

## Early Detection and Treatment Options for Psychosis in Transition from Childhood to Adolescence – a Review about 3 Decades of Psychiatric Clinical Experience

Abstract: In the 80s we worked with young adults suffering from psychosis (often with drug abuse beforehand) and we had limited drugs and no concept whatsoever (Zentrum für Psychiatrie Herten, Germany).

We started with a systemic therapy concept in a ward specialized in psychotic patients from age 18-30 and a training (Brenner Program) to guide them into a healthier way of living. There had been no experience in combining individual therapies with education for the patient and his/her parents and siblings in adult psychiatry.

The limitations of adult psychiatry in those times made me switch to child and adolescent psychiatry, which included family therapy to get earlier diagnoses and prevent the unsatisfactory outcome, that we had to handle in adult psychiatry at that time.

This article includes several case reports and also deals with early diagnosis and preventive treatment, especially when several siblings are affected.

Plus, there are references to a Canadian and German study regarding psychosis and drug abuse.

Another item is the difficulty of transition, i.e., how to transfer child/adolescent psychiatric treatment into a manageable concept for young adults, meaning the cooperation between the child/adolescent clinic which in Germany is allowed to treat up to age 21 and the psychiatric clinician for adults, who treats patients from age 18 onwards.

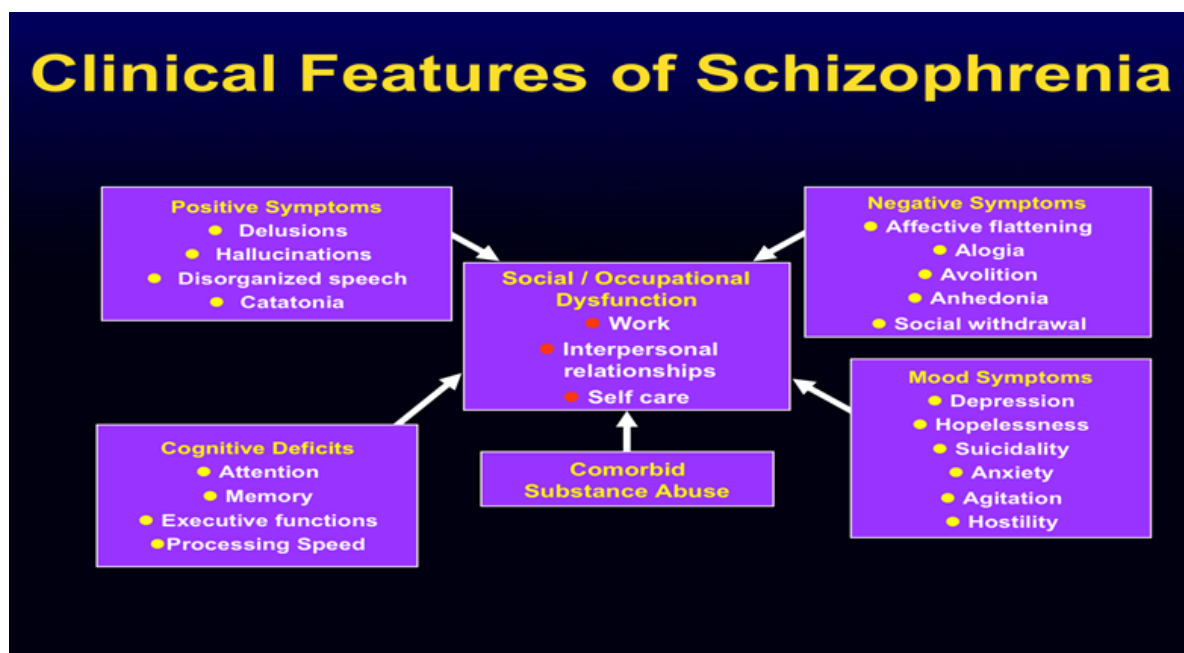
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### Introduction:

While schizophrenia is best known for episodes of psychosis it is also marked by chronic neurocognitive deficits, such as problems with memory and attention. These neurocognitive symptoms are evident prior to the onset of psychosis in the prodromal phase.

