

**Comparison of rehospitalization rates in France and the United States**  
Michael Gusmano, Victor Rodwin, Daniel Weisz, Jonathan Cottenet and Catherine Quantin  
*J Health Serv Res Policy* published online 25 September 2014  
DOI: 10.1177/1355819614551849

The online version of this article can be found at:  
<http://hsr.sagepub.com/content/early/2014/09/23/1355819614551849>

---

Published by:



<http://www.sagepublications.com>

**Additional services and information for *Journal of Health Services Research & Policy* can be found at:**

**Email Alerts:** <http://hsr.sagepub.com/cgi/alerts>

**Subscriptions:** <http://hsr.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

>> [OnlineFirst Version of Record](#) - Sep 25, 2014

[What is This?](#)

# Comparison of rehospitalization rates in France and the United States

Michael Gusmano<sup>1</sup>, Victor Rodwin<sup>2</sup>, Daniel Weisz<sup>3</sup>,  
Jonathan Cottenet<sup>4</sup> and Catherine Quantin<sup>5,6,7</sup>

Journal of Health Services Research &  
Policy  
0(0) 1–8  
© The Author(s) 2014  
Reprints and permissions:  
sagepub.co.uk/journalsPermissions.nav  
DOI: 10.1177/1355819614551849  
jhsrp.rsmjournals.com



## Abstract

**Objective:** To compare rates of 30-day all-cause rehospitalization in France and the US among patients aged 65 years and older and explain any difference between the countries.

**Methods:** To calculate rehospitalization rates in France, we use an individual identifying variable in the national hospital administrative dataset to track unique individuals aged 65 years or more hospitalized in France in 2010. To calculate the proportion of rehospitalized patients (65+) who received outpatient visits between the time of initial discharge and rehospitalization, we linked the hospital database with a database that includes all medical and surgical admissions. We used step by step regression models to predict rehospitalization.

**Results:** Rates of rehospitalization in France (14.7%) are lower than among Medicare beneficiaries in the US (20%). We find that age, sex, patient morbidity and the ownership status of the hospital are all correlated with rehospitalization in France.

**Conclusions:** Lower rates of rehospitalization in France appear to be due to a combination of better access to primary care, better health among the older French population, longer lengths of stay in French hospitals and the fact that French nursing homes do not face the same financial incentive to rehospitalize residents.

## Keywords

France, health policy, rehospitalization

## Introduction

The problem of rehospitalizations in the US is well documented<sup>1–3</sup> but poorly understood. Although Medicare compares the rates of rehospitalization across the country, we have found no comparison of different countries. This is a first attempt to compare rehospitalization,<sup>6–8</sup> in the US with France where national health insurance (NHI) provides easy access to primary care but, like the US, policymakers struggle to improve coordination between hospitals and community-based health care providers.

Although France's NHI system<sup>9</sup> with central state intervention differs from the United States' tradition of federalism, private health insurance and pluralism, we focus on an important area of policy convergence – the struggle to contain rising health care costs and to achieve coordination among hospitals and health care providers. In both countries, policymakers seek to achieve cost savings and to reform the health care system.<sup>10</sup> A recent literature review on avoidable rehospitalization of older persons in France<sup>11</sup> cited studies on the topic and relied largely on ones from the US.

In the US, the *Patient Protection and Affordable Care Act* (ACA) encourages the formation of Accountable Care Organizations (ACOs) that would bring hospitals and other health care providers into new partnerships to care for well-defined territorial

<sup>1</sup>Research Scholar, Research department, The Hastings Center, New York, USA

<sup>2</sup>Professor, The Robert F. Wagner School of Public Service, New York University, New York, USA

<sup>3</sup>Associate Research Scientist, The Robert N. Butler Columbia Center on Aging, Columbia University – International Longevity Center, New York, USA

<sup>4</sup>Statistician, Service de Biostatistique et d'Informatique Médicale (DIM), Centre Hospitalier Universitaire, France

<sup>5</sup>Researcher, Service de Biostatistique et d'Informatique Médicale (DIM), Centre Hospitalier Universitaire, Dijon, France

<sup>6</sup>Researcher, INSERM U866, Université de Bourgogne, France

<sup>7</sup>Researcher, INSERM, CIC1432, France

## Corresponding author:

Michael Gusmano, The Hastings Center – Research, 21 Malcolm Gordon Road, Garrison, New York 10524, USA.  
Email: gusmanom@thehastingscenter.org

populations.<sup>12</sup> In 2009, France created new regional agencies (*Agence Régionale de la Santé*) that consolidate health insurance, public health and hospital regulation functions to coordinate health services, including medical homes, within their regions. Starting in 2013, the Center for Medicare and Medicaid Services' (CMS) 'Hospitals Readmissions Reductions Program' withheld up to 1% of regular reimbursements for hospitals with higher than expected (by CMS) rates of rehospitalization, within 30 days of discharge, due to heart attacks, heart failure and pneumonia. CMS increased this to 2% in 2014, will raise it to 3% in 2015 and may subsequently expand the list of conditions for which it will penalize early rehospitalizations.

