Bilaga till rapport
Kontinuitet i vården / Continuity of care,
rapport 329 (2021)

Bilaga 7 Inkluderade studier om psykisk sjukdom /Appendix 7 Included studies regarding severe mental illness

Author **Year** **Ref #** **Country**	Adair et al. 2005 [1] Canada, Alberta.
Study design **Population** **Setting**	Cohort study, 17-month follow-up 2001 to 2002. 486 patients with severe mental illness (65% mood disorders, 35% psychotic disorder) from three health regions were followed over a 17-month period). Mean age 42.5 (SD 10) years; 60% women. Both in and outpatient clinics.
Exposure/ intervention	Patient and observer rated continuity of care, using the Alberta Continuity of Services Scale for Mental Health (ACSS-MH).
Outcome **Type of analysis** **Confounders/ covariates in analysis**	EQ-5D (both the five-item index score and the 100- point visual analogue scale score) for generic quality of life. Multiple linear regression. Bivariate analysis, analysis of variance (of relevance for health economic assessment) Final model 1 adjusted for income and problem severity at baseline and final model 2 adjusted for (adjusted for primary diagnosis, age, suicidality and income.
Results	Associations between ACSS-MH scores and EQ-5D Model 1: EQ-5D visual analogue scale: Patient related continuity score: b= 0.22 (95% CI 0.123 to 0.317), beta*=0.225, p<0.001 Model 2: EQ-5D index score Observer related continuity score: b=0.008 (95% CI 0.005 to 0.012), beta*=0.263 p<0.001 Bivariate associations between quartiles of *patient rated* ACSS-MH and EQ 5D Index score Quartile mean (SD) 1 0.48 (0. 33) 2 0.57 (0.30) 3 0.60 (0.29 4 0.62 (0.31) P for group comparison <0.01 Bivariate associations between quartiles of *observer rated* ACSS-MH and EQ 5D Index score 1 0.41 (0.34) 2 0.62 (0.26) 3 0.62 (0.33) 4 0.62 (0.28) P for group comparison <0.001 Bivariate associations between quartiles of *patient rated* ACSS-MH and EQ 5D 100 VAS score 1 56.0 (18) 2 60.2 (21)

	3 66.4 (16) 4 68.3 (19) P for group comparison <0.001 Bivariate associations between quartiles of *observer rated* ACSS-MH and EQ 5D 100 VAS score 1 55.1 (21) 2 62.5 (19) 3 66.4 (17) 4 66.6 (17) P for group comparison <0.001
Risk of bias **Comments**	High. Almost same study sample as Mitton et al. 2005. Authors tested two models for each continuity scale because they were only moderately correlated with each other (r=0.36, p<0.001). The reasons for testing different scales for the different outcomes were not motivated.

EQ-5D = standardised measure of health-related quality of life developed by the EuroQol Group

**Comment by SBU: beta is the standardized coefficient implying that an increase in the independent variable by one standard deviation is associated with an increase in the dependent variable by the beta coefficient value.*

Author **Year** **Ref #** **Population**	Adnanes et al. 2019 [2] Norway.
Study design **Population** **Setting**	National cross-sectional survey, comparing SMI to non-SMI (SMI= severe mental illness). Data obtained 2013. Population: 835 mental health outpatients with severe and not severe mental illness. Persons with severe mental illness (n=155) were diagnosed with schizophrenia, schizoaffective disorder or bipolar affective disorder. Age groups of persons with SMI: 18-23 7.0%, 24-29 16.2%, 30-39 24.3%, 40-49 27.6%, 50-59 14.6%, >=60 10.3%, 63.9% women). Population selection of questionnaire responders, total national mapping population: n = 23 167. Setting: patients receiving specialist outpatient psychiatric treatment.
Exposure/ intervention	Perception of CoC using the CONTINUUM measure. *
Outcome **Type of analysis** **Confounders/ covariates in analysis**	QoL with the Manchester Short Assessment of Quality of Life (MANSA) questionnaire. Linear multivariate regression between CoC and QoL. Gender, age, education, income, living situation, contact with family, contact with friends, therapeutic relationship, unmet need for treatment, unmet need for activity.
Results	SMI patients' CoC were positively associated with QoL Linear regression coefficient: b= 0.268 (95 % CI 0.070 to 0.466), p=0.008
Risk of bias **Comments**	Moderate Note: cross sectional design, population selection of earlier questionnaire responders. Authors investigated associations and do not claim causality in findings.

