



## King's Research Portal

DOI:

[10.1016/j.schres.2016.04.008](https://doi.org/10.1016/j.schres.2016.04.008)

*Document Version*

Peer reviewed version

[Link to publication record in King's Research Portal](#)

*Citation for published version (APA):*

Winkler, P., Mladá, K., Krupchanka, D., Agius, M., Ray, M. K., & Höschl, C. (2016). Long-term hospitalizations for schizophrenia in the Czech Republic 1998–2012. *Schizophrenia Research*. Advance online publication. <https://doi.org/10.1016/j.schres.2016.04.008>

### **Citing this paper**

Please note that where the full-text provided on King's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

### **General rights**

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the Research Portal

### **Take down policy**

If you believe that this document breaches copyright please contact [librarypure@kcl.ac.uk](mailto:librarypure@kcl.ac.uk) providing details, and we will remove access to the work immediately and investigate your claim.

# Long-term hospitalizations for schizophrenia in the Czech Republic 1998-2012

---

**Author's names:** Petr Winkler<sup>a, b</sup>; Karolína Mladá<sup>a</sup>; Dzmitry Krupchanka<sup>a</sup>; Mark Agius<sup>c</sup>; Mana'an Kar Ray<sup>d</sup>; Cyril Höschl<sup>a</sup>

**Departments:** <sup>a</sup> Department of Social Psychiatry, National Institute of Mental Health, Klecany, Czech Republic; <sup>b</sup> Health Service and Population Research Department, Institute of Psychiatry, Psychology and Neuroscience, King's College London, United Kingdom; <sup>c</sup> Department of Psychiatry, Clare College, University of Cambridge, United Kingdom; <sup>d</sup> Cambridgeshire and Peterborough NHS Foundation Trust, Cambridge, United Kingdom

**Correspondence address:** PhDr. Petr Winkler; Department of Social Psychiatry; National Institute of Mental Health; Topolová 748; 250 67 Klecany; Czech Republic; GSM: 00420 728 221 883; petr.winkler@nudz.cz

## Abstract

Deinstitutionalization has not been pursued in the post-communist Europe until recently. The population of psychiatric patients institutionalized in the regional mental hospitals is, however, largely understudied. The aim of this study is to assess discharges of long-term inpatients with schizophrenia from Czech psychiatric hospitals and to analyse re-hospitalizations within this group. The nationwide register of all-cause inpatient hospitalizations was merged with the nationwide register of all-cause deaths on an individual level basis. Descriptive statistics, survival analysis and logistic regression were performed. 3,601 patients with schizophrenia previously hospitalized for more than a year were discharged from Czech mental hospitals between 1998 and 2012. This included 260 patients hospitalized for more than 20 years. Nearly one fifth (n=707) of the long-term patients died during the hospitalization; and discharges of 19.36 % (n=697) were only administrative in their nature. Out of 2,197 truly discharged patients, 14.88 % (n=327) were re-hospitalized within two weeks after the discharge. The highest odds of rehospitalization were associated with being discharged against medical advice (OR 5.27, CI: 3.77-7.35, p<0.001). These data are important for the ongoing mental health care reforms in the Czech Republic and other countries in the Central and Eastern Europe.

## Keywords

Schizophrenia, hospitalization, deinstitutionalization, epidemiology, health service, psychiatric hospital

## Introduction

Deinstitutionalization is the process of shifting the locus of care from mental hospitals to the community. This policy has come to prominence in the second half of the 20<sup>th</sup> Century. It has been especially driven by humanitarian concerns (Aderibigbe, 1997; Haug and Rossler, 1999; Thornicroft and Bebbington, 1989; Yohanna, 2013) responding to the improper treatment and human rights violations associated with long-term hospitalizations in big psychiatric institutions (Drew et al., 2011). Tens of thousands of long-term patients were discharged from mental hospitals as a consequence of deinstitutionalization (Honkonen et al., 1999; Talbott, 2004; Thornicroft and Bebbington, 1989), including a large number of patients with schizophrenia, some of whom were previously hospitalized for more than 20 years (Andrews et al., 1990; Barr and Parker, 1975; Donnelly et al., 1997; McGrew et al., 1999; Rothbard et al., 1999; Salokangas and Saarinen, 1998).

The right to live independently and be included in the community was established in Article 19 of the Convention on the Rights of Persons with Disabilities (CRPD) as one of the basic human rights of people with disabilities (UN, 2007). A call for action has risen globally to promote its better implementation (Maj, 2011; Stuart, 2012) and deinstitutionalization is now the official policy of the World Health Organization in Europe (WHO, 2013). While mental health care systems in the majority of West European countries have undergone deinstitutionalization to some extent (Haug and Rossler, 1999; Novella, 2010; Pijl et al., 2001; Priebe et al., 2005; Saraceno and Tognoni, 1989; Vazquez-Barquero et al., 2001), mental health care in the countries of post-communist Central and Eastern Europe often continue to rely on large psychiatric hospitals (Semrau et al., 2011).

In the Czech Republic, mental hospitals are the largest in the EU in terms of the number of beds per hospital – on average, there are more than 500 beds per hospital (WHO, 2011). Although there has been a sharp decrease of mental health beds in Czech mental hospitals between 1990 and 1995 (from 12.4 to 10.0 beds per 10.000 inhabitants) and slight decrease between 1995 and 2010 (from 10.0 to 8.8 beds per 10.000 inhabitants) (IHIS, 2013), this has not been accompanied by a sufficient development of alternatives within the community. Community care is unequally accessible throughout the country and psychiatric beds in the community are scarce (Höschl et al., 2012). The present system of mental health care does not fully adhere to the main principles of current human rights standards. In 2008, the national Public Defender of Rights has conducted a series of investigations within eight out of a total of 16 Czech mental hospitals and has identified possible violations of human rights in some of these institutions (Motejl, 2008a, c, d, e, f, g, h). Conditions within these institutions were often qualified as inappropriate; it was not unusual that there were more than nine [and in some cases even 17] beds in one room (Motejl, 2008a, c, d, e, f, g, h). There have been only few signs of improvement since then. However, the government of the Czech Republic has signed and ratified the CRPD in 2009, so it is obliged to implement reforms to meet the rights and demands of people with mental health disabilities.