The findings suggest that these impairments may serve as early warning signs of schizophrenia, as well as potential targets for intervention that could mitigate the onset of the psychotic disorder and significantly improve cognitive function (1).

Impaired working memory and declarative memory turned out to be the key neurocognitive functions that are impaired in the high-risk, prodromal phase prior to the onset of full-blown psychosis. These findings, said Dr. Seidman, are in keeping with the experiences of many people with schizophrenia who report sudden difficulties reading, concentrating or remembering things in the earliest days of the disorder (1).



(2): Best of PSYCH FORUM 2016: Schizophrenia: Preventing Deterioration and Returning to Baseline  
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## Early Detection and Treatment Options for Psychosis in Transition from Childhood to Adolescence

As Dr. Seidman mentioned, early detection is essential for the later outcome in psychosis.

So, in our Center we focus on a holistic way in anamnesis and diagnosis including neurological, psychiatric and test psychological assessments for all our patients.

We deal with a population from toddler to age 21.

Our neurological examination includes motor abilities, checks for persisting preborn reflexes, regards all kinds of sensory disabilities and hypersensitivities. We also check for generalised internal diseases and have a cursory check including the static and orthopaedic state.

Psychiatric evaluation will regard the age and mental status and includes the cognitive functions, memory and attention.

These have to be objectively measured and we regularly include the OPATUS CPTa® from age 3 onwards (3).

We use a fixed test battery for each developmental stage (3).

If there arises the suspicion, there could be a prepsychotic or psychotic disorder behind the symptoms presented, additional examinations and tests will be followed up.

Quite effective is, to check for cognitive basic impairments:

#### Cognitive Perceptual Basic Disorders (COPER) (4)

Presence of > 1 of the following ten basic symptoms with multiple occurrences (SPI-CY score >3) within the last three months and a first occurrence >12 months before:

- Thought interference (D. 9)
- Compulsive perseveration of certain contents of consciousness (D. 14)
- Urging and chasing thoughts (D. 10)
- Mind blocking (D. 15)
- Disorder of receptive language (D. 11)
- Disorder of discrimination of ideas and perceptions, imagination and Memory ideas (B. 1)
- "Subject centrism", self-relationship tendencies (B. 2)
- Derealization (B. 7)
- Disorders of visual perception, excluding hypersensitivity and blurred vision (B.3, O.1)
- Acoustic perception disorders, excluding hypersensitivity (B. 4.2, B. 5)

#### Basic cognitive disorders (COGDIS)

- Presence of >2 of the following 9 basic symptoms with multiple occurrences (SPI-CY score >3) within the last 3 months:
- Impaired ability to split attention (D. 8)
- Thought interference (D. 9)
- Urging and chasing thoughts (D. 10)
- Mind blocking (D. 15)
- Disorder of receptive language (D. 11)
- Disorder of expressive language (D. 12)
- "Subject centrism", self-relationship tendencies (B. 2)
- Disturbance of symbol recognition (D. 7)
- Captivation (banishment) through perceptual details (O. 2)

The categories given in brackets refer to the original assessment instrument, the Basic Symptom Scale (BSABS) [5].

When suspicion continues this will be accompanied by a deeper anamnesis, using parents and even grandparents reports as well.

### Case Report Anna, age 12:

Anna reported to our clinic with symptoms of distraction, anxiety and impulsivity.

She was the youngest of 4 siblings, the others aged between age 19 and 27.

What made her diagnosis a lot easier was, that the eldest sister age 27 and the brothers, ages 19 and 23 had been previously diagnosed with psychosis some years ago and were still in treatment. The brother age 19 had been in our clinic with psychosis, aggravated by substance abuse for nearly 2 years.

And of course, the family had been "forewarned": over the past years they had all developed into experts to recognize the prodromal symptoms.