	Exposure does not directly measure relational continuity to one professional (see expiation of exposure below) rather team continuity. Self-reported outcome.

CoC = Continuity of care

**Comment by SBU: The CONTINUUM measure is based on 17 different domains also comprising assessments of importance, ease to access and satisfaction with domains. Only 13 of 17 domains were included in analysis because most responders deemed the excluded domains irrelevant in their response. Total score of CoC measure used in the analysed group ranged from 1-5.*

Author **Year** **Ref #** **Country**	Bindman et al. 2000 [3] England, south London area.
Study design **Population** **Setting**	Prospective cohort study over 20 months after baseline interview, unclear date for exact study duration, likely end of 90´s. 100 patients (mean age 41 years, 42% women) with severe mental illness (schizophrenia, schizoaffective disorder, bipolar affective disorder, or recurrent depressive disorder) having had two or more lifetime admissions to hospital. All patients had contact with a general adult sector psychiatric teams in south London
Exposure/ intervention	Continuity of contact with particular professionals, operationalized as the number of community `keyworkers' (an individual member of the mental health team identified as having principal responsibility for ensuring delivery of care) over a period of time.
Outcome **Type of analysis** **Confounders/ covariates in analysis**	BPRS (Brief psychiatric Rating Scale). HoNOS (Health of the Nation Outcome Score). GAF (Global Assessment of Functioning). Multivariate linear regression Age, sex, whether white, whether currently living alone or living in supported accommodation, time since onset of illness, whether diagnosed schizophrenic; and symptom and function GAF scores and total HoNOS scores at baseline. Stepwise selection was used to determine variables remaining in final model.
Results	Number of keyworkers / months on: Total HoNOS score: b coefficient - 0.07 (95% CI -0.14 to - 0.002), p=0.04 GAF disability score: b coefficient -0.02 (95 % CI -0.04 to 0.002), p=0.09 BPRS did not remain in model after step-wise selection and results were not reported.
Risk of bias **Comments**	Moderate Small sample, attrition. Study´s main focus is changes in continuity and individual outcomes over time, rather than investigating effects of continuity of care.

Author **Year** **Ref #** **Country**	Catty et al. 2013 [4] England.

Study design	Prospective cohort study over 2 years, full study took place during 2002-2007.
Population	180 persons 18-65 years of age (mean age 43.1 SD 10.9, 44.4% women) with a long-term psychotic disorder and been in contact with psychiatric services for minimum 2 years.
Setting	Psychiatric services within seven community health teams in two mental health trusts the Care Programme Approach indicating allocation to a key worker or case manager.
Exposure/ intervention	CONTINU-UM was used to measure user rated overall "experienced" continuity. Of the 7 care factors in CONTINU-UM Experience & Relationship, Regularity and Consolidation are of relevance to relational continuity.
Outcome	BPRS: Brief Psychiatric Rating Scale. Overall functioning: GAF (Global Assessment of Functioning) Quality of life using MANSA and SEIQoL
Type of analysis	Linear regression analysis.
Confounders/ covariates in analysis	Tested variables: time-point, mental health trust, team, gender, total number of lifetime admissions, type of accommodation, living situation, ethnic group, education, employment, informal carer, use of depot medication, alcohol or drugs, whether hospitalized in the previous year, age, duration of illness, functioning, symptomatology, empowerment and quality of life.
Results	Having a higher Experience & Relationship, score was associated with an increase in symptomology during the subsequent year (beta coefficient= 0.69 (95% CI 0.28 to 1.1) Users with higher Regularity scores was more likely to be hospitalized in the subsequent year, OR = 1.166 (95% CI 0.977 to 1.393) There were no other significant associations according to authors.
Risk of bias	High
Comments	High attrition. Note, unclear which variables were adjusted for in final model. Authors do not seem to consider them confounders.

SEIQoL = The Schedule for the Evaluation of Individual Quality of Life

Author **Year** **Ref #** **Country**	Chien et al. 2000 [5] USA, Maryland.
Study design	Register study using interview and claims data om Medicaid recipients.
Population	351 in and outpatient with schizophrenia in the State of Maryland. Interviews performed in 1995 and sample included individuals with mental illness diagnosis or mental health service utilization between 1992-1993. Age 18-64, presented in age groups, 51.6 % women.
Setting	Medicaid recipient, in and outpatient care.
Exposure/ intervention	Continuity of care (COC) Usual provider continuity (UPC) Sequential continuity (SECON)