Policymakers in France have been reluctant to implement a hospital pay for performance system based on a rehospitalization indicator whose validity is a subject of considerable controversy.<sup>2,3</sup> Despite the controversy and differences in approach, a comparison of rehospitalizations between the US and France provides a cross-national perspective on a timely policy issue facing both countries.

Our comparisons of the two countries focus on the frequency of rehospitalization within 30 days of discharge; the most common diagnoses associated with the rehospitalizations for initial medical and surgical discharges; regional patterns of rehospitalization and the proportion of rehospitalized patients who received outpatient visits between the time of discharge and rehospitalization.

## Method

### Data sources

The hospital administrative data for this study are from the SNIIRAM (Système National d'Informations Inter Régimes de l'Assurance Maladie) which also includes the national hospital reporting system (PMSI – Programme de Médicalisation des Systèmes d'Information).<sup>4</sup>

The SNIIRAM is a centralized administrative database of all health services reimbursed under France's NHI program. The PMSI, based on diagnosis-related groups (DRGs), is a centralized administrative database of hospital discharge records by diagnosis, procedure, age and residence of patients from all hospitals in France. It is managed by a national agency (ATIH).<sup>13</sup>

### Study design

We follow the same methods and definitions used by two of the three key US studies of all-cause rehospitalization.<sup>6,8</sup> To calculate the rehospitalization rates, we use an individual identifying variable in the PMSI

dataset to track unique individuals (65+) hospitalized in France in 2010. The median age of patients in the database was 78 and 53% were female. As in the two US studies previously noted, we follow the same three basic definitions in calculating the rehospitalization rates. First, we present the total number of rehospitalizations within 30 days of discharge, as a percent of total hospital discharges for all acute-care hospitals. Second, we include hospital discharges for all patients 65+ admitted from their homes (including nursing homes) and discharged back to them. Third, we exclude all one-day admissions for such treatments as chemotherapy, radiation therapy and haemodialysis; and patients transferred to other acute-care hospitals.

Consistent with the methods adopted in the US studies, our denominator counts all admitted patients only once. The rehospitalization rate is defined as the first hospital admission from home within 30 days following discharge. We also present the primary diagnosis associated with the initial (index) hospital discharge for all patients aged 65+, who were rehospitalized within 30 days for both medical and surgical conditions. We do not report deaths that occurred during or after rehospitalization so as not to double count. We assume that the probable share of planned readmissions, as a percent of all readmissions (10%), is the same in France as in the US.

To calculate the proportion of rehospitalized patients (65+) who received outpatient visits between the time of discharge and rehospitalization, we collaborated with analysts at the French NHI fund (CNAMTS). We linked the individual identifying variable for rehospitalized patients and extracted the outpatient visits from the SNIIRAM database for all medical and surgical admissions. Of the total number of hospitalized French patients aged 18 years and over (5,804,677) with identifiers in 2010, only 299,364 (5%) were unidentified after linking these datasets. These patients are most likely to have been foreigners and newborns who had not yet received an identifier. Outpatient visits include all physician consultations in community-based practice, as well as hospital outpatient visits. Likewise, we excluded all visits on the day of discharge and the day of rehospitalization.

### Statistical analyses

The dependent variable in our regression models is a dummy variable that captures whether each individual in the database experienced at least one hospital readmission within 30 days from an initial hospital discharge during the year 2010. We ran four types of model: one with a stepwise selection, one with a backward selection, one with a forward selection and the last with a step by step selection. All these models yielded the same results so we present the step by step

model. We present separate models for patients initially hospitalized with medical and surgical conditions. In both models, the independent variables were selected based on our review of the literature and the availability of relevant variables in the PMSI database. Previous studies have found that neither subjective assessments from hospital physicians nor a risk assessment tool were able to predict rehospitalization.<sup>5</sup> Despite this, recent studies have identified factors that are associated with rehospitalization: length of stay and the Charlson index of morbidity predict 10-year survival for patients based on their comorbidities whether the initial hospitalization was for an emergent condition and whether the patient had visited an emergency department during the previous six months.<sup>13,14</sup> Our model includes the following independent variables: five-year age bands, sex, hospital ownership type (private or public), length of stay and the Charlson index of morbidity.