Anna then quickly got on neuroleptics and we could prevent an acute phase with hallucinations and more.

### Case Report Arthur, age 17:

Arthur is Anna`s brother, two years before the case report mentioned above.

When he came to our clinic he showed a lot of active psychotic symptoms with his first episode like hallucinations, derealisation, decline in school performance, depression and anxiety plus impulsivity.

He was still on cannabis and in the early stage of treatment unwilling to part with this abuse, because, as he put it, THC helped him to control his anxiety and gave him subjectively an increase in attention.

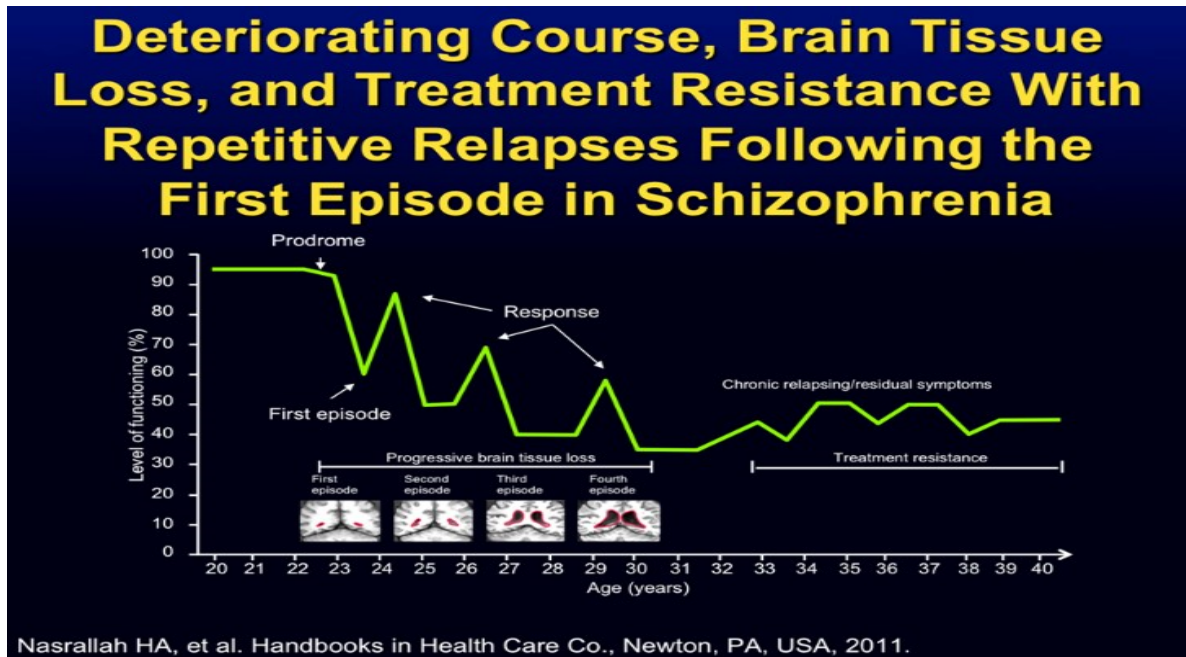
Interventions of his elder siblings helped, to get his consent for neuroleptics and to cease using drugs.

He attended a psychotherapy group for young adults at our clinic for several years until his follow up treatment had to be transferred to an adult psychiatrist.

He managed to achieve his high school grade and afterwards started with training to become a nurse. And gratefully there was no relapse in all this time and he even started with his own family.

But till today, we regard this outcome special, because it does not represent the long way of clinical persuasion it usually takes to get someone discontinuing substance abuse in the early stages of psychosis (first or even second episode).

## Decline of mental performance



(6) Nasrallah HA et al.

### Case Report George, age 19:

**George** was presented by his father with ongoing psychotic derealisation, that he tried to dissimulate.

After finishing his exams, he had taken a year abroad in Australia ("work and travel"). In skype and zoom calls, his parents got suspicious of his mental decline and derealisation. So, his father decided to fly over and get him home again.