Outcome	Medicaid payments for mental illness care and total payments. General life satisfaction, and satisfaction with health (2 of 10 Lehman Quality of Health domains). The respondent rated quality of life dimensions on a scale from 1 (terrible) to 7 (delighted). General life satisfaction. Satisfaction with health was based on six questions whose responses were averaged to obtain an overalls score
Type of analysis	Linear regression model
Confounders/ covariates in analysis	Gender, age, race, education, monthly income living arrangements, location (Baltimore or Eastern Shore), marital status, contact with family, social contact, SPMI category 1, disability entitlement, mental illness hospitalization in previous year, Colorado Symptom Scale for depressive symptoms and for psychotic symptoms, presence of medical comorbidities, presence of mental comorbidities, screen for substance abuse problems, organizational type of usual source for medical care, organizational type of care source for mental health, MAC provider used for medical, and MAC provider used for mental health. In the Medicaid cost regressions, Medicaid costs from prior year included as covariate.
Results	Regression results on general life satisfaction: UPC: b 0.171, p = n.s SECON: b 0.367, p= n.s. Regression results on satisfaction with health: UPC: b 0.208, p= n.s SECON: b 0.236, p=n.s The findings were that provider continuity was not related to general life satisfaction with health. Regression results on costs: Higher provider continuity was found to be related to lower costs and to lower likelihood of mental illness hospitalization. Provider continuity was not significantly related to general life satisfaction or to satisfaction with health. Regression results for total Medicaid costs: UPC: b 8 909.83 USD/year (p<0.05) SECON: b 12 959 USD /year (p<0.05) Total Medicaid payments (mean USD 11,444) and mental health payments (mean USD 6,142) were significantly lower for persons with greater continuity experience during the year, for both UPC and SECON. A 10% increase in UPC was associated with USD 891 lower total Medicaid annual payments per person-year and USD 725 lower mental health payments. For SECON, a 10% increase in follow-up visits to the same provider was associated with a decrease in total Medicaid payments of USD 1,296 and in mental health payments of USD 924. (Due to the almost-perfect correlation of COC and UPC, the subsequent analysis used the UPC and SECON measures only)
Risk of bias	Moderate
Comments	Note: very extensive adjustment, possible overadjustment. Possible overlap between components of exposure measure and resources included in cost calculations.

USD = US dollar

Author **Year** **Ref #** **Country**	Conti et al. 2012 [6] Italy, Lombardy region.
Study design **Population** **Setting**	Register study, with a 12-month follow-up period using data from regional psychiatric information system. Data obtained 2007. Population, A total of 11,797 patients, followed in the specialist mental healthcare system, who started a new pharmacological treatment for depression (n=5 851, mean age 49,8 years SD, women 66.1%), schizophrenia (n= 4 975, mean age 46.4, women 47.8%) or bipolar disorder (n= 971, mean age 48.5, women 56.3%) during 2007. Setting: specialist mental health care
Exposure/ intervention	Continuity of care was defined as receiving at least one psychiatric contact every 90 days.
Outcome **Type of analysis** **Confounders/ covariates in analysis**	Outcome: Prescription records of antidepressants, antipsychotics, mood stabilizers operationalized as time to lack of persistence with initial pharmacological treatment. It was defined as a gap of at least 30 days between subsequent medication fills. Cox regression. Age groups, gender, education, employment status, marital status, urbanicity, comorbidity, psychiatric hospitalization in the previous 5 years; substance-use disorder; continuity and intensity of psychiatric care received after treatment initiation
Results	Continuity of care on lack of persistence: Depression: HR 0.89 (95% CI 0.71–1.13) Schizophrenia HR 0.70 (95% CI 0.63–0.77) Bipolar disorder: HR 0.84 (95% CI 0.64–1.09)
Risk of bias **Comments**	Moderate Note: very extensive adjustment, possible overadjustment. Exposure not clearly relevant to relational continuity.

Author **Year** **Ref #** **Country**	Desai et al. 2005 [7] USA
Study design **Population** **Setting**	Register study using data from VA health care system over the 4-year period from January 1, 1994, to December 31, 1998. The sample included all patients (n= 121 933, mean age 48.2 years SD 11.7, women 5.6%) discharged with a diagnosis of major affective disorder, bipolar affective disorder, posttraumatic stress disorder (PTSD), or schizophrenia from psychiatric inpatient units in the VA health care system. Of 121 933 unique patients included in the sample, 3 588(2.9%) died within 1 year of discharge. Of those, 481 (0.4% of the total sample, 13.4% of deaths) died of suicide. Psychiatric inpatients discharged from any of 128 U.S. Department of Veterans Affairs hospitals between 1994 to 1998.