Recently, a further attempt to reform mental health care has been introduced into the Czech Republic (MHCZ, 2013). One of its major goals is a systematic development of care in the community, and the focus is on those with severe mental illness (MHCZ, 2013). The reform efforts are hindered by a lack of evidence. No relevant epidemiological study has been published and the only available data are routinely collected by the Institute of Health Information and Statistics of the Czech Republic. These data are presented on an aggregate level and lack important details, such as lengths of individual hospitalizations, rates of suicides following discharge, rates of reinstitutionalization (i.e. moving patients from psychiatric hospitals to other long-term care institutions such as health and social care

facilities or prisons), and rates of re-hospitalizations (i.e. admitting patients back to psychiatric hospitals shortly after discharge from inpatient hospitalizations). As a consequence, the population in mental hospitals is largely understudied. The number of hospitalised long-term patients, patterns of their discharge and rehospitalization remains unclear. This depreciates the ongoing reform as well as the general development of evidence based mental health care.

The aim of this paper is to investigate discharges of patients with schizophrenia from mental hospitals after their long-term hospitalization. We were particularly interested in the number of patients discharged in recent years, the length of their hospitalizations, the number of patients who died in mental hospitals, the number of patients who were re-institutionalized into health and social care facilities, and the number of patients who were re-hospitalized shortly after their discharge.

This study is important for three reasons. Firstly, it quantifies the scale of the challenge for the mental health reform in the Czech Republic and helps to assess the number of long-term inpatients diagnosed with schizophrenia. This is needed for informed decision making related to the reform. Secondly, it is vital to identify the patterns of re-institutionalization which will also help to chart out the need for effective interventions both pre and post discharge. Last but not least, mental health care systems in post-communist Europe have been influenced by similar societal factors and they face similar challenges. Evidence from one of the post-communist states is likely to be relevant to other post-communist countries in the region.

## Materials and methods

### 2.1. Data and participants

The data were extracted from the database of all-cause hospitalizations and the database of all-cause deaths in the Czech Republic. The database of all-cause hospitalizations is maintained by the Institute of Health Information and Statistics (IHIS), Czech Republic, and based on the form *Protocol of discharge*. The *Protocol of discharge* is filled out by mental health professionals and it contains a summary of the key facts about the discharge of a person from the inpatient psychiatric treatment. The protocols are sent from health care facilities to the Institute of Health Information and Statistics in the following cases: a) the person dies during hospitalization; b) the person is transferred to another department within the same facility; c) the person is transferred to an acute physical health care facility; d) the person is re-institutionalized into either health or social care facility; e) the person is discharged home, or f) the person is discharged against the medical advice of the psychiatrists. The database of all-cause deaths is based on the *Notifications of deaths*. Every deceased person in the Czech Republic is examined by a physician. The physician then issues a *Death Certificate* which is sent to the national Register Office. The Register Office issues an official *Notification of death* and it is then handed to the Czech Statistical Office [CZSO], which maintains a database of all-cause deaths. The individual data in both databases were encrypted by the IHIS so it was not possible for researchers to identify individual patients and yet it was possible to connect data from both databases via the same encrypted code.

All adults (18+ years at the time of discharge) who were hospitalized in psychiatric inpatient facilities with the diagnosis of schizophrenia (F20x) for more than a year and discharged between the 1 January 1998 and 31 December 2012 were included in the analysis. The duration of hospitalization of one year

or longer was chosen to define a long-term patient. This is in line with other studies focused on deinstitutionalization and mental health care reforms, including studies of the Team for the Assessment of Psychiatric Services (TAPS) (Leff, 1997) and others (Francis et al., 1994; Jones et al., 1986; McInerney et al., 2010; Ward et al., 2003). If there were more than one long-term hospitalization during the given period, the patients' last long-term hospitalization was taken into the analysis and it is further referred to as an "index hospitalization".

The period of two weeks was chosen to define "rehospitalization shortly after discharge" because the majority of readmissions take place within this time according to survival analysis (Figure 1). A shorter time horizon would exclude a substantial number of re-hospitalizations. The time period of one year between the discharge and possible death (including suicide) was chosen because a longer time period would lead to the exclusion of a relatively large number of patients from our analyses.

## 2.2. Statistical analysis

We have calculated descriptive statistics, and conducted a survival analysis using a Kaplan-Meier curve. The association between patients' characteristics (gender, age, diagnosis, way of discharge, length of hospitalization) and rehospitalization within two weeks after the discharge was examined by calculating crude odds ratios (Table 2) and by conducting multivariable logistic regression (Table 3). The period of two weeks after the discharge was selected on the basis of survival analysis (Figure 1). Those who were discharged because of death as well as those who were transferred into either another department of a psychiatric hospital or acute physical health care, were excluded from the regression because of the administrative nature of their discharge.

## Results

### 3.1. Participants

In total, there were 22,281 individual adult patients with schizophrenia discharged from Czech mental hospitals between 1 January 1998 and 31 December 2012. This included 3,601 (16.16 %) individuals who had a long-term hospitalization, i.e. they were hospitalized for more than a year. Among the long-term inpatients with schizophrenia, there were 1,343 of those hospitalized for more than four years, and this included 260 patients hospitalized for more than 20 years. Characteristics of the discharged long-term patients are given in the Table 1, which is stratified according to the way of discharge so it is possible to see the full characteristics of the patients who were included into further analyses of association between patients' characteristics and the risk of re-hospitalization within two weeks after discharge.

---Table 1 about here---

### 3.2. Outcomes

Out of the total 3,601 long-term patients with schizophrenia, 707 (19.63 %) died at the average age of 54.3 years during their psychiatric inpatient hospitalization. Out of the remaining 2,894 (80.37 %) long-term patients with schizophrenia, the discharges of 655 and 42 were only administrative in their nature as they were for those who were transferred to acute physical health care or to another department within the psychiatric hospital respectively. This means that only 2,197 patients were truly discharged (Figure 2).

