Title	12-year follow-up student of mortality due to suicide among first-episode psychosis cohort: Is the early intervention program more effective in reducing excess mortality due to suicide in psychosis
Author(s)	Chan, KW; Chan, SWY; Hui, CLM; Chang, WC; Lee, EHM; Chen, EYH
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O10.6 How many psychiatric beds per capita do we need?

Richard O'Reilly[*1], John Gray[1], Jerry Shum[1]*

[1]*University of Western Ontario, Faculty of Medicine, Ontario, Canada*

Background: Since the 1950s, psychiatric services in most developed countries have undergone radical change from a system almost exclusively hospital-based to one that now operates primarily in community settings. The decline in the absolute number of psychiatric beds has been accentuated by significant population expansion in many countries. As bed numbers have decreased, there are fewer beds available to treat people experiencing acute exacerbations of schizophrenia and other psychotic illnesses. Few attempts have been made to identify a minimal or optimal number of psychiatric beds per capita. Many administrators reasonably contend that the optimal number of psychiatric beds depends on the quantity and quality of the community psychiatric services. However, we should at least have a range for the required minimum and optimum number of beds in a similar way that we have for other elements of the service system such as numbers of psychiatrists and community-based teams. In this study, we make our first attempt to put parameters around what these ranges might be.
Methods: We extracted reported psychiatric bed numbers for nations in the databases of the World Health Organization and the Organization for Economic Cooperation and Development. The Canadian data from the above databases was first verified using data in the Canadian Institute for Health Information (CIHI) database. We further verified the Canadian data, which is hospital specific, by contacting each hospital in three Canadian provinces. We established the cause of all noted inconsistencies in hospital specific data. These procedures identified several areas that are likely to be a source of confusion when comparing data within and between jurisdictions. Finally, we polled Canadian jurisdictions to determine if there were established targets for psychiatric beds.
Results: Remarkable variation exists in bed numbers amongst similar nations. Germany, Canada and Italy have respectively 87, 35, and 10 psychiatric beds/100,000 population. We will focus our further analysis on these three nations as representative examples of countries with a high, medium and, low rate of psychiatric beds per capita. The initial due diligence comparison of the CIHI data with figures obtained directly from hospitals yielded hospital specific differences as great as 20%. Uncertainty over whether to include beds used for detoxification and those used for more formal addictions treatment accounted for much of these variances. In Canada, only the province of Ontario has established a psychiatric bed target (35/100,000). In contrast, the Canadian Psychiatric Association recommended 50 acute beds and 15 long-stay beds/100,000.
Discussion: Countries with similar levels of development appear to have markedly differing amounts of inpatient services for people with psychiatric disorders. We are currently undertaking a more detailed analysis of the types of services included in the reported bed numbers in Germany and Italy to ensure that they are comparable with Canada. In view of the degree of the variances found thus far, it seems likely that there are real differences. If there are, it would raise important questions of how Italy manages the types of individual who are treated as inpatients in Germany and Canada and whether the outcomes are equivalent.

O10.7 An investigation of the potential specificity of childhood maltreatment trauma in patients with non-affective psychosis as compared to other mental health disorders

Nina Mørkved[*1], Mathilde Endsjø[2], Dagfinn Winje[2], Erik Johnsen[3], Anders Dovran[4], Kjersti Arefjord[2], Rune Kroken[3], Siri Helle[5], Liss-Gøril Anda-Ågotnes[6], Maria Rettenbacher[7], Nathalie Huber[7], Else-Marie Løberg[8]*

[1]*Mosjoen District Psyciatric Centre, Helgeland Hospital,* [2]*University of Bergen, Bergen, Norway,* [3]*University Hospital; University of Bergen,* [4]*University of Bergen; Sørlandet Hospital Health Enterprise,* [5]*Haukeland University Hospital, Bergen, Norway,* [6]*Stavanger University Hospital, Stavanger, Norway,* [7]*Innsbruck Medical University, Innsbruck, Austria,* [8]*University of Bergen; Haukeland University Hospital*