Exposure/ intervention	Six variables reflected delivery of mental health care, one being: a measure of continuity of outpatient care after discharge—the number of 2- month periods in the 6 months after discharge in which the patient had at least two outpatient visits for his or her primary discharge diagnosis (range=0–3).
Outcome **Type of analysis** **Confounders/ covariates in analysis**	Suicide. Multivariate logistic regression. Age, gender, race, disability, distance to the VA, year of discharge, diagnosis, and discharge to the community.
Results	Continuity of care (reference: 3) 0 Rate ratio 1.06; p 0.84 1 Rate ratio 1.59; p <0.03 2 Rate ratio 1.01, p= 0.97 *
Risk of bias **Comments**	Moderate Exposure does not directly measure relational continuity.

**Authors state that results show that poor continuity of care was associated with higher suicide risk. However, those with no follow-up visits were at similar risk to those who had more than two visits.*

Author **Year** **Ref #** **Country**	Farley et al. 2011 [8] USA, North Carolina
Study design **Population** **Setting**	Register study using data from North Carolina Medicaid and for the period 2001–2003. Population A total of 7868 patients with schizophrenia were identified from North Carolina Medicaid records for the period 2001–2003. Mean age for those with 1 prescriber 43.3 years SD 10.5 (50% women), 2 prescribers 43.2 years SD 10.7 (52% women), 3 prescribers 42.0 years SD 10.9 (54% women), 4 prescribers or more 40.2 years SD 11.3 (59% women). Unclear. All patients were enrolled to Medicaid and were on antipsychotic drugs
Exposure/ intervention	Number of unique prescribers who provided schizophrenia medication.
Outcome **Type of analysis** **Confounders/ covariates in analysis**	Adherence measured by the medication possession ratio (MPR*) from Medicaid claims data, categorized into non-adherent, partially adherent, fully adherent and excess filler. Multivariate logistic regressions. Age, gender, race, comorbidity and in some analyses also switching drugs.
Results	Ordered logistic regression on adherence, by number of prescribers (1= ref) 2 OR 1.32 (95% CI 1.21 to 1.45) 3 OR 1.69 (95% CI 1.46 to 1.95) >=4 OR 2.59 (95% CI 2.06 to 3.27) **
Risk of bias **Comments**	Moderate Exposure does not directly measure relational continuity.

** MPR measures refill behavior and according to authors, thus, represents medication taking, and disease control.*
***According to authors: patients with more prescribers were significantly more likely than patients with one prescriber to switch medications for and to be either fully adherent or excess fillers.*

Author **Year** **Ref #** **Country**	Giacco et al. 2018 [9] Belgium, England, Germany, Italy and Poland.
Study design **Population** **Setting**	1-year prospective natural experiment during 2014-2017 comparing 1-year clinical outcomes of personal continuity and specialisation in routine care in a large-scale study across five European countries. Psychiatric in-patients (n= 7 302, mean age 42.4 years SD 14.3, women 47.7%) clinically diagnosed with a psychotic, mood or anxiety/dissociative/stress-related/somatoform disorder. 6369 (87.2%) included in follow-up analysis. Follow-up of personal continuity by the same psychiatrist or under the care of different specialization of psychiatrists for in and outpatient treatment.
Exposure/ intervention	Personal continuity, i.e., a patient is under the care of the same psychiatrist for in- and out-patient treatment; or specialization, i.e., a patient is under the care of different psychiatrists for in and out-patient treatment.
Outcome **Type of analysis** **Confounders/ covariates in analysis**	Readmission to hospital within 1 year following the index admission, obtained from medical records in England and Italy and via phone or personal interviews in the other countries. Mixed effect logistic regression model with a random effect for hospital. Age, gender, diagnostic group, whether or not a patient has been previously admitted, severity of illness at baseline, social situation, formal status of the patient at baseline, length of stay in hospital and country.
Results	Readmission to hospital personal continuity vs specialization: OR 1.08 (95% CI 0.94–1.25), p =0.28 Results from subgroups Women: personal continuity vs specialization: OR 1.12 (95% CI 0.91–1.38), p=0.28 Men: personal continuity vs specialization: 1.03 (95% CI 0.84–1.27), p=0.78 Psychotic disorders personal continuity vs specialization OR 1.07 (95% CI 0.86–1.32), p=0.55
Risk of bias **Comments**	Moderate Whether personal continuity or specialization was deployed may depend on unknown and/or unmeasured factors. Comparison is based on natural experiment.