## Results

### Frequency of rehospitalization

In France, 14.7% of patients were rehospitalized within 30 days (Table 1; Figure 1) compared with 20% in the US (for 2004).<sup>6</sup> Between 2007 and 2011, the all-cause rehospitalization rate in the US was 19% and 18.4% in 2012.<sup>8</sup>

In France, the rate was 17.7% for a medical and 9.1% for a surgical patient, compared with 21.1% and 15.6%, respectively, in the US.<sup>6</sup>

The median age of rehospitalized patients in France was 78 compared with 77 for those not rehospitalized.

### Geographic disparities

Rehospitalization rates varied across the 95 departments of metropolitan France (Figure 2). The department with the highest rehospitalization rate (16.7%) was still lower than the average in the US. (18.4%). The average rehospitalization rate in the five French departments with the highest rates was 17% higher than that for the five departments with the lowest rates. In contrast, in the US, the rehospitalization rate was 45% higher in the five states with the highest rate than in the five states with the lowest rate.<sup>16</sup> The far lower geographical variation in France is notable, given there are nearly twice as many administrative units in France (95) compared with the US (50).

### Outpatient visits

For patients with medical conditions who were rehospitalized (Figure 3), there was no record of outpatient

**Table 1.** Rehospitalizations after discharge from the hospital among patients aged 65 years or more in France.

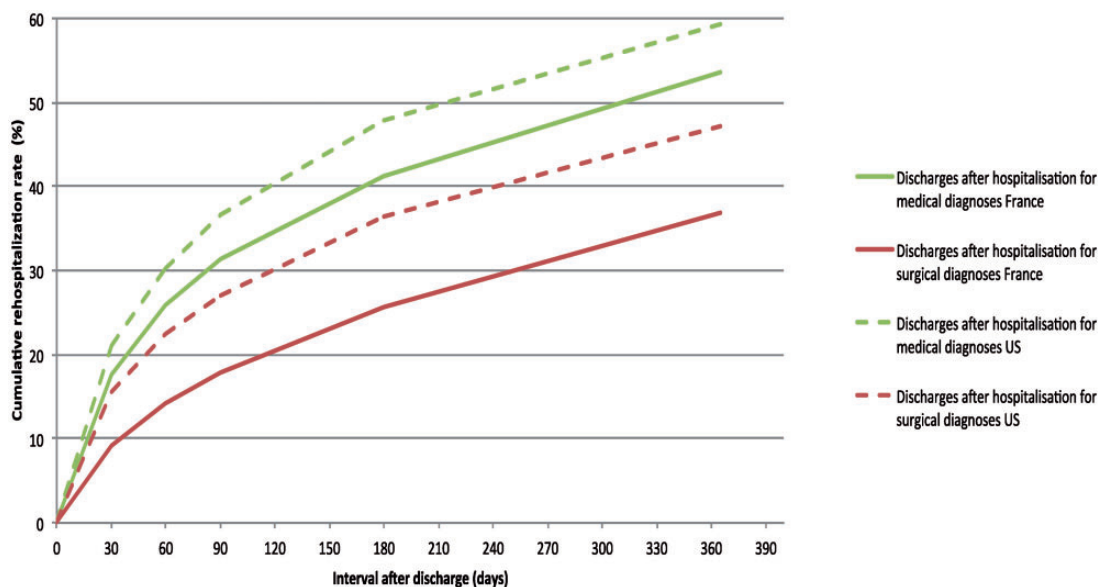
Interval after discharge	Patients at risk at beginning of period (%)	Cumulative rehospitalizations by end of period (%)
<b>All discharges</b>		
0–30 days	1,944,566 (100.0)	285,676 (14.7)
31–60 days	1,658,890 (85.3)	425,566 (21.9)
61–90 days	1,519,000 (78.1)	518,033 (26.6)
91–180 days	1,426,533 (73.4)	696,010 (35.8)
181–365 days	1,248,556 (64.2)	928,932 (47.8)
>365 days	1,015,634 (52.2)	
<b>Discharges after hospitalization for medical diagnoses</b>		
0–30 days	1,267,131 (100.0)	223,863 (17.7)
31–60 days	1,043,268 (82.3)	328,945 (26.0)
61–90 days	938,186 (74.0)	396,632 (31.3)
91–180 days	870,499 (68.7)	522,843 (41.3)
181–365 days	744,288 (58.7)	679,341 (53.6)
>365 days	587,790 (46.4)	
<b>Discharges after hospitalization for surgical procedure</b>		
0–30 days	677,435 (100.0)	61,813 (9.1)
31–60 days	615,622 (90.9)	96,621 (14.3)
61–90 days	580,814 (85.7)	121,401 (17.9)
91–180 days	556,034 (82.1)	173,167 (25.6)
181–365 days	504,268 (74.4)	249,591 (36.8)
>365 days	427,844 (63.2)	