---Figure 1 about here---

A Kaplan-Meier survival plot shows that out of the 2,197 truly discharged persons, 327 (14.88 %) were re-hospitalized within two weeks after the discharge (Figure 1). The crude odds ratios suggested that higher odds of rehospitalization shortly after discharge may be associated with gender, age, marital status, and way of discharge (Table 2). After multiple adjustment in logistic regression (Table 3) there remains evidence of the highest odds of rehospitalization being associated with the discharge against medical advice (OR 5.27, CI: 3.77-7.35,  $p < 0.001$ ). The odds of rehospitalization were also elevated in those who were hospitalized for more than 2 years, but not for more than 15 years (see the Table 3 for details). Slightly elevated odds of rehospitalization were found among those being divorced (OR 1.49, CI: 1.04-2.11,  $p = 0.028$ ). Neither age nor gender predicted higher odds of rehospitalization. On the other hand, the status of being re-institutionalized into a social care facility has been shown to be a protective factor against rapid rehospitalization in an inpatient psychiatric facility (OR 0.09, CI: 0.05-0.15,  $p < 0.001$ ).

---Figure 2 about here---

---Table 2 about here---

---Table 3 about here---

## Discussion

The study shows that thousands of patients with schizophrenia, previously hospitalized for more than a year, were discharged from Czech mental hospitals between 1998 and 2012. The number of people kept so long out of their natural environment and in huge facilities where there are undignified conditions suggest that mental health care in the Czech Republic is not fully compliant with CRPD, and more specifically with the Article 19.

To understand these findings, a contextual reference of the Czech mental health care systems is necessary. It is a consensus among Czech mental health professionals, and it has been also reported by the Public Defender of Rights (Motejl, 2008a, b, c, d, e, f, g, h) that Czech mental hospitals act partly as a substitute for social care facilities. People are hospitalized for an excessively long time because there are no alternative services in the community. This means that mental health patients are hospitalized in psychiatric hospitals not because of the treatment of their disorder, but because they have no alternatives of essential support. In this perspective, long-term hospitalization might be, at least for some of these patients, the best available alternative.

The idea of lack of services in the community is also supported by the high rehospitalization rates in our sample. Although the odds of rehospitalization were highly elevated only in those who were discharged against medical advice, the rates of rehospitalization are excessive. It is somewhat startling that there are people hospitalized for many years and then 14.88 % of them are readmitted within the two weeks after their discharge.

It should be a key aim of deinstitutionalisation to enable patients to stay out of hospital and to provide further support to achieve social inclusion and further recovery. This will require appropriate facilities and staff, so that patients can be discharged to a number of different places as appropriate to the individual case, including both home and supported accommodation. Furthermore it is important, for

deinstitutionalisation to occur, that patients once discharged, do not relapse and require readmission, but are supported to stay out of hospital. This might be the task of Community Mental Health Teams.

The experience with deinstitutionalization in many countries in Western Europe suggests that a well-organized transformation of the mental health care system is beneficial to patients. There have been thousands of patients deinstitutionalized in Western Europe. Some of these patients with schizophrenia had been previously hospitalized for more than 20 years, and it has been demonstrated that they did well in the community after discharge (Barbato et al., 2004; Donnelly et al., 1997; Furlan et al., 2009; Jones et al., 1986; Kunitoh, 2013; Leff, 1997; Mizuno et al., 2005; Thornicroft et al., 2005). Long-term patients treated in community also demonstrated more favourable outcomes than patients treated in hospitals (James et al., 2006). There is also evidence suggesting that deinstitutionalization might have led to a decreasing gap in life expectancy between psychiatric patients and the general population (Wahlbeck et al., 2011).

Nevertheless, deinstitutionalization has been criticized for leading to adverse consequences, such as criminality, homelessness, 'revolving-door' psychiatry, and other difficulties related to the life of chronic patients in the community. With respect to criminality and homelessness, we demonstrated in our recent systematic review that there is only weak evidence to support the association between deinstitutionalization, homelessness, and criminality (Winkler et al., 2016). The evidence is stronger with regard to problems of 'revolving-door' patients and difficulties of life within the community. On the one hand, patients were usually more satisfied and their quality of life improved after relocation from mental hospitals to the community (Kunitoh, 2013). On the other hand, issues of poverty, unemployment and loneliness have been reported in numerous studies, and new forms of institutionalism occurred among patients who were relocated into various types of social services (Freedman & Moran, 1984, Craig et al, 1984, Lamb, 1993, Novella, 2010). Coordination and cooperation of extramural services, case management and appropriately supervised housing seem to be necessary components of successful deinstitutionalization (Freedman & Moran, 1984, Craig et al, 1984, Lamb, 1993). Criminality and homelessness, and other societal problems related to mental disorders might be primarily associated with low level of efficacious investments into mental health rather than with deinstitutionalization itself (Winkler et al. 2016). To our mind, the most recent Department of Health report on mental health services in England (Farmer & Dyer, 2016) supports this hypothesis. Beside of the availability of appropriately funded services in the community, there is also something to consider about the mind-set of practitioners involved in the care. This is the ethos of recovery that embodies creating hope and empowerment to live a fulfilling life despite the presence of mental disorder.

The findings presented in this paper suggest that there are still hundreds of people with schizophrenia institutionalized in large mental health hospitals in the Czech Republic. This might explain excessively long average length of inpatient treatment for schizophrenia, schizotypal and delusional disorders, which was as high as 103 days in 2006 and 115 days in 2012 (IHIS, 2007; IHIS, 2013). In Denmark 2006, only 9.8 % of lifetime schizophrenia patients were institutionalized and their mean number of bed days for that year was 24.9 days (Uggerby et al., 2011). In Zurich canton 2004, median length of inpatient hospitalization for schizophrenia, schizotypal and delusional disorders was 24 days (Lay et al., 2007).

This study benefits from both the health and death registers, which include Czech nation-wide data on inpatient hospitalizations and details about all-cause deaths that occurred in a given year or time period. The other strength is that it was possible to merge these registers on an individual data basis

and obtain a sample large enough to conduct reliable analysis related to discharges and re-hospitalizations of long-term patients with schizophrenia. These data are highly important for the ongoing mental health care reform in the Czech Republic, and they might be also important for some other Central and East European countries where the mental health care still relies on large psychiatric hospitals.