Author **Year** **Ref #** **Country**	Hoertel et al. 2014 [10] France
Study design **Population**	Observational study, using data from French National Health Insurance reimbursement database. Patients were followed from 2007-2010. Sample of 14 515 (33.0% 19-40 years, 56.3% 41-65 years, 10.7% 66 and older, women 65.5%) from National Health Insurance database of persons with any mental disorder, of these a diagnosis was reported for 2863 patients (19.8%) and of these 554 (3.8%) had schizophrenia; 832 (5.7%) had major depressive disorder and 303 (2.1%) bipolar disorder.

Setting	General French metropolitan population, specialist care.
Exposure/ intervention	COC Index
Outcome **Type of analysis** **Confounders/ covariates in analysis**	All causes mortality Cox proportional regression models Age, gender, comorbidities and social status in first step, interaction variables by testing variable pairs in first model.
Results	Overall results (for total population) showed significant associations between COC and death. HR by 0.1 CoC index increase: HR 0.83 (95% CI 0.83 to 0.83), p<0.0001 Results for subgroups by psychiatric condition in sensitivity analyses: Schizophrenia HR 0.87 (95% CI 0.83–0.92), p<0.0001 Major depressive disorder HR 0.87 (95% CI 0.83–0.91), p<0.0001 Bipolar disorder HR 0.84 (95% CI 0.79–0.89), p<0.0001
Risk of bias **Comments**	Moderate

Author **Year** **Ref #** **Country**	Kaltsidis et al. 2020 [11] Canada, Quebec
Study design **Population** **Setting**	Retrospective observational study of medical records and interview data over the 12 months prior to interview at the emergency department. Medical records obtained for 2016 to 2017. Population of n=320 (mean age 38.9 SD 13.6 years, women 51.6%) visiting emergency department for mental health reasons. In- and outpatient specialist care.
Exposure/ intervention	Study investigates predictors of frequent emergency department utilization for mental health reasons. Factors were organized as predisposing, enabling and needs factors. Within enabling factors: a regular source of care (outside the ED or hospitalization) over the 12 months prior to interview was regarded as relevant to CoC and was measured through health records.
Outcome **Type of analysis** **Confounders/ covariates in analysis**	Number of emergency department visits for mental health reasons over the 12 months prior to interview at the ED Bivariate analyses were used to assess associations (with the alpha value set at $p < 0.10$) between each independent variable and the dependent variable, separately. Multivariate hierarchical linear regression 3 analyses were performed for significantly associated variables introduced by blocks using backward elimination. Final model adjusted for: Needs factors (diagnoses), Predisposing factors (frequency of past hospitalizations for mental health reasons) and Enabling factors ((having regular care from family physician or outpatient psychiatrist).
Results	Adjusted results: Having regular care from an outpatient psychiatrist (outside ED or hospitalization) over the 12 months prior to interview at the ED: beta: 0.123, p=.002488 Having regular care from an outpatient psychiatrist over the 12 months prior to interview at the ED was the only predictor of frequent ED utilization.
Risk of bias	Moderate

Comments	Adjustment for many covariates, exposure of interest is predictor in analysis and cannot be interpreted causally. Exposure does not directly measure relational continuity.

ED =Emergency department
**p-value is calculated by SBU from a reported t-value of 3.049, using 319 as degrees of freedom and a two-tailed test.*

Author **Year** **Ref #** **Country**	Macdonald et al. 2019 [12] England, south London
Study design **Population** **Setting**	Register study using data from 2006–2016 obtained from the electronic patient record system held by the mental health trust. Patients (n=5 552, mean age 46.5 SD 16.8 years, 37,5% women) with a schizophrenia or delusional disorders.
Exposure/ intervention	Modified Modified Continuity Index (MMCI, range 0-1) measuring the number of teams caring for the patient over time.
Outcome **Type of analysis** **Confounders/ covariates in analysis**	HoNOS, Health of the Nation Outcomes Scales The generalized estimating equations (GEE) method for longitudinal data. The estimated coefficients reflect the relationship between the longitudinal development of the dependent variable and the longitudinal development of the predictor variables, using all data. Gender, age, ethnicity, number of teams caring for the patient, main diagnosis and Index of Multiple Deprivation.
Results	MMCI predicts HoNOS in adjusted analysis: B regression coefficient: −0.624, (95% CI −0.896 to −0.352), p<0.001. Cohens d = 1.75.
Risk of bias **Comments**	High Unclear adjustments. Authors hypothesized a decline over the follow-up period in CoC and HoNOS due to organizational changes.