Source: Reproduced with permission from SNIIRAM-PMSI, 2010.

visits for 43.2% of those aged 65–74 years and 42.9% of those aged 75 and over ( $P < 0.0001$ ) compared with 50.1% in the US.<sup>6</sup>

### Causes associated with rehospitalization

Table 2 shows the top five medical and surgical conditions with the highest rehospitalization rates in France. Among US Medicare patients, the principal medical conditions associated with rehospitalization, as a proportion of all rehospitalizations, were heart failure (7.6%), pneumonia (6.3%), chronic obstructive pulmonary disease (4%), psychoses (3.5%) and gastrointestinal problems (3.1%). The principal surgical conditions were cardiac stent placement (1.6%), major hip or knee procedures (1.5%), other vascular surgery (1.4%), major bowel surgery (1%) and other hip or femur procedures (0.8%).<sup>6</sup>



**Figure 1.** Cumulative rehospitalization rate for population aged 65 years or more in France and US.

Source: Reproduced with permission from SNIIRAM-PMSI, 2010 (for French data). US Medicare data from 2004 were analysed by Jencks et al. (2009).

### Factors associated with rehospitalization in France

The odds of rehospitalization associated with an initial discharge for medical conditions are significantly higher among men, patients hospitalized in private (in contrast to public) hospitals and among patients with a higher Charlson index, but not influenced by age (Table 3). Reprehospitalization associated with initial surgical discharges is similar except older ages are associated with significantly higher odds of rehospitalization (Table 4). In contrast to the US, length of hospital stay was not associated with the odds of rehospitalization in our models.<sup>14</sup>

### Discussion

The percentage of rehospitalizations among the population aged 65 years and above in France (14.7%) was lower in 2010 than recent estimates for the Medicare population in the US (18.4–19%) despite federal policy efforts in the US to lower the rate.

As in the US, there are some French studies that calculate rehospitalization rates following discharge for specific medical diagnoses.<sup>16,17</sup> However, such studies are not comparable to recent Medicare studies of all-cause rehospitalization, within 30 days following discharge. Similarly, because Medicare includes severely disabled patients under 65 years old as well as those with end stage renal disease (ESRD), this could possibly result in an underestimate of the comparable French rate, but this is likely to be slight as