A major limitation of the study is the reliance on these datasets. Although the databases are well organized and carefully maintained, some mistakes may have occurred. These might be random and systematic in their nature. By random mistakes we mean especially those mistakes that are related to data processing. Some items in the protocol of discharge might have been incorrectly answered by liable medical doctor, and some items might have been misread by liable employee of the Institute for Health Information and Statistics. By systematic mistakes we mean especially those that are related to artificial discharges of psychiatric patients. Artificial discharges happen when the patient is, for instance, discharged just for the sake of Christmas holidays and it is arranged in advance that he or she will be admitted back when the holidays are over. We know that this happens in the Czech Republic, but we were not able to identify such artificial discharges in our data, which might have introduced some kind of error into our analyses. Lastly, we believe that data presented in this paper give a glimpse of the scale of institutionalism in the post-communist Central and Eastern Europe. However, extrapolation of our results into other countries in the region is not straightforward and the results should be taken only as indicative of a possible problem that might be prevalent there.

## References

- Aderibigbe, Y.A., 1997. Deinstitutionalization and criminalization: Tinkering in the interstices. *Forensic Sci. Int.*, 85(2), 127-134.
- Andrews, G., Teesson, M., Stewart, G., Hoult, J., 1990. Follow-up of community placement of the chronic mentally ill in New South Wales. *Hosp. Community Psych.*, 41(2), 184-188.
- Barbato, A., D'Avanzo, B., Rocca, G., Amatulli, A., Lampugnani, D., 2004. A study of long-stay patients resettled in the community after closure of a psychiatric hospital in Italy. *Psychiatr. Serv.*, 55(1), 67-70.
- Barr, R., Parker, G., 1975. Effects of Discharge on Long-Stay Psychiatric Hospital Patients. *Aust. NZ. J. Psychiat.*, 9(1), 47-49.
- Craig, T.J., Goodman, A.B., Siegel, C., Wanderling, J., 1984. The dynamics of hospitalization in a defined population during deinstitutionalization. *Am. J. Psychiatry* 141(6), 782-785.
- Donnelly, M., McGilloway, S., Mays, N., Perry, S., Lavery, C., 1997. A three- to six-year follow-up of former long-stay residents of mental handicap hospitals in Northern Ireland. *Soc. Psych. Psych. Epid.*, 1997;32(8):451-8.
- Drew, N., Funk, M., Tang, S., Lamichhane, J., Chávez, E., Katontoka, S., Pathare, S., Lewis, O., Gostin, L., Saraceno, B., 2011. Human rights violations of people with mental and psychosocial disabilities: an unresolved global crisis. *Lancet* 378(9803), 1664-1675.



Farmer, P., Dyer, J., 2016. The Five Year Forward View for Mental Health. Mental Health Taskforce, available at: <https://www.england.nhs.uk/mentalhealth/taskforce/> [accessed 15 February 2016]

Francis, V., Vesey, P., Lowe, G., 1994. The closure of a long-stay psychiatric hospital: a longitudinal study of patients' behaviour. *Soc. Psych. Psych. Epid.*, 29(4), 184-189.

Freedman, R.I., Moran, A., 1984. Wanderers in a promised land. The chronically mentally ill and deinstitutionalization. *Med. Care* 22(12 Suppl), S1-60.

Furlan, P.M., Zuffranieri, M., Stanga, F., Ostacoli, L., Patta, J., Picci, R.L., 2009. Four-Year Follow-Up of Long-Stay Patients Settled in the Community After Closure of Italy's Psychiatric Hospitals. *Psychiatr. Serv.*, 60(9), 1198-1202.

Haug, H.J., Rossler, W., 1999. Deinstitutionalization of psychiatric patients in central Europe. *Eur. Arch. Psychiatry Clin. Neurosci.*, 249(3), 115-122.

Honkonen, T., Saarinen, S., Salokangas, R.K., 1999. Deinstitutionalization and schizophrenia in Finland: II. Discharged patients and their psychosocial functioning. *Schizophr. Bull.*, 25(3), 543-551.

Höschl, C., Winkler, P., Pec, O., 2012. The state of psychiatry in the Czech Republic. *Int. Rev. Psychiatry*, 24(4), 278-285.

IHS, 2007. Psychiatrická péče 2006. [Psychiatric care 2006]. Institute for health information and statistics, Czech Republic, Prague.

IHS, 2013. Psychiatrická péče 2012. [Psychiatric care 2012]. Institute for health information and statistics, Czech Republic, Prague.

James, G. M., Sugar, C. A., Desai, R., Rosenheck, R. A., 2006. A comparison of outcomes among patients with schizophrenia in two mental health systems: A health state approach. *Schizophr. Res.*, 86(1), 309-320.

Jones, K., Robinson, M., Golightley, M., 1986. Long-term psychiatric patients in the community. *Br. J. Psychiatry* 149, 537-540.

Kunitoh, N., 2013. From hospital to the community: The influence of deinstitutionalization on discharged long-stay psychiatric patients. *Psychiat. Clin. Neuros.*, 67(6), 384-396.

Lamb, H.R., 1993. Lessons learned from deinstitutionalisation in the US. *Br. J. Psychiatry* 162, 587-592.

Lay, B., Nordt, C., Rössler, W., 2007. Trends in psychiatric hospitalisation of people with schizophrenia: a register-based investigation over the last three decades. *Schizophr. Res.*, 97(1), 68-78.

Leff, J., 1997. *Care in the community*. John Wiley, Chichester.

Maj, M., 2011. The rights of people with mental disorders: WPA perspective. *Lancet* 378(9802), 1534-1535.

McGrew, J.H., Wright, E.R., Pescosolido, B.A., McDonel, E.C., 1999. The closing of Central State Hospital: Long-term outcomes for persons with severe mental illness. *J. Behav. Health Ser. R.*, 26(3), 246-261.