Background: Childhood maltreatment trauma (CMT) might be a potential risk factor in psychosis, and the prevalence of CMT may be higher in patients with psychosis as compared to other mental health disorders. However, research also shows an increase in general psychopathology and a variety of mental health disorders following CMT, raising the question of specificity between CMT and psychotic disorders. The aim of the study was to investigate the potential specificity of CMT in psychosis. We hypothesized that there would be more CMT in patients with non-affective psychosis as compared to other mental health disorders.
Methods: The sample consisted of 52 patients with non-affective psychosis and 52 matched patients with other mental health disorders. All patients in the psychosis group ($n = 52$) met the ICD-10 diagnostic criteria for non-affective psychosis (F20–F29; Schizophrenia, schizotypal, and delusional disorders), and had a score of □4 on at least one of the items Delusions, Hallucinatory behavior, Grandiosity, Suspiciousness/Persecution, or Unusual thought content on the PANSS. The non-psychosis group consisted of ICD-10 diagnosis F10–19 Mental and behavioral disorders due to psychoactive substance use, F30–39 Mood disorders, F40–48 Neurotic, stress-related and somatoform disorders, F50–59 Behavioral syndromes associated with physiological disturbances and physical factors, F60–69 Disorders of adult personality and behavior, and F80–89 Disorders of psychological development. CMT was measured by the Childhood Trauma Questionnaire Short-Form (CTQ-SF) assessing physical, emotional and sexual abuse, and physical and emotional neglect. We compared the two groups on CTQ-SF sum score and subscale scores indicating rates of CMT, in addition to rates of none/low vs. moderate/severe levels of CMT.
Results: The psychosis group had significantly higher CTQ-SF sum scores $U = 893.50$, $P = 0.003$, $r = -0.29$, and scored significantly higher on three of five subscales; physical abuse, $U = 1069.50$, $P = 0.039$, $r = -0.20$, sexual abuse, $U = 1043.50$, $P = 0.004$, $r = -0.28$, and physical neglect, $U = 773.50$, $P = 0.000$, $r = -0.38$. Patients in the psychosis group were more likely to have experienced moderate/severe levels of CMT. Emotional neglect and emotional abuse were no more frequent in the psychosis group than in the non-psychosis group. In the psychosis group, 67.3% had cut-off scores for one or more subtypes of CMT as compared to 38.5% in the non-psychosis group, and 9.6% had cut-off scores for four or more subtypes of CMT compared to 0% in the non-psychosis group.
Discussion: Patients with psychosis reported a history of more CMT, both in terms of severity and frequency, compared to non-psychotic patients. Thus, our results mainly confirmed our hypothesis of a link between CMT and psychosis. However, the prevalence of some CMT also in the non-psychosis group, as well as non-significant differences in two subtypes of CMT indicated a graded specificity of CMT in psychosis. Our results are consistent with previous research on CMT and psychosis. Limitations regarding the present study relate to fairly small sample sizes and retrospective data. Strengths of the study include the use of matched pairs and the comparison of CMT in psychosis to other mental health disorders instead of the general population. Future research is needed to explore possible causal directions, developmental sequences and mediating or moderating factors on the relationship between CMT and psychosis, as well as a prospective and longitudinal design. We conclude that CMT might have an especially strong effect on the development of psychosis, and assessment of trauma history should be included in psychosis interventions.

O10.8 12-Year follow-up study of mortality due to suicide among first episode psychosis cohort: is the early intervention program more effective in reducing excess mortality due to suicide in psychosis

Kit Wa Sherry Chan[*1], Wing Yan Stephanie Chan[1], Lai Ming Christy Hui[1], Wing Chung Chang[1], Ho Ming Edwin Lee[1], Yu Hai Eric Chen[1]*

