CEPHOS-LINK

## Newsletter August 2015

Comparative Effectiveness Research on Psychiatric Hospitalisation by Record Linkage of Large Administrative Data Sets (CEPHOS-LINK) is pleased to reach you with our second project newsletter!

We are just over one year into our project, and in the final stages of completing our first set of deliverables. Crucially, we have attained ethical approval from all six countries involved (Finland, Austria, Romania, Norway, Italy, Slovenia) as well as establishing a solid scientific foundation for our work in the remaining two years.

Our designated work packages have been busy coordinating five systematic literature reviews around re-hospitalisation, as well as a review on methods used for data analysis (see below for more details). Interestingly, we have found that terminology is of vital importance and have learned that the use of the more specific term of *readmission*is preferable in this context.

The systematic literature reviews give us a solid understanding of what factors affect readmission, and investigate which methods have been used for modelling and data analyses. In total the work packages reviewed over 734 articles.

During this time, we have also established the scientific backbone of our study, i.e the study protocol for six national record linkage studies (one per country), and one joint analysis of pooled data.

In September 2015 we will reach the 18-month mark of our project after which we will embark on the the following phase of the study, data analysis and the aforementioned national and pooled data reports.

Simultaneously, we will be working on concrete guidelines, information packages and policy briefs, as well as a web-based decision support tool to assist mental health service planning and provision. We strongly value the benefit of experience from our broad stakeholder group, and plan to incorporate stakeholders in this phase of the project.

Please check our website www.cephos-link.org for updates, and do not hesitate to

contact us for more information.

**CEPHOS-LINK will be presenting a symposium at the upcoming ENMESH Conference in Malaga 1-3 October 2015. We hope to see you there!**

## CEPHOS-LINK Systematic Reviews

**Psychiatric Readmissions and their Association with Environmental and Health System Variables: A Systematic Review of the Literature.**
By: SINTEF Norway

The objective was to review the importance of health, social system and environmental variables on readmission after discharge (psychiatric or general health in-patient care). The probability for readmission depends on individual characteristics of the patient, but also on factors in the patient's environment i.e. the way services are delivered and on the organisation, governance and financing of health care, all factors of clear importance to policy makers. System variables can be considered as:

- Features of the health system
- Capacity, organization and structure of the healthcare providers
- Financial environment of healthcare providers
- Environmental variables surrounding the patient

While there is a growing literature that discusses models of care, we still lack knowledge of the institutional factors that promote good care. Comparative analysis may contribute to the understanding of why we observe differences between countries. Much as expected, a thorough review of the literature reveals an absence of aggregate health care system characteristics in studies of readmission.

**Which Factors before Discharge have to be Considered to Prevent Readmissions?**
By: UNIV, Italy

Improved knowledge on pre-discharge factors that modify the risk of being readmitted could be useful for clinicians and service planners for two reasons, to improve the quality of life for patients with chronic conditions, and to save resources that could be used to deliver other types of community-

based services.

In this review, the outcome of interest was adult readmission to in-patient hospital care, regardless if it was to a psychiatric or non-psychiatric/general bed.

The main characteristics of included papers were:

- studies ranged between 1990 to 2014, half of which were from the USA (51%);
- the majority of papers considered all ages from 18 years old (even if a huge variation in the mean age emerged);
- the study population included all psychiatric diagnoses, or more than one diagnostic group; even though some studies were focused on single diagnostic groups;
- as for outcome, papers related either to time to readmission or to readmission as a binary outcome.

In particular, three kinds of outcomes emerged: readmission within a specific period from discharge as a binary outcome or as a rate, time to readmission, and other kinds of outcomes connected to readmission (i.e. related to cumulative length of stay or number/frequency of readmissions).

Pre-discharge variables were classified according to the following categories: (1) patients' socio-demographic characteristics (2) patients' clinical characteristics (3) patients' clinical history; (4) characteristics of index admission and discharge; (5) treatment and clinical practice during admission and at discharge.

Preliminary results show as many of these covariates have been analysed in multivariate analysis as possible predictors of readmission. The most consistently significant predictor of readmission was the presence (or number) of previous hospitalisations, which were analysed in the majority of the papers as possible covariate.

In general, the comparison among studies is not straightforward, and various study characteristics have to be accounted for and described in detail when analysing the results. Heterogeneous findings across the literature may be partly explained by the diversity of studies in terms of time to follow up, study design (mainly case-control and cohort studies) and the particular population (often not all psychiatric patients but a specific subgroup of them) and covariates considered.