McInerney, S.J., Finnerty, S., Avalos, G., Walsh, E., 2010. Better off in the community? A 5-year follow up study of long-term psychiatric patients discharged into the community. *Soc. Psych. Psych. Epid.*, 45(4), 469-473.

MHCZ, 2013. Strategie reformy psychiatrické péče [Mental health care reform strategy], Ministry of Health of the Czech Republic, Prague.

Mizuno, M., Sakuma, K., Ryu, Y., Munakata, S., Takebayashi, T., Murakami, M., Falloon, I.R.H., Kashima, H., 2005. The Sasagawa Project: A model for deinstitutionalisation in Japan. *Keio J. Med.*, 54(2), 95-101.

Motejl, O., 2008a. Zpráva z návštěvy zařízení: Psychiatrická léčbna Dobřany [Report from a visit of an institution: Psychiatric hospital Dobřany]. Sp. zn.: 6/2008/NZ/LS. Public Defender of Rights, Brno.

Motejl, O., 2008b. Zpráva z návštěvy zařízení: Psychiatrická léčbna Havlíčkův Brod [Report from a visit of an institution: Psychiatric hospital Havlíčkův Brod]. Sp. zn.: 5/2008/NZ/LS. Public Defender of Rights, Brno.

Motejl, O., 2008c. Zpráva z návštěvy zařízení: Psychiatrická léčbna Horní Beřkovice [Report from a visit of an institution: Psychiatric hospital Horní Beřkovice]. Sp. zn.: 10/2008/NZ/LS. Public Defender of Rights, Brno.

Motejl, O., 2008d. Zpráva z návštěvy zařízení: Psychiatrická léčbna Kosmonosy [Report from a visit of an institution: Psychiatric hospital Kosmonosy]. Sp. zn.: 2/2008/NZ/LS. Public Defender of Rights, Brno.

Motejl, O., 2008e. Zpráva z návštěvy zařízení: Psychiatrická léčbna Kroměříž [Report from a visit of an institution: Psychiatric hospital Kroměříž]. Sp. zn.: 3/2008/NZ/LS. Public Defender of Rights, Brno.

Motejl, O., 2008f. Zpráva z návštěvy zařízení: Psychiatrická léčbna Lnáře [Report from a visit of an institution: Psychiatric hospital Lnáře]. Sp. zn.: 14/2008/NZ/LS. Public Defender of Rights, Brno.

Motejl, O., 2008g. Zpráva z návštěvy zařízení: Psychiatrická léčbna Opava [Report from a visit of an institution: Psychiatric hospital Opava]. Sp. zn.: 7/2008/NZ/LS. Public Defender of Rights, Brno.

Motejl, O., 2008h. Zpráva z návštěvy zařízení: Psychiatrická léčbna Šternberk [Report from a visit of an institution: Psychiatric hospital Šternberk]. Sp. zn.: 1/2008/NZ/LS. Public Defender of Rights, Brno.

Novella, E.J., 2010. Mental Health Care in the Aftermath of Deinstitutionalization: A Retrospective and Prospective View. *Health Care Anal.*, 18(3), 222-238.

Pijl, Y.J., Kluiter, H., Wiersma, D., 2001. Deinstitutionalisation in the Netherlands. *Eur. Arch. Psychiatry Clin. Neurosci.*, 251(3), 124-129.

Priebe, S., Badesconyi, A., Fioritti, A., Hansson, L., Kilian, R.T., Torres-Gonzales, F., Turner, T., Wiersma, D., 2005. Reinstitutionalisation in mental-health care: comparison of data on service provision from six European countries. *BMJ*, 330(7483), 123-126.

Rothbard, A.B., Kuno, E., Schinnar, A.P., Hadley, T.R., Turk, R., 1999. Service utilization and cost of community care for discharged state hospital patients: A 3-year follow-up study. *Am. J. Psychiat.*, 156(6), 920-927.

Salokangas, R.K., Saarinen, S., 1998. Deinstitutionalization and schizophrenia in Finland: I. Discharged patients and their care. *Schizophr. Bull.*, 24(3), 457-467.

Saraceno, B., Tognoni, G., 1989. Methodological lessons from the Italian psychiatric experience. *Int. J. Soc. Psychiatry*, 35(1), 98-109.

Semrau, M., Barley, E.A., Law, A., Thornicroft, G., 2011. Lessons learned in developing community mental health care in Europe. *World Psychiatry*, 10(3), 217-225.

Stuart, H., 2012. United Nations convention on the rights of persons with disabilities: a roadmap for change. *Current Opin. Psychiatry*, 25(5), 365-369.

Talbott, J.A., 2004. Deinstitutionalization: Avoiding the disasters of the past (Reprinted from *Hospital and Community Psychiatry*, pg 621-624, 1979). *Psychiatr. Serv.*, 55(10), 1112-1115.

Thornicroft, G., Bebbington, P., 1989. Deinstitutionalisation--from hospital closure to service development. *Br. J. Psychiatry*, 155, 739-753.

Thornicroft, G., Bebbington, P., Leff, J., 2005. Outcomes for long-term patients one year after discharge from a psychiatric hospital. *Psychiatr. Serv.*, 56(11), 1416-1422.

Uggerby, P., Nielsen, R. E., Correll, C. U., Nielsen, J., 2011. Characteristics and predictors of long-term institutionalization in patients with schizophrenia. *Schizophr. Res.*, 131(1), 120-126.

UN, 2007. Convention on the Rights of Persons with Disabilities : resolution / adopted by the General Assembly 7, A/RES/61/106, available at: <http://www.refworld.org/docid/45f973632.html> [accessed 21 April 2015]

Vazquez-Barquero, J.L., Garcia, J., Torres-Gonzalez, F., 2001. Spanish psychiatric reform: what can be learned from two decades of experience? *Acta Psychiatr. Scand.*, 104, 89-95.

Wahlbeck, K., Westman, J., Nordentoft, M., Gissler, M., Laursen, T.M., 2011. Outcomes of Nordic mental health systems: life expectancy of patients with mental disorders. *Br. J. Psychiatry*, 199(6), 453-458.

Ward, R.J., McLaughlin, M.E., Livingston, M.G., 2003. Glasgow's Community Care Programme: 10 year follow up of discharged patients with schizophrenia. *Scott. Med. J.*, 48(2), 38-40.