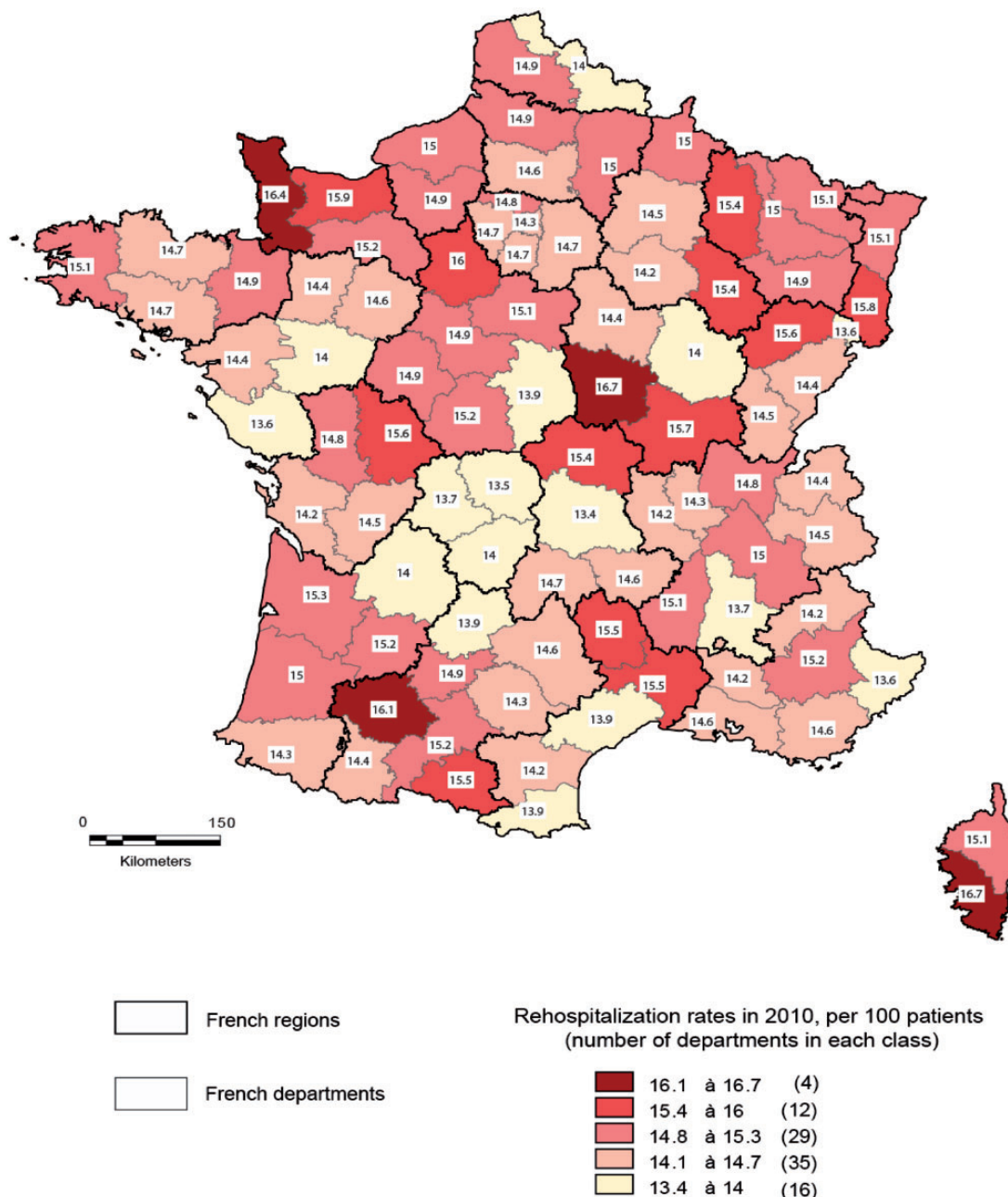
most such patients are over 64 years of age.<sup>18</sup> For example, regarding ESRD, we calculated that fewer than 16,000 patients under 65 years were included in the French database. Even if they were all rehospitalized, the rehospitalization rate would increase by only 0.7% (15.4% instead of 14.7%).

### Diagnoses associated with rehospitalization

The diagnoses associated with rehospitalization, in France, were comparable to those reported for the Medicare population with the exceptions of psychoses and cataract surgery. The low French rate for psychoses rehospitalizations reflects the fact that psychiatric hospitalizations in acute-care hospitals are not captured in the case-based PMSI reporting system. With regard to cataract surgery, in the US, virtually all such procedures are performed as outpatients, whereas in France 17% were performed as inpatients. The high proportion of rehospitalizations in France (24.3%) reflects planned hospital readmissions (Table 2). Exclusion of data on cataract surgery in France would lower France's all-cause rehospitalization.

### Regional variation in rehospitalization

In France, there is little variation in rehospitalization rates among the 95 departments suggesting there may be less variation in the health status of the population, in the quality of hospitals or in the capacity of primary care providers to coordinate their care with



**Figure 2.** Rehospitalization rates within 30 days of initial hospitalization among 95 French departments for patients aged 65 years or more (2010).

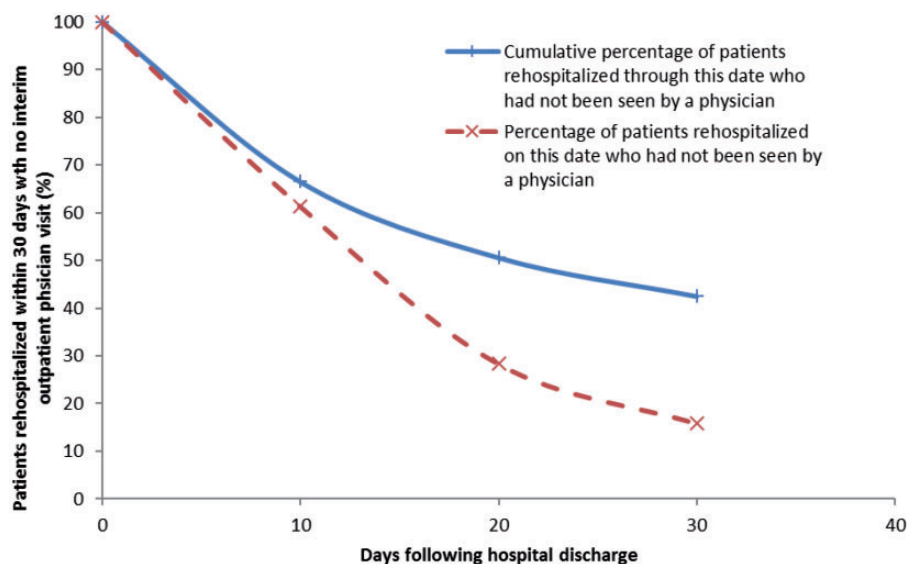
Source: Reproduced with permission from French hospitals claims data (PMSI), 2010.