He admitted, having tried hallucinogenic mushrooms, LSD, Cannabis, Ecstasy and legal highs and was not easily persuaded to regard his mental state as declining.

Under strict control of his parents, we could give him neuroleptics which had an immediate effect clearing his mind of derealisation and could improve the basic cognitive disorders like impaired ability to split attention, thought interference, urging and chasing thoughts, mind blocking and self-relationship tendencies.

However, his attention span was quite affected, as the OPATUS CPTa results below show:

Opatus CPTa in early stage of treatment (3 weeks on aripiprazole 20mg):



UserId: Case George (M)

ClinicID XX - nn - 1

Date: - - - -  
Time: - - -

DoB: - - - -  
Age: 19 yr. 10 mo.

Test no. **1**

Medication

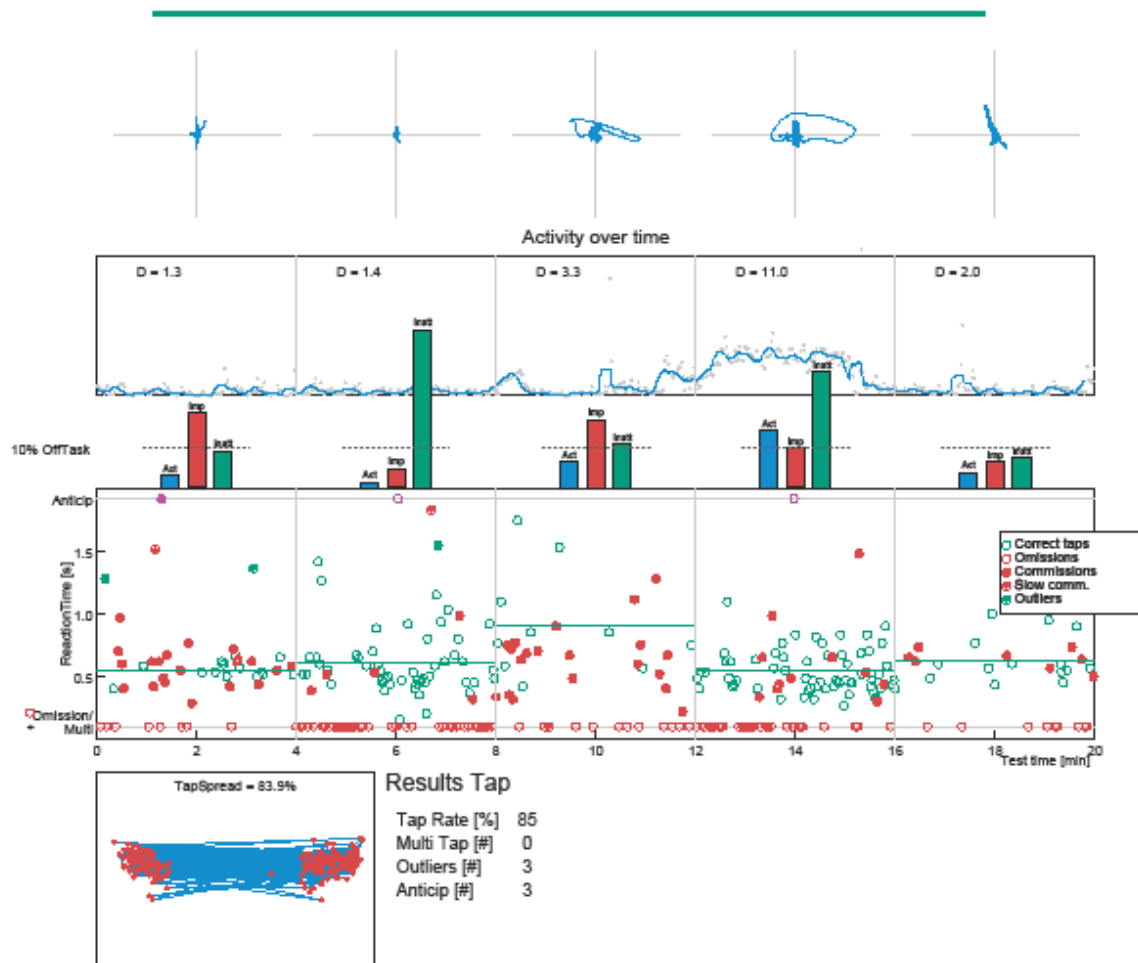
Not specified

Diagnosis

Not specified

Assessment:

Not specified



**Results Activity**

Reference: N = 77

**Results Impulsivity & Attention**

Measure	Z-score	Percentile	Tot	Lo	Hi	RelDiff	Z-s	Perc.
Distance [m]	19.1	2.7	99	599	679	571	19	> 3.0 99
Volume [cm3]	7.4	1.4	92	234	280	209	34	> 3.0 99
Time in activity [%]	38.2	2.2	98	39	41	37	13	2.5 99
ReactionTime								> 3.0 99
ReactionTimeStd								> 3.0 99
Normalized Std.								> 3.0 99
Commissions [%]								> 3.0 99
Omissions								> 3.0 99
ErrorRate								> 3.0 99

The table shows George's performance: greens circles are good reactions, red dots represent impulsivity, red circles stay for omissions. His overall error rate is 29,2%, the blue line in the upper field represents the movement activity, z-scores above 0 are abnormal (3)

George recovered fast and wanted to regain personal responsibility again. He then started with his study of legal affairs in a town 1,5hrs. distance to his home town. He was living at a student facility and got involved with drugs again and ceased taking his medication. 4 months later, he was presented again with similar symptoms like in his first episode. Starting with aripiprazole again, quickly got him out of the productive phase, but mental decline could be monitored clinically. However, all our talks about his vulnerability regarding drugs and discontinuation of neuroleptics were not to be held up for long. He was not able to continue with his studies. His father provided him with a training as a commercial clerk at his factory, but in reality, he had to be pushed to rise in the mornings and he was not able to fulfil any difficult task at work. His situation worsened, when he started using drugs again and discontinued with his medication. He ended with tattoos all over his face, living under guardianship in a therapeutic residential group.