WHO, 2011. Mental health atlas 2011. World Health Organization, Geneva.

WHO, 2013. Mental health action plan 2013-2020. World Health Organization, Geneva.

Winkler, P., Barrett, B., McCrone, P., Csémy, L., Janoušková, M., Höschl, C., 2016. Deinstitutionalised patients, homelessness and imprisonment: systematic review. *Br. J. Psychiatry* 208, 1-8. doi: 10.1192/bjp.bp.114.161943

Yohanna, D., 2013. Deinstitutionalization of people with mental illness: causes and consequences. *V.M.*, 15(10), 886-891.

## Figures and tables

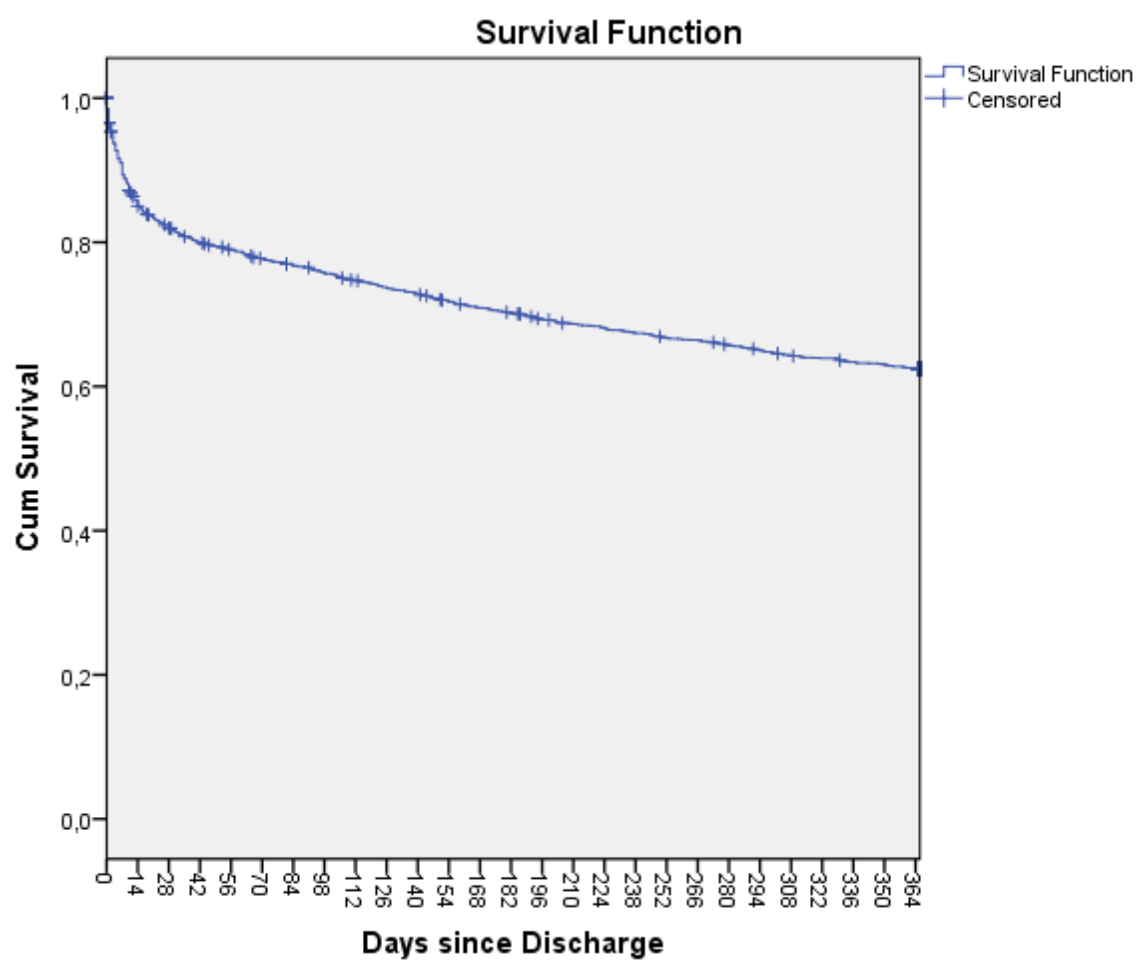


Fig. 1. Kaplan-Meier survival curve showing the proportion of discharged patients who were re-hospitalized in inpatient psychiatric facilities during a year after being discharged from the index hospitalization. Censoring was applied to the patients who deceased (n=97) during a year after being discharged from the index hospitalization.