[1]*The University of Hong Kong, Hong Kong, China*

Background: The mortality gap between the general public and people with psychotic disorders remains large. Despite the excess mortality particularly due to suicide observed in people with psychosis, little has been done to investigate measures that may effectively prevent premature deaths. It remains unclear if early intervention (EI) for psychosis can have sustainable effect to prevent excess mortality. This study compared the mortality rates at 12-year between first-episode

psychosis patients from the EI program, and those who received standard care service.
Methods: Seven hundred consecutive patients who received the EI service between 2001 and 2003 in Hong Kong, and 700 matched patients who received the standard care (SC) service between 1998 and 2001 were traced over a 12-year period following their first presentation. The EI service in Hong Kong (EASY) provides phase specific intervention to patients with first episode psychosis of age 15–25. All deaths within the cohort were identified via the centralized digital patient records system. Official verdict on cause of death was then obtained from the Coroner's Court.
Results: Of all 1,400 patients, 80 (5.7%) people had died within the follow-up period, 74 (5.3%) cases committed suicide. There were 4.1% ($N = 29$) among the EI group and 7.3% ($N = 51$) among the SC group. The difference of suicide rates between the two groups was statistically significant, χ^2 (1) = 4.71, $P < 0.03$. Multivariate Cox-proportional hazards regression analysis revealed that, EI patients were at reduced risk of mortality than those in the SC group (adj. rate ratio [RR] 1.68, 95% CI 1.05–2.69). However, when suicide occurred within the first three years following the initial onset were excluded, there was no significant difference between the two groups (adj. rate ratio [RR] 1.08, 95% CI.60–1.97), with 1.5% ($N = 21$) from the EI group and 1.5% ($N = 22$) from the SC group. Compared with the general population, the standardized mortality ratios for suicide [SMR] for EI (SMR 31.5, 95% CI 21.52–44.71) and SC (SMR 51.4, 95% CI 38.64–66.99) were both very high.
Discussion: This study investigated mortality among 1,400 individuals with first-episode psychosis at 12-year follow-up. Significantly more deaths were observed within people in the EI program than in those who received the SC service. After controlling for the gender difference, the analyses revealed that the EI program is more effective than the SC service in reducing mortality rates in psychosis patients, especially for the first three years of illness. However, the excess mortality in psychosis patients yet remains large. These points to the need in refining the EI service in targeting the tractable clinical and social risk factors that underlie excess mortality in psychosis.

O11. Brain imaging-ii: molecules, structures, and functions

O11.1 Aberrant salience and dysfunctional neural processing of self-reference in unmedicated schizophrenia patients

Teresa Katthagen[*1], Jakob Kamniski[1], Norbert Kathmann[2], Henrik Walter[1], Andreas Heinz[1], Florian Schlagenhauf[3]*

[1]Campus Charité Mitte, Charité - Universitätsmedizin, Berlin, Germany, [2]Humboldt-Universität zu Berlin, Berlin, Germany, [3]Campus Charité Mitte, Charité - Universitätsmedizin; Max Planck Institute for Human Cognitive and Brain Sciences

Background: A disturbed sense of self is a core symptom in schizophrenia and can be experimentally probed via self-referential processing (Kelley *et al.*, 2002; Nelson, Whitford, Lavoie, & Sass, 2014). The latter process is accompanied by activation in the cortical midline structures (van der Meer, Costafreda, Aleman, & David, 2010). Previous work revealed blunted ventromedial prefrontal cortex/anterior cingulate cortex (vmPFC/ACC) activation during self-referential processing correlated with aberrant salience attribution towards irrelevant events in patients with schizophrenia (Pankow, *et al.*, 2015). However, since these patients were medicated studies in unmedicated patients are warranted. To our knowledge, this is the first study to investigate aberrant salience and the neural correlates of self-referential processing in unmedicated schizophrenia patients.
Methods: In the present study, 18 schizophrenia patients (mean age: 34.83 years, 6 females) who did not receive antipsychotic medication as well as 18 healthy controls (mean age: 33.44 years, 6 females) completed the self-referential paradigm during fMRI. In this task, they applied trait words to themselves (self) or to Angela Merkel (other). Outside the scanner, they completed the Salience attribution test (SAT; Roiser *et al.*, 2009), an instrumental learning paradigm probing aberrant salience. The latter was defined as the individual reaction time difference between trials of equally irrelevant cue features. Parameter estimates from the t-contrast self > other were extracted using an ACC/vmPFC mask and correlated with aberrant salience scores in each group.
Results: Schizophrenia patients displayed increased aberrant salience compared to healthy controls (t(32) = 3.132, $P = 0.004$). In the fMRI paradigm, the t-contrast self > other revealed the typical response pattern comprising the anterior cortical midlines structures and the midbrain (at pFWE corrected $< .05$). In this contrast, groups differed in their vmPFC response ([338–2], F (1, 68) = 17.20, pSVC for bilateral ACC/vmPFC = 0.026). *Post hoc* t-test revealed that unmedicated schizophrenia patients displayed reduced vmPFC activation compared to healthy controls ([338–2], t (1, 68) = 4.15, pSVC for bilateral ACC/vmPFC = 0.013). There was a statistical trend for the negative correlation between vmPFC/ACC activation and aberrant salience in schizophrenia patients ($r = -0.411$, $P = 0.09$).
Discussion: Similar to results in medicated patients (Pankow *et al.*, 2015), unmedicated schizophrenia patients showed increased aberrant salience and dysfunctional self-referential processing in the vmPFC/ACC. Thus, the differentiation of relevance attribution during self-compared to other-referencing might be blunted in unmedicated schizophrenia patients. In line with the aberrant salience hypothesis (Heinz, 2002; Kapur, 2003, 2005), unmedicated patients attributed meaningfulness to irrelevant events. However, the association between aberrant salience and self-referential processing did not approach significance which might have been due to the relatively small sample size. Our results stress the importance of investigating schizophrenia related concepts at varying clinical stages of the disorder. Future studies should focus on the idionsycratic aspects and underlying mechanisms of aberrant salience and self-reference.