OPATUS CPTa – objective measurement for concentration and activity

In our clinic, the OPATUS-CPTa test for objective measurement of concentration and activity is an important part of the test packages for all age groups; its validity has been confirmed in various clinical studies. It offers a fast and accurate procedure to support the diagnosis and for progress controls under treatment of ADHD and it can be used to describe the decline of attention correlating with psychosis as well as shown above.

The OPATUS CPTa is available as an app that runs on iPhones, iPods and iPads. It is intended for doctors and scientists in research and therapy.

The different versions are adapted for patients from the age of three to seniors. Its execution time varies between eight minutes for infants, sixteen minutes for children between six and twelve years and twenty minutes for older test persons. The short results serve as a first orientation and are available free of charge for all users. The complete evaluation including a graphical report is only available for professionals.

And this is how the test is carried out: The test person holds the iPhone or iPod with both hands. Because the devices can determine their position in space, they pick up the subject's movement pattern (the movement sensor of iPads is less sensitive; they are suitable for presenting the test, but not for conducting it). On the screen, either a yellow or blue triangle that point up, down, left or right and becomes visible in rapid succession; the client has to press on the screen, when two identical targets follow in time.

In the adult version that is shown in our example, there are four-minute intervals of low target phases, followed by high target phases and so on.

The movement - the four blue "scribbles" in the upper section show the movement patterns for each of the four four-minute sections. If the device is held calmly in the hand, the picture is quite closed. The more restless the subject is, the more expansive the scribbles become.