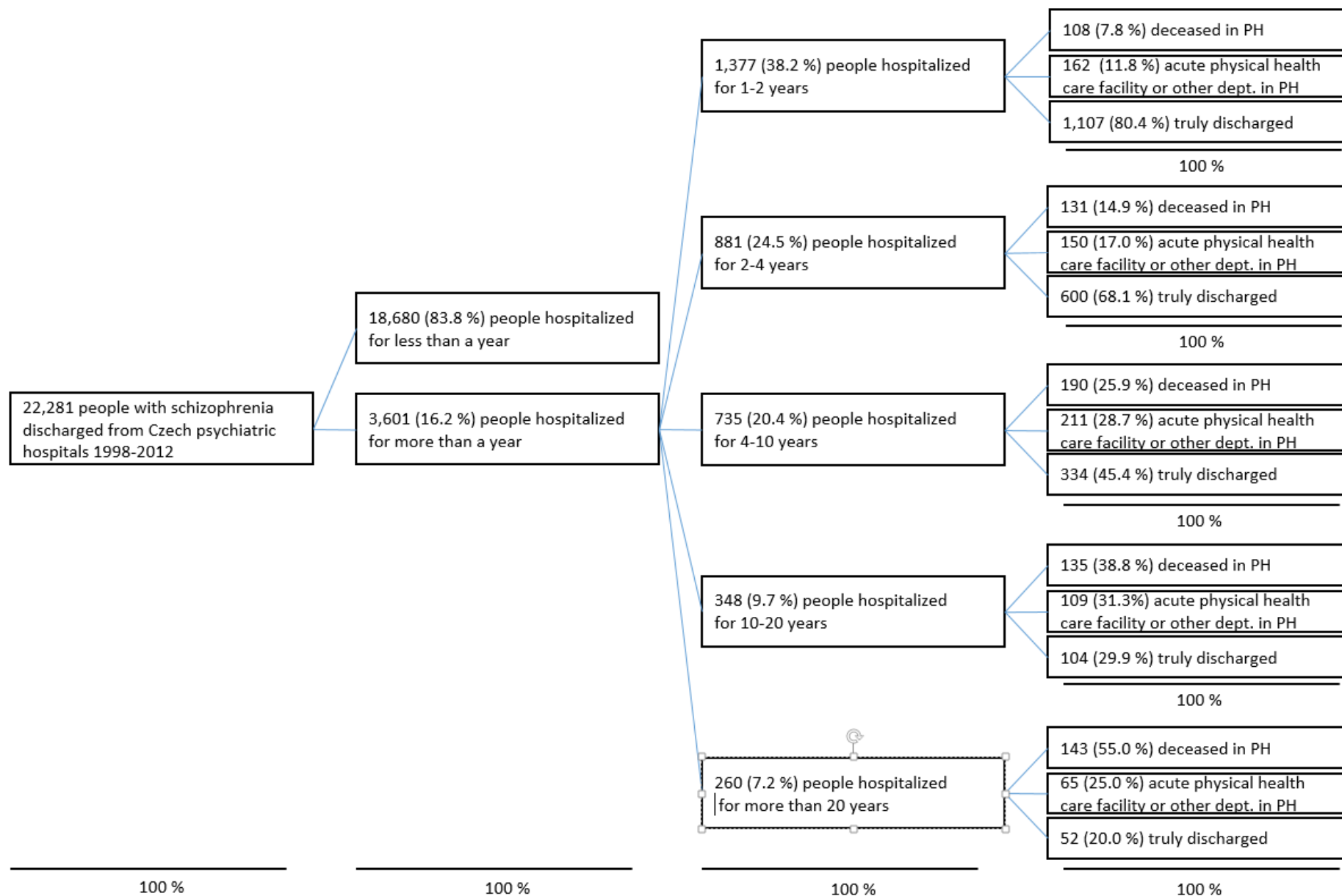


Figure 2 Pathways of discharges of long-term patients with schizophrenia hospitalized in Czech psychiatric hospitals between 1998 and 2012

Table 1

Characteristics of patients with schizophrenia who were discharged from the long-term inpatient psychiatric treatment in the Czech Republic 1998-2012, stratified by the way of discharge (home, other department of psychiatric hospital, post-treatment facility, acute physical health care, discharged against medical advice, deceases)

Way of Discharge		Home		Social Care Facility		Other Dept. of PH		Post-treat. Facility		Acute Phys. Health Care		Against Medical Adv.		Deceased		Total	
		n	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%
Gender	Male	830	37.52	396	17.90	22	0.99	21	0.95	381	17.22	148	6.69	414	18.72	2212	100.00
	Female	390	28.08	357	25.70	20	1.44	19	1.37	274	19.73	36	2.59	293	21.09	1389	100.00
Age	18-29	240	56.60	61	14.39	2	0.47	1	0.24	37	8.73	37	8.73	46	10.85	424	100.00
	30-39	317	47.17	126	18.75	3	0.45	3	0.45	86	12.80	50	7.44	87	12.95	672	100.00
	40-49	300	35.46	181	21.39	6	0.71	6	0.71	173	20.45	52	6.15	128	15.13	846	100.00
	50-59	238	27.67	197	22.91	12	1.40	14	1.63	182	21.16	37	4.30	180	20.93	860	100.00
	60-69	96	18.71	135	26.32	13	2.53	6	1.17	108	21.05	8	1.56	147	28.65	513	100.00
	70+	29	10.14	53	18.53	6	10.15	10	3.50	69	24.13	0	0.00	119	41.61	286	100.00
Diagnosis	F200	787	40.67	373	19.28	18	0.93	23	1.19	320	16.54	116	5.99	298	15.40	1935	100.00
	F201	17	50.00	8	23.53	0	0.00	0	0.00	5	14.71	1	2.94	3	8.82	34	100.00
	F202	3	37.50	0	0.00	0	0.00	0	0.00	1	12.50	0	0.00	4	50.00	8	100.00
	F203	43	61.43	13	18.57	0	0.00	0	0.00	7	10.00	5	7.14	2	2.86	70	100.00
	F204	2	33.33	2	33.33	0	0.00	0	0.00	2	33.33	0	0.00	0	0.00	6	100.00
	F205	317	22.51	330	23.44	20	1.42	14	0.99	301	21.38	54	3.84	372	26.42	1408	100.00
	F206	21	29.17	14	19.44	4	5.56	1	1.39	13	18.06	5	6.94	14	19.44	72	100.00
	F208	12	57.14	4	19.05	0	0.00	0	0.00	0	0.00	2	9.52	3	14.29	21	100.00

F209		18	38.30	9	19.15	0	0.00	2	4.26	6	12.77	1	2.13	11	23.40	47	100.00
Marital Status	Undisclosed	38	21.35	36	20.22	2	1.12	3	1.69	44	24.72	4	2.25	51	28.65	178	100.00
	Unmarried	826	35.88	469	20.37	24	1.4	20	0.87	395	17.16	137	5.95	431	18.72	2,3	100.00
	Married	92	38.49	40	16.74	0	0.00	3	1.26	46	19.25	9	1.3	49	20.50	239	100.00
	Divorced	227	32.71	156	22.48	12	1.73	11	1.59	126	18.16	33	4.76	129	18.59	694	100.00
	Widowed	37	19.68	52	27.66	4	2.13	3	1.60	44	23.40	1	0.53	47	25.00	188	100.00
Length of terminated hospitalization	1-2 y	721	52.36	276	20.04	15	1.09	10	0.73	147	10.68	100	7.26	108	7.84	1377	100.00
	2-3 y	225	39.40	141	24.69	3	0.53	8	1.40	83	14.54	40	7.01	71	1.12	571	100.00
	3-4 y	89	28.71	79	25.48	6	1.94	2	0.65	58	18.71	16	5.16	60	19.35	310	100.00
	4-5 y	47	24.23	41	21.13	2	1.3	1	0.52	54	27.84	8	4.12	41	21.13	194	100.00
	5-10 y	86	15.90	123	22.74	7	1.29	14	2.59	148	27.36	14	2.59	149	27.54	541	100.00
	10-15 y	30	12.71	37	15.68	4	1.69	0	0.00	70	29.66	3	1.27	92	38.98	236	100.00
	15-20 y	8	7.14	24	21.43	2	1.79	2	1.79	33	29.46	0	0.00	43	38.39	112	100.00
	20+ y	14	5.38	32	12.31	3	1.15	3	1.15	62	23.85	3	1.15	143	55.00	260	100.00