Author **Year** **Ref #** **Country**	Mitton et al. 2005 [13] Canada, Alberta.
Study design **Population** **Setting**	Observational cohort study using administrative data for most cost items, supplemented by patient interviews. 486 patients with severe mental illness (65% mood disorders, 35% psychotic disorder) (confirmed by using a structured diagnostic interview, the Mini International Neuropsychiatric Interview (MINI), were followed over a 17-month period (March 2001 to December 2002). Age and sex not stated in present manuscript but in Adair et al. 2005 (same population, mean age 42.5 (SD 10) years; 60% women.) Both in and outpatient.
Exposure/ intervention	Patient and observer rated continuity of care, using the Alberta Continuity of Services Scale for Mental Health (ACSS-MH).

Outcome	Costs from payer perspective, including inpatient care, emergency department visits, outpatient and community care, home service visits, laboratory tests, and medications.
Type of analysis	One-way analysis of variance for differences in means across quartiles of observer-rated continuity of care. Multiple linear regression for associations between continuity of care and different cost categories (only 2 shown). Cost categories: total costs, hospitalization costs, costs for community services, drug costs, and non-GP physician costs.
Confounders/ covariates in analysis	Age, household income, duration of illness, recruitment location, and suicidality.
Results	Differences in mean costs between lowest and highest quartiles of observer-rated continuity of care: Total costs: $CAN 23 942 (SD 27 628) vs. $CAN 23 347 (SD 25 919), p=0.054 Hospital costs: $CAN 13 634 (SD 20 574) vs. $CAN 9 331 (SD 20 979), p=0.001 Community costs: $CAN 2042 (SD 3313) vs. $CAN 5056 (SD 7264), p=0.001 Drug costs: $CAN 3166 (SD 5973) vs. $CAN 6502 (SD 7250), p=0.001 Non-GP physician costs: $CAN 5232 (SD 6019) vs. $CAN 2457 (SD 3505), p=0.001 Adjusted linear regression: Observer-rated continuity on log hospital costs: beta: –0.24 (95% CI –0.03 to –0.006) Observer-rated continuity on log community costs: beta: 0.26 (95% CI 0.008 to 0.025
Risk of bias	Moderate
Comments	Same study and same sample as Adair et al 2005. Possible overlap between components of exposure measure and resources included in cost calculations.

GP = general practitioner; $CAN = Canadian dollar

Author **Year** **Ref #** **Country**	Puntis et al. 2016 [14] England
Study design	36-month prospective cohort study. Recruitment between 2008 to 2011. Follow up data from medical records.
Population	323 patients (mean age 39.6 years SD 11.4, women 32.5%) with a psychosis diagnosis, currently detained in hospital involuntarily.
Setting	Unclear
Exposure/ intervention	Average gap between face-to-face contacts Number of 60-day gaps without contact Number of different mental health professions seen Number of care coordinators Number of psychiatrists
Outcome	Readmission to hospital Time to readmission Number of days in hospital.
Type of analysis	Multivariate logistic regression for readmission outcome. Proportional hazard models for time to readmission outcome and negative-binomial model for number of days in hospital outcome.

Confounders/ covariates in analysis	Age, gender, ethnicity, and BPRS score.
Results	Readmission: Average gap between face-to-face contacts: OR 0.956 (95% CI 0.922 to 0.990) Number of 60-day gaps without contact: OR: 1.154 (95% CI 0.897–1.484) Number of different mental health professions seen: OR 1.056 (95% CI 0.776 to 1.436) Number of care coordinators OR 1.154 (95% CI 0.930 to 1.433) Number of psychiatrists not analyzed /reported Time to readmission: Average gap between face-to-face contacts: HR 0.996 (95% CI 0.989 to 1.003) Number of 60-day gaps without contact: HR 0.597 (95% CI 0.481 to 0.743) Number of different mental health professions seen: HR 0.848 (95% CI 0.761 to 0.945) Number of care coordinators: HR 0.541 (95% CI 0.435 to 0.673) Number of psychiatrists: HR 0.923 (95% CI 0.777 to 1.097) Number of days in hospital: Average gap between face-to-face contacts IRR 0.966 (95% CI 0.956 to 0.976) Number of 60-day gaps without contact: IRR 0.904 (95% CI 0.810 to 1.010) Number of different mental health professions seen: IRR 0.861 (95% CI 0.743 to 0.997) Number of care coordinators: IRR 1.157 (95% CI 1.053 to 1.271) Number of psychiatrists not analyzed /reported
Risk of bias Comments	Moderate