hospital specialists. We are unable to assess these possible explanations.

*Why are rehospitalization rates lower in France than the US?*

Many unplanned rehospitalizations can be avoided and may represent sub-standard hospital care, or poor coordination among hospitals and other community-based health care providers. French health care is

characterized by poor hospital discharge planning and a lack of coordination among providers.<sup>19</sup> Although general practitioners in private community-based practice have informal referral networks to specialists and public hospitals, there are no formal institutional relationships. Such lack of coordination is one criterion on which a cross-national evaluation of primary care ranked France as one of the lowest performing systems of primary care among Organization for Economic Cooperation and Development nations.<sup>20</sup> For this



**Figure 3.** Proportion of patients in France rehospitalized within 30 days following discharge for a medical condition, for whom there was no record of an outpatient physician visit between the time of initial discharge and rehospitalization, 2010.

Source: Reproduced with permission from SNIIRAM-PMSI, 2010.

**Table 2.** Conditions most frequently associated with rehospitalization in France, 2010.

Condition at index discharge	30-day rehospitalization rate (%)	Proportion of all rehospitalizations (%)
<b>Medical</b>		
All	17.7	78.4
Ischaemic heart disease	19.3	6.9
Heart failure	21.3	6.5
Pneumonia	14.7	2.9
Arrhythmias	13.7	2.7
Stroke	10.4	2.1
<b>Surgical</b>		
All	9.1	21.6
Cataract	20.6	24.3
Prostate	12.5	12.7
Hip surgery	6.7	5.2
Cardiac stent placement	8.0	5.1
Small intestine and colon	12.5	3.3

Source: Reproduced with permission from SNIIRAM-PMSI, 2010.

reason, we had expected that rates of rehospitalization in France would be high. In addition, we calculated the total hospital discharge rate among the population 65+ for France in 2011 (375.8 per 1000) and found it to be 12 % higher than in the US (335.3 per 1000; National Hospital Discharge Survey, 2011), which would also be expected to result in higher rehospitalization rates. Previous studies have noted the strong association

**Table 3.** Odds ratios for hospital readmissions within 30 days following discharge for medical conditions in France.

Variable	Exp(B) (P value)
Age 70–74	1.009 (0.275)
Age 75–79	1.024 (0.002)
Age 80–84	1.006 (0.439)
Age 85+	0.955 (0.000)
Female	0.774 (0.000)
Private hospital	1.092 (0.000)
Charlson = 1	1.120 (0.000)
Charlson = 2	1.547 (0.000)
Charlson = 3	1.759 (0.000)
Length of stay of initial hospitalization	1.008 (0.000)

Source: Reproduced with permission from SNIIRAM-PMSI, 2010.

between hospital admission rates and rehospitalization.<sup>21</sup> However, our results contradict this expectation, as well.

Our finding with regard to outpatient visits following hospital discharge suggests there may be more access barriers in the US than in France where NHI covers the entire legally resident population. Despite co-insurance, in France, most of the population has complementary insurance similar to Medigap coverage in the US.<sup>9</sup> There are no deductibles, and patients with debilitating or chronic illness are exempted from payment. Previous studies have linked outpatient visits following hospital discharge to the probability of rehospitalization<sup>22</sup> so higher rates of outpatient visits

**Table 4.** Odds ratios for hospital readmissions within 30 days following discharge for surgical conditions in France.

Variable	Exp(B) (P value)
Age 70–74	1.141 (0.000)
Age 75–79	1.412 (0.000)
Age 80–84	1.661 (0.000)
Age 85+	1.838 (0.000)
Female	0.936 (0.000)
Private hospital	1.038 (0.000)
Charlson = 1	1.085 (0.000)
Charlson = 2	1.418 (0.000)
Charlson = 3	1.930 (0.000)
Length of stay of initial hospitalization	1.015 (0.000)

Source: Reproduced with permission from SNIIRAM-PMSI, 2010.

following hospital discharge for medical conditions among French patients may explain why rates of rehospitalization are lower in France than the US.