The four individual pictures give a first impression of the movement pattern for each four minutes of the test duration; much more meaningful is the graph below. Here, the movement activity is listed as a function of the total time. The blue line shows the real-time deflections, the red line is somewhat "softer" because it reflects the values averaged over a certain period of time in each case.

The concentration ability - the graph with the many dots of different colours gives information about the frequency of errors and thus about the concentration ability. This part is divided into four-minute sections.

- Green circles show the correct reactions.
- Red dots show when the respondent made mistakes.
- The green solid lines parallel to the time axis show the average reaction times for each four-minute segment.
- Purple circles stand for random reactions; they are of course not linked to a reaction time and are therefore all displayed at the same height parallel to the time axis.
- Black crosses on the time axis show when the client pressed twice (so-called multitaps); this is also interpreted as a sign of impulsivity.
- Red circles can be seen on the same axis as the black crosses; they indicate the omission errors. This means: There was no response because the client was dreaming or was distracted.

The four small bar charts above the dot diagram give a quick overview of the reaction patterns:

- The blue column reflects the level of restlessness (data from the blue movement lines),
- the red column shows the measure of impulsivity (data from purple circles and black crosses),
- the green column is the measure of inattention (data from the red circles).

## Schizophrenia Risk on Heritability up to 80%

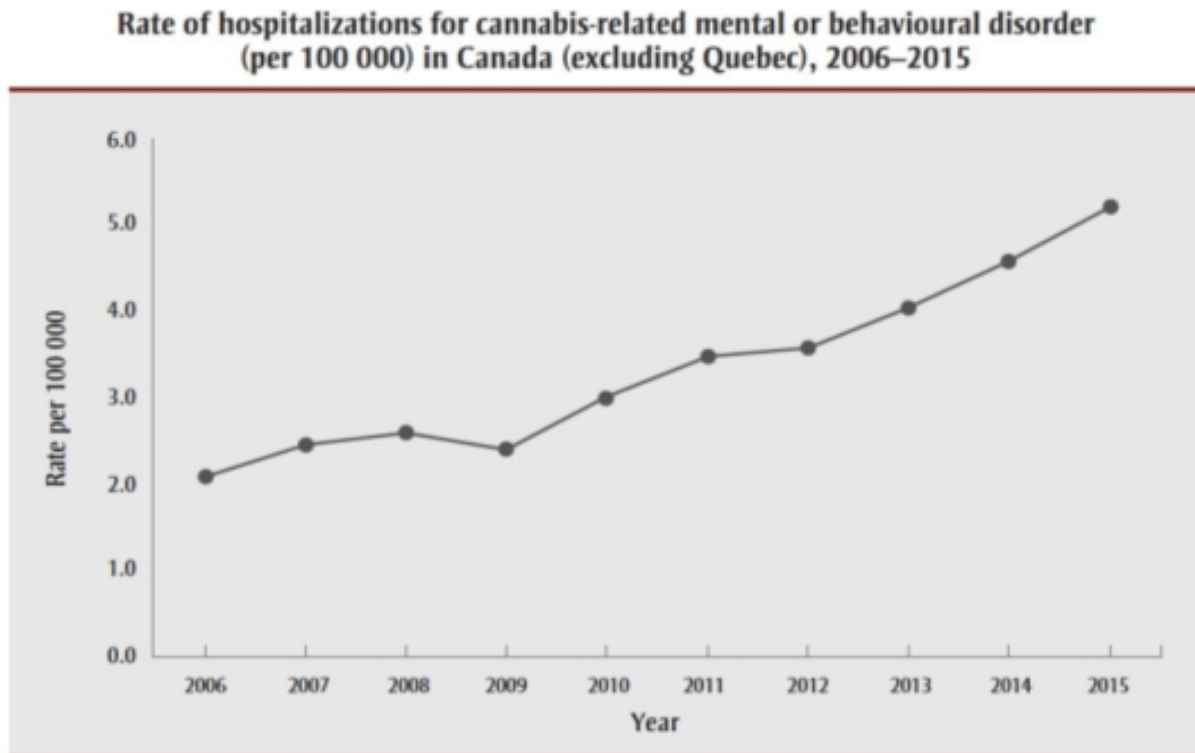
In the largest schizophrenia study involving twins to date, researchers estimate that as much as 79% of schizophrenia risk may be explained by genetic factors.