OR = odd ration, HR = hazard ratio, IRR = incidence rate ratio, BPRS = Brief Psychiatric Rating Scale

Author **Year** **Ref #** **Country**	Ride et al. 2019 [15] England
Study design **Population** **Setting**	Observational cohort study investigating associations between care in family practice and unplanned hospital visits, 2007-2014. The sample consisted of 19 324 (50.2% women, age adults) individuals attending 215 practices, observed for 15.8 3-month periods on average (range 1-28 periods). Population had bipolar disorder (35.4%), Schizophrenia and other psychoses (53.1%) or both (11.5%). Family physicians.
Exposure/ intervention	Three indices measuring different dimensions of family physician relational continuity The Continuity of Care (COC) The Usual Provider of Care (UPC) The Sequential Continuity (SECON) Continuity indices were defined as low or high based on the median value of each index: COC low (0-0.35), high (>0.35) UPC low (0-0.67), high (>0.67) SECON low (0-0.17), high (>0.17).
Outcome **Type of analysis**	Emergency department (ED) presentations, and unplanned admissions for SMI and ambulatory care-sensitive conditions (ACSC). Outcomes investigated for moderate (3-5 visits) and high (6 visits o more) visit frequency. Cox regression analyses, random effects models.

Confounders/ covariates in analysis	Age, gender, ethnicity, deprivation of the person's neighborhood of residence, history of smoking, number of Charlson Index comorbidities, comorbid depression, diagnostic subgroup and number of years since diagnosis. Treatment for SMI was included as a time-varying variable indicating that the individual had been prescribed an antipsychotic drug at least once in the 12-month lookback period prior to the current period.
Results	**ED presentations:** COC (random effect model) Moderate visit frequency (3-5 visits), High COC index vs low COC index: HR 0.84, (95% CI 0.77-0.91), p<0.001 High visit frequency (6 or more visits), High COC index vs low COC index, HR 0.86 (95% CI 0.80-0.92), p<0.001 UPC Moderate visit frequency (3-5 visits), High UPC index vs low UPC index: HR 0.90 (95% CI 0.83-0.98) p<0.05 High visit frequency (6 or more visits), High UPC index vs low UPC index, HR 0.97 (95% CI 0.89-1.05), n.s SECON Moderate visit frequency (3-5 visits), High SECON index vs low SECON index: HR 0.84, (95% CI 0.77 to 0.92) p<0.001 High visit frequency (6 or more visits), High SECON index vs low SECON index, HR 0.90 (95% CI 0.84 to 0.97), p<0.01 **SMI admission:** COC (random effect model) Moderate visit frequency (3-5 visits), High COC index vs low COC index: HR 0.98 (95% CI 0.82-1.16), n.s. High visit frequency (6 or more visits), High COC index vs low COC index, HR 0.94 (95% CI 0.82-1.08), n.s UPC Moderate visit frequency (3-5 visits), High UPC index vs low UPC index: HR 0.90 (95% CI 0.75 to 1.08), n.s High visit frequency (6 or more visits), High UPC index vs low UPC index, HR 0.79 (95% CI 0.66 to 0.95), p<0.05 SECON Moderate visit frequency (3-5 visits), High SECON index vs low SECON index: HR 0.81 (95% CI 0.67 to 0.98) p <0.05 High visit frequency (6 or more visits), High SECON index vs low SECON index, HR 0.94 (95% CI 0.78 to 1.15), n.s. **ACSC admission:** COC (random effect model) Moderate visit frequency (3-5 visits), High COC index vs low COC index: HR 0.74, (95% CI 0.62-0.88), p<0.001 High visit frequency (6 or more visits), High COC index vs low COC index, HR 0.71 (95% CI 0.61-0.82), p<0.001 UPC Moderate visit frequency (3-5 visits), High UPC index vs low UPC index: HR 0.83 (95% CI 0.70 to 0.99) p<0.05 High visit frequency (6 or more visits), High UPC index vs low UPC index, HR 0.79 (95% CI 0.66 to 0.93) p<0.01

	<u>SECON</u> Moderate visit frequency (3-5 visits), High SECON index vs low SECON index: HR 0.83 (95% CI 0.69 to 0.99) p<0.05 High visit frequency (6 or more visits), High SECON index vs low SECON index, HR 0.83 (95% CI 0.69 to 0.99) p<0.05
Risk of bias **Comments**	Moderate Lots of tests, not adjusted for potential multiplicity. Many covariates used, possible over-adjustment.