Table 2

Crude odds ratios for rehospitalization within two weeks after the discharge

		OR	Std. Err.	z	95% Conf. Interval		p-value
Gender	Female	1.00					
	Male	<b>1.48</b>	<b>0.19</b>	<b>3.02</b>	<b>1.15</b>	<b>1.92</b>	<b>0.003</b>
Age at the end of the index hospitalization	18-29 years	1.00					
	30-39 years	1.15	0.21	0.75	0.80	1.65	0.454
	40-49 years	0.86	0.16	0.82	0.59	1.24	0.411
	<b>50-59 years</b>	<b>0.66</b>	<b>0.13</b>	<b>2.09</b>	<b>0.44</b>	<b>0.97</b>	<b>0.036</b>
	<b>60-69 years</b>	<b>0.53</b>	<b>0.14</b>	<b>2.48</b>	<b>0.32</b>	<b>0.87</b>	<b>0.013</b>
	70+ years	0.66	0.23	1.19	0.33	1.31	0.235
Marital status	Unmarried	1.00					
	Married	1.13	0.26	0.50	0.71	1.79	0.614
	Divorced	1.14	0.17	0.89	0.85	1.53	0.372
	Widowed	0.46	0.18	1.95	0.21	1.00	0.051
	<b>Undisclosed</b>	<b>0.37</b>	<b>0.17</b>	<b>2.12</b>	<b>0.15</b>	<b>0.93</b>	<b>0.034</b>
Destination of discharge	Home	1.00					
	<b>Social care facility</b>	<b>0.10</b>	<b>0.03</b>	<b>8.56</b>	<b>0.06</b>	<b>0.17</b>	<b>&lt;0.001</b>
	Post-treatment facility	1.02	0.43	0.05	0.45	2.34	0.962
	<b>Discharge against medical advice</b>	<b>5.13</b>	<b>0.85</b>	<b>9.86</b>	<b>3.71</b>	<b>7.11</b>	<b>&lt;0.001</b>
Length of long-term hosp.	1-2 years	1.00					
	2-3 years	1.31	0.21	1.74	0.97	1.78	0.082
	3-4 years	1.25	0.27	1.03	0.82	1.90	0.305
	4-5 years	1.33	0.37	1.00	0.76	2.30	0.316
	5-10 years	1.04	0.21	0.21	0.70	1.56	0.832
	10-15 years	1.42	0.45	1.10	0.76	2.66	0.270
	15-20 years	0.39	0.29	1.28	0.09	1.64	0.199
	20+ years	0.66	0.32	0.86	0.26	1.69	0.391



Table 3

Multivariable regression for rehospitalization within two weeks after the discharge

		OR	Std. Err.	z	95% Conf. Interval		p-value
Gender	Female	1.00					
	Male	1.15	0.14	0.89	0.85	1.56	0.373
Age at the end of the index hospitalization	18-29 years	1.00					
	30-39 years	1.30	0.26	1.31	0.88	1.93	0.190
	40-49 years	0.95	0.20	0.24	0.63	1.44	0.810
	50-59 years	0.83	0.19	0.80	0.53	1.30	0.423
	60-69 years	1.00	0.30	0.02	0.56	1.78	0.987
	70+ years	1.75	0.73	1.34	0.77	3.98	0.180
Marital status	Unmarried	1.00					
	Married	1.38	0.37	1.20	0.82	2.32	0.231
	Divorced	<b>1.49</b>	<b>0.27</b>	<b>2.20</b>	<b>1.04</b>	<b>2.11</b>	<b>0.028</b>
	Widowed	0.84	0.38	0.39	0.34	2.05	0.695
	Undisclosed	0.46	0.23	1.55	0.18	1.22	0.120
Destination of discharge	Home	1.00					
	Social care facility	<b>0.09</b>	<b>0.02</b>	<b>8.73</b>	<b>0.05</b>	<b>0.15</b>	<b>&lt;0.001</b>
	Post-treatment facility	0.83	0.38	0.42	0.34	2.01	0.676
	Discharged against medical adv.	<b>5.27</b>	<b>0.90</b>	<b>9.76</b>	<b>3.77</b>	<b>7.35</b>	<b>&lt;0.001</b>
Length of long-term hosp.	1-2 years	1.00					
	2-3 years	<b>1.51</b>	<b>0.26</b>	<b>2.43</b>	<b>1.08</b>	<b>2.11</b>	<b>0.015</b>
	3-4 years	<b>1.69</b>	<b>0.41</b>	<b>2.17</b>	<b>1.05</b>	<b>2.70</b>	<b>0.030</b>
	4-5 years	<b>1.86</b>	<b>0.58</b>	<b>1.98</b>	<b>1.01</b>	<b>3.42</b>	<b>0.048</b>
	5-10 years	<b>1.85</b>	<b>0.43</b>	<b>2.65</b>	<b>1.17</b>	<b>2.92</b>	<b>0.008</b>
	10-15 years	<b>3.02</b>	<b>1.09</b>	<b>3.07</b>	<b>1.49</b>	<b>6.13</b>	<b>0.002</b>
	15-20 years	1.26	0.98	0.30	0.27	5.79	0.765
	20+ years	1.33	0.71	0.54	0.47	3.78	0.591