**The impact of post-discharge community mental health service use on psychiatric readmission rates. Results from a systematic review of the literature.**
By: SNSPMPDSB, Romania

Continuity of care is widely believed to ensure a better outcome and prevent rapid readmission, especially for persons suffering from a mental illness. However, a wide range of service organisation models and strategies have been employed across time and countries to ensure the implementation of this concept.

Therefore, the main objective was to systematically review the literature in order to identify and describe post-discharge variables used in continuity of care and hospital readmission publications, for patients with a psychiatric diagnosis at hospital discharge.

A comprehensive literature search of papers focused on the association between mental health and readmission was conducted and the full text of 303 papers was retrieved and screened for inclusion. As the interest was to identify as many different types of post-discharge variables that might have an impact on readmission rates, 106 papers matching our criteria for;
a) setting (discharged from hospital),
b) intervention (post-discharge variables) and
c) outcomes (readmission) have been included.

A wide heterogeneity of the populations, interventions and outcomes was observed. Post-discharge variables identified were mainly grouped under continuity of care factors and socio-demographic factors. Continuity of care interventions varied from mere contact with GP or specialist, to fully developed care programs.  The impact of these interventions on readmission rates were found to be inconsistent across studies.

Post discharge social support and service use patterns have been proved to constitute influencing factors of readmission rates. However, taking into consideration the individual, systemic and environmental factors, as well as the time since discharge and symptom severity can help clinicians better tailor their interventions to individual patient needs.

**Psychiatric Readmissions and their Association with Physical Comorbidity Variables: A Systematic Review of the Literature.**
By ZRCSAZU, Slovenia

Comorbidity between mental and medical conditions can be considered the rule rather than the exception, and the aim here was to examine the influence

of physical comorbidity variables on readmission.

A large body of evidence suggests that people with enduring mental health problems are more likely to develop physical health problems than the general population, consequently impacting readmission rates.

The Charlson Comorbidity Score, number of medical diagnoses, diabetes, cardiovascular diseases, and substance use related medical diagnoses were the most frequently reported as variables that could be associated with an increased probability of readmission.

Several gaps in the literature became evident during this review, implying differences in the understanding of the concept of comorbidity. Regardless of psychiatric readmission being studied in several clinical settings and diagnostic groups of mental disorders, the physical comorbidity issue was excluded in most studies. In this respect more high quality research is needed, as it is clear that pathways leading to comorbidity of mental and medical disorders are complex and often bidirectional.

**Statistical Methods and Modelling Techniques for Analysing Hospital Readmission of Discharged Psychiatric Patients: A Systematic Literature Review.**

By dwh, Austria

Based on the systematic literature reviews above, a systematic evaluation of the mathematical (statistical and modelling) methods used in the studies around readmission was performed. Starting point were 503 papers from which 407 were analysed in detail, dividing the methods into 5 categories including detailed analyses of subcategories;

1. Parametric tests
2. Non-parametric tests
3. Regression analysis
4. Methods from survival analysis
5. Dynamic Models

In addition to survival analysis and regression models, special interest was placed on modelling and simulation. In general the population size and the follow up time of the patients varied widely in the identified literature, thus the methods used were found to be scattered. A major problem in evaluation is the often insufficient description of statistical strategy, and in nearly all cases reasoning for the methods

is missing. Modelling and simulation are underrepresented, in spite of a high usability can be shown in the outlook.

In the CEPHOS LINK setting, logistic regression as well as Cox regression and its graphical result representation by Kaplan-Meier-curves look promising. Actually advanced clustering methods are under investigation for testing their usability for pooling under k-anonymity criteria.

## The Project Handbook

By IMEHPS, Austria

The CEPHOS-LINK Project Handbook (PHB) summarizes key information and the agreed rules for partners carrying out the retrospective observational multi-centre cohort study on hospital readmissions of persons discharged from a hospital with a main psychiatric diagnosis.  Hence, the PHB is a common reference document for all parties carrying out the study.

In addition to outlining the objectives of the study, and providing country specific background information, the PHB also contains the study protocol including several components such as:

- the study design,
- the selection criteria for hospitals and patients to be included in the study,
- definitions of the variables to be used for carrying out the study,
- quality control measures of the variables
- the methods of data analysis to be applied.

The data is contained in country-specific “Large Existing Electronic Administrative Registries” (LEEARs), each with its own terminology, history, purpose and architecture, with differences requiring a precise process of establishing comparability. The PHB describes how the LEEARs correspond to each country’s specific health care system structures. In relation to record linkage, privacy issues are also considered in detail.

Due to the richness of details included in the PHB a WIKI structure is used for easy navigation. The PHB is currently in development in an iterative process and will be available in September 2015.

**The CEPHOS-LINK team wish you a pleasant summer!**