ACSC = ambulatory care-sensitive conditions. n.s = not statistically significant using 5% threshold.

Author **Year** **Ref #** **Country**	Van der Lee et al. 2016 [16] Netherlands
Study design **Population** **Setting**	A retrospective register-based cohort study using insurance data from patients over 2008–2011. 7 392 patients under 70 years of age (mean age 43.3 years, women 39% at year 0) with schizophrenia in 2008, data from Computerized claims data of a Dutch Health Insurer. Outpatient psychiatric treatment.
Exposure/ intervention	Continuity of elective psychiatric care The number of follow-up years of elective psychiatric care in 2009–2011 was calculated. Continuous care group: patients with 3 years of elective psychiatric care No treatment group: patients without elective psychiatric care 1-year treatment group: 1 year of elective psychiatric care 2-year treatment group: 2 years of elective psychiatric care
Outcome **Type of analysis** **Confounders/ covariates in analysis**	1) Acute treatment events 2) Inpatient care and somatic care 3) Medical costs (psychiatric and somatic care) For outcomes 1 and 2, descriptive proportions of care according to outcome categorizations over number of years with elective psychiatric care. For outcome 3 average costs according to outcome categorizations over number of years with elective psychiatric care and effect size Cohen's d for continuous care group with 3 years of elective psychiatric care versus other groups. None identified.
Results	Outcome measurements: acute treatment 33% of the patients had acute treatment events or inpatient treatment in 2009–2014. The continuous care group with three years of treatment showed least of these outcomes, 25% of the patients had any of those treatments. The groups with less years of treatment suffered more acute treatment events or inpatient treatment with 34% in the no treatment group, 52% in the one year group and 68% in the two year treatment group. The amount of somatic care demonstrated a strong positive relation with the number of years of elective psychiatric care.

	The effect sizes for costs of psychiatric care between the continuous care group and the one and two years treatment group were medium to large and there was almost no effect for the no treatment group. The costs of somatic care showed a reverse pattern of effect sizes. The total costs showed medium effects between the continuous care group and the one year and two years treatment groups.
Risk of bias **Comments**	High Inadequate analysis strategy. Lots of tests, no adjustment confounders or multiplicity. Possible overlap between components of exposure measure and resources included in cost calculations.

Author **Year** **Ref #** **Country**	Watkins et al. 2016 [17] USA
Study design **Population** **Setting**	Retrospective cohort study of patients receiving care for mental illness or substance disorders within Veterans Administration between October 2006 and September 2007. Patients (n=144 045, mean age 52.2 years SD 10.6, women 5.5%) with co-occurring mental illness (schizophrenia, bipolar I disorder, post-traumatic stress disorder and major depression) and substance use disorders who received care for these disorders paid for by the Veterans Administration between October 2006 and September 2007. Both in- and outpatient care.
Exposure/ intervention	Continuous care over time which was defined as receiving at least one diagnosis-related visit (either mental illness or substance use disorder) each quarter over a one-year period from any type of provider.
Outcome **Type of analysis** **Confounders/ covariates in analysis**	Mortality 12 and 24 months after the end of the observation period (main outcome). Avoidable excess mortality number (the number of deaths that potentially could have been averted had the patient received the respective quality measure.) Logistic regression models. Difference in mortality rates for avoidable excess mortality number. Age, gender, racial/ethnic background, marital status, rural/urban location and whether the veteran had a service-connected disability for a mental or substance use disorder.
Results	Quality measure continuity of care (quarterly visits) had about* Mortality 12 months: OR of about 0.73 (95% CI 0.66 to 0.78) on mortality at 12 months Mortality 24 months: OR of about 0.77 (95% CI 0.71 to 0.82) on mortality at 24 months Avoidable excess mortality Mortality rate 12ths: 2.3% vs. 3.1% mortality rate in those with more vs less CoC resulting in and avoidable excess mortality number of 655.7. 24ths: 4.6% vs. 5.8% mortality rate in those with more vs less CoC resulting in and avoidable excess mortality number of 983.6.
Risk of bias **Comments**	Moderate Exposure does not directly measure relational continuity.

**visually assessed from forest plot graph*

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