O11.2 Single dose of cannabidiol attenuates neurofunctional abnormalities present in individuals at high risk of psychosis

Sagnik Bhattacharyya[*1], Cathy Davies[1], Robin Wilson[1], Elizabeth Appiah-Kusi[1], Matthijs Bossong[1], Paul Allen[1], Vincent Giampietro[1], Philip McGuire[1]*

[1]King's College London, London, UK

Background: Cannabidiol (CBD), a major ingredient in the extract of cannabis, may have antipsychotic and anxiolytic properties.[1–3] It may also protect from impairments in memory induced by delta-9-tetrahydrocannabinol and has been shown to modulate the neural substrates of verbal memory in healthy individuals.[2] However, the precise mechanism underlying the potential antipsychotic-like effects of CBD is unclear. Here, we investigate this in individuals at ultra-high risk of psychosis (UHR), using a combination of acute pharmacological challenge and functional magnetic resonance imaging (fMRI). UHR individuals experience low-grade psychotic symptoms and have a very high-risk of making a transition to frank psychosis. Our objective was to test whether an acute oral dose of CBD can modulate functioning of the neural substrates of verbal memory in individuals at UHR of psychosis using functional magnetic resonance imaging (fMRI).
Methods: We employed a randomized, double-blind, placebo-controlled, parallel-arm, between-subject design to examine the acute effect of CBD in 28 UHR individuals who were randomized to receive either an acute oral dose of CBD (600 mg; UHR-CBD) or placebo (UHR-Placebo; $n = 14$ per arm). A separate healthy control group ($n = 19$) was studied under identical conditions but without any drug administration. Each participant was studied on one occasion using fMRI whilst performing a verbal paired associates learning task.
The outcome measures of interest were regional brain activation (blood-oxygenation-level-dependent response) during encoding and recall conditions of the verbal paired associates learning task, recall performance in the task, and levels of positive psychotic symptomology.
Results: Relative to healthy controls, UHR subjects under placebo conditions displayed enhanced engagement ($P < 0.005$) in the parahippocampal gyrus, inferior parietal lobule, precuneus and caudate head during the encoding condition, and attenuation of engagement ($P < 0.005$) of the parahippocampal gyrus and inferior frontal gyrus during cued recall. Severity of psychotic symptoms in the UHR individuals under placebo condition were correlated with recall task performance ($r = 0.7$, $P = 0.002$) and functional alterations in the parahippocampal gyrus (rho = 0.58, $P = 0.018$) and caudate (rho = 0.53, $P = 0.031$). Acute Cannabidiol treatment in UHR individuals modulated activation in each of these regions ($P < 0.005$), such that activation in the UHR-CBD group was intermediate between that of healthy