Our regression finding that the odds ratio for rehospitalization in France is higher for patients whose initial hospitalization was in a private for-profit hospital appears to contradict previous findings.<sup>23</sup> One explanation is that patients discharged from private hospitals may be younger and suffer from lower morbidity and have better follow-up services than those discharged from public hospitals, who may experience inadequate hospital-community care coordination. These characteristics led us to expect that the odds of rehospitalization would be higher among patients treated in public hospitals. Since our model controls for age and differences in morbidity, we cannot explain this finding. It could, however, suggest that lack of coordination between hospital and community-based physicians is not an important contributor to rehospitalization in France. Alternatively, this finding could be explained by the financial incentives of private hospitals to maximize case-based reimbursement. Yet, this hypothesis lacks plausibility as hospital reimbursement incentives for public hospitals were well aligned with those of their private sector counterparts in 2010.

In summary, we identify four plausible hypotheses for lower rates of rehospitalization in France compared to the US. First, France provides better access to primary care.<sup>24</sup> Hospital admissions for ambulatory-care sensitive conditions – a widely accepted indicator of access to timely and effective primary care – are lower in France than in the US. Second, the older French population is healthier than their US counterparts: life expectancy at 65 years, disability levels among older people and premature mortality bear this out. Third, the average length of stay in hospitals is longer in France (just over seven days) than in the US (5.5

days), perhaps reflecting aggressive efforts by US hospital managers to reduce hospital lengths of stay, which results in premature discharge. Although our regression analysis suggests that length of stay of initial admission does not predict the odds of rehospitalization *within* France, it is plausible to suggest that the 1.5 day difference in length of stay explains part of the difference between countries.

Our fourth plausible hypothesis is that French nursing homes do not face the same financial incentive to rehospitalize residents. When a patient from a skilled nursing facility (SNF), dually eligible for Medicare and Medicaid in the US, is hospitalized in an acute-care hospital, the SNF receives a higher Medicare reimbursement rate when that patient is discharged back to that facility.<sup>25</sup> The equivalent of SNFs, in France, does not face the same incentive. Because rehospitalization among dually eligible SNF patients in the US is a significant contributor to the overall rates of Medicare readmissions,<sup>26</sup> this financial incentive may also explain why French rates of rehospitalization among patients 65+ are lower. It may also account for why psychoses are a leading condition associated with rehospitalization in the US as patients from SNFs are more likely to be hospitalized for psychoses and other severe mental illness than other Medicare beneficiaries.

## Conclusion

Although better health status and access to primary care may be important factors in explaining why France has a lower rate of rehospitalization than the US, our results indicate that the odds of rehospitalization are higher in France among sicker patients. The odds of rehospitalization among patients with the highest morbidity (level 3) of the Charlson index were nearly 76% higher than among patients with the lowest morbidity (level 1). This finding, consistent with the US, suggests two policy implications. First, the importance of risk adjustment, particularly if policymakers enact financial penalties for high rates of rehospitalization. Second, that there are opportunities for reducing rehospitalization rates among older patients, in both countries, by targeting those patients at high risk of rehospitalization and identifying interventions that can lower these odds.

## Acknowledgements

For assistance in linking the PMSI and SNIIRAM datasets using individual patient identifiers, we thank Philippe Ricordeau and Myriam Mezzarobba (Département des études en santé publique (DESP), Direction de la stratégie des études et des statistiques (DSES), Caisse Nationale



d'Assurance Maladie des Travailleurs Salariés). In addition, we thank Zeynep Or and Michel Naiditch (IRDES) for their frequent counsel in interpreting the French health care system.

### Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

### References

1. Boutwell AE, Johnson MB, Rutherford P, et al. An early look at a four-state initiative to reduce avoidable hospital readmissions. *Health Aff* 2011; 30: 1272–1280.
2. Ryan A, Blustein J and Casalino LP. Medicare's flagship test of pay-for-performance did not spur more rapid quality improvement among low-performing hospitals. *Health Aff* 2012; 31: 797–805.
3. Joynt KE and Jha AK. Thirty-day readmissions—truth and consequences. *New Engl J Med* 2012; 366: 1366–1369.
4. Goldberg M, Jouglu E, Fassa M, et al. The French public health information system. *J Int Assoc Off Stat* 2012; 28: 31–41.
5. Allaudeen N, Schnipper JL, Orav EJ, et al. Inability of providers to predict unplanned readmissions. *J Gen Inter Med* 2011; 26: 771–776.
6. Jencks SF, Williams MV and Coleman EA. Readmissions among patients in the Medicare fee-for service program. *New Engl J Med* 2009; 360: 1418–1428.
7. Goodman DC, Fisher ES and Chang CH. *After hospitalization: a Dartmouth Atlas report on post-acute care for Medicare beneficiaries*. Dartmouth Atlas of Health, 28 September 2011.
8. Gerhardt G, Alshadye Y, Hickman P, et al. Medicare readmission rates showed meaningful decline in 2012. *Medicare Medicaid Res Rev* 2013; 3: E1–E12.
9. Rodwin VG (ed). *Universal health insurance in France how sustainable? Essays on the French health care system*. Washington, DC: Office of Health and Social Affairs, French Embassy, 2006.
10. Schneider EC, Hussey PS and Schnyer C. *Payment reform: analysis of models and performance measurement implications*. Technical Report. Santa Monica, CA: Rand Corporation, 2011.
11. HAS (Haute Autorité de Santé). Comment réduire le risque de réhospitalisations évitables des personnes âgées? Notes méthodologique et de synthèse bibliographique, 2013.
12. McClellan M and Fisher E. The ACO final rule: progress toward better care at lower cost. *Health Affairs Blog*, <http://healthaffairs.org/blog/2011/10/21/the-aco-final-rule-progress-toward-better-care-at-lower-cost/> (2011, accessed 1 September 2014).
13. Billings J, Dixon J, Mijanovich T, et al. Case finding for patients at risk of readmission to hospital: development of algorithm to identify high risk patients. *BMJ* 2006; 333: 327.
14. van Walraven C, Irfan AD, Chaim B, et al. Derivation and validation of an index to predict early death or unplanned readmission after discharge from hospital to the community. *CMAJ* 2010; 182: 551–557.
15. <http://www.atih.sante.fr> (accessed 6 November 2013).
16. Atete-Leblanca R, Bréchat P-H, Morele, et al. Parturientes précaires et réhospitalisation: étude pilote au groupe hospitalier Lariboisière-Fernand-Widal de Paris. *Gynecologie Obstetrique Fertilité* 2012; 40: 753–758.
17. Dely C, Sellier P, Dozol A, et al. Les readmissions évitables des “pneumopathies communautaires”: utilité et fiabilité d'un indicateur de la qualité du parcours de soins du patient. *Presse Med* 2011; 41: e1–e9, [www.em-consulte.com/revue/lpm](http://www.em-consulte.com/revue/lpm) (accessed 1 September 2014).
18. <http://www.usrds.org/adr.aspx> (accessed 6 November 2013).
19. Schoen C, Osborn, Squires D, et al. A survey of primary care doctors in ten countries shows progress in use of health information technology, less in other areas. *Health Aff* 2012; 31: 2805–2816.
20. Macinko J, Starfield B and Shi L. The contribution of primary care systems to health outcomes within Organization for Economic Cooperation and Development (OECD) countries, 1970–1998. *Health Serv Res* 2003; 38: 831–865.
21. Epstein AM, Ashish KJ and Orav EJ. The relationship between hospital admission rates and rehospitalizations. *NEJM* 2012; 365: 24.
22. Hernandez AF, Greiner MA, Fonarow GC, et al. Relationship between early physician follow-up and 30-day readmission among Medicare beneficiaries hospitalized for heart failure. *JAMA* 2010; 303: 1716–1722.
23. Gusmano MK, Weisz D, Rodwin VG, et al. Disparities in access to health care in three French regions. *Health Policy* 2014; 114: 31–40.
24. Gusmano MK, Rodwin VG and Weisz D. *Health Care in World Cities*. New York, London and Paris, Baltimore: Johns Hopkins University Press, 2010.
25. Mancuso D, Court B and Felve BEM. Patterns of hospital readmissions and nursing facility utilization among Washington State dual eligibles: opportunities for improved outcomes and cost savings. *RDA Report* 11.175, <http://www.dshs.wa.gov/pdf/ms/rda/research/11/175.pdf> (2012, accessed 16 June 2014).
26. Moore J, Balderas M, Dong N, et al. Medicare nursing home resident hospitalization rates merit additional monitoring, US Office of the Inspector General, 2013; Report OEI-06-11-00040; Congressional Research Service (CRS), Medicare Hospital Readmissions: Issues, Policy Options and PPACA [the Patient Protection and Affordable Care Act], 21 September 2010.