified by authors in JAMA and the Cleveland Clinic Journal of Medicine recommending that mammograms remain encouraged at age 40 years, despite US Preventive Services Task Force November 2009 guidelines recommending initial breast cancer screenings at age 50 years.

International recommendations may include acetaminophen as first choice for acute LBP followed by nonsteroidal anti-inflammatory drugs (NSAIDs) if additional analgesia is required with opioids as tertiary options, but fortunately clinicians in the published study primarily prescribed NSAIDs and opioids.

Despite the assertion that the recommended acetaminophen dose is 4 g/d, because of acute hepatotoxicity, paracetamol dose was downgraded to 3250 mg in healthy persons, with a maximum dose of 2000 mg for patients with damaged livers. Given that viral hepatitis is common and world prevalence of occult alcoholism ranges up to 25%, 2000 mg may be liberal rather than cautious. The active metabolite of acetaminophen is so toxic that ingestion of two 500-mg tablets 3 times daily rapidly transforms some non–life-threatening acute LBP presentations to preterminal events.

Rather than delaying NSAIDs to secondary treatment, NSAIDs should immediately be initiated, since acute musculoskeletal LBP is characteristically inflammatory, characterized by profound amplification of prostaglandins and other mediators, some of which effect tissue damage. With NSAIDs, clinicians have an opportunity to “put water on campfires before becoming forest fires,” enormously mitigating morbidity and lost days of work.

Fortunately, clinicians in the study by Williams et al primarily prescribed NSAIDs as the most common pharmacetical, contrary to guideline recommendations, presumably recognizing that it is erroneous to suggest that acetaminophen is “equally effective” as NSAIDs, since paracetamol does not alter the inflammatory cascade. With proven safety and efficacy, opioids have treated acute pain for over 90 centuries. Unlike NSAIDs and acetaminophen, the ceiling of analgesia is not fixed such that dose escalation diminishes pain to the point where patients return earlier to work, affecting cost savings. Opioids may also prevent transformation of acute to chronic lifelong pain and perceived disability such that sampled practitioners appropriately did not delay offering opioids.