The study, published in *Biological Psychiatry*, used a new statistical approach to address one of the factors that contributes to inconsistencies across previous studies. Usually, studies of heritability require that people be classified as either having schizophrenia or not, but some people at risk could still develop the disease after the study ends. (8)



## Psychotic disorder and cannabis use: Canadian hospitalization trends, 2006-2015

Between 2006 and 2015, the rate of hospitalizations for cannabis-related mental or behavioural disorders in Canada rose from 2.11 to 5.18 per 100000.



**Data source:** Canadian Institute of Health Information.<sup>24</sup>

**Note:** Hospitalizations were extracted from the Hospital Mental Health Database (HMHDB) for the ten fiscal years spanning April 2006 to March 2016 (herein referred to as 2006 to 2015).

Further research is required to investigate the reasons for the increase in hospitalizations for cannabis-related psychotic disorder. The introduction of high-potency cannabinoid products and synthetic cannabinoids into the illicit market are considered as possible factors. (13)

Incidence of inpatient cases with mental disorders due to use of cannabinoids in Germany: a nationwide evaluation  
Quantitative (e.g. increasing recreational cannabinoid use) and qualitative (e.g. increasing availability and use of synthetic cannabinoids and cannabis preparations with increased tetrahydrocannabinol content) changes in cannabinoid use may be associated with changes in the prevalence of cannabinoid-related mental and behavioural disorders and, accordingly, changes in the need for medical care. We aimed to investigate if there are changes in the number of inpatient cases (ICs) due to cannabinoid-related disorders in Germany.

Absolute AFs of ICs with DRUCs increased statistically significantly ( $P < 0.0001$ , trend analysis) in Germany between 2000 and 2018 and corresponding relative AFs increased considerably (4.8-fold increase when comparing 2000 and 2018). Specifically, absolute AFs of ICs with

cannabinoid intoxications ( $P < 0.0001$ ), harmful use ( $P = 0.0005$ ), dependence syndrome ( $P < 0.0001$ ), withdrawal state ( $P < 0.0001$ ), psychotic disorders ( $P < 0.0001$ ) and residual and late-onset psychotic disorder ( $P < 0.0001$ ) statistically significantly increased. (14)

## The transition from child and adolescent psychiatry to adult psychiatry

Working in a clinic for child and adolescent psychiatry, we have to conclude, that even if we are able to prevent some outcome of psychosis going chronic, that later on have to be transferred to a clinic for adult psychiatry, if we are able to get an early diagnosis and work with families generating a systemic support net, the willingness and compliance to cease drug abuse, supporting the psychosis to develop into a chronic disorder is crucial.

In adult psychiatry an outcome of 50% improvement still is regarded as a positive achievement, like in the early 80s (10).

And even if specialized residential groups are available, they often deal with patients, that have deteriorated a lot during their history, so the expectations for improvement have to be kept realistically low.

My old professor described this with following picture: "Imagine, that your brain is a kind of library, where someone let through a hefty gush of wind, so that all the books got pushed to the ground, out of their primary order. Your task now, after suffering from a psychotic episode is, to get a new sense into what you want to understand or want to express without direct access to the right book or words."

This is, what the above-mentioned Benner Program is about. (11)

Social cognition was shown as a rate limiting factor for both psychosocial outcome and response to psychosocial intervention in schizophrenia. In a randomized controlled trial, a new cognitive-behavioural group treatment for schizophrenic inpatients (the "Training of Emotional Intelligence", TEI) was tested against the well evaluated "Integrated Psychological Therapy Program" (IPT) of H. Brenner. Within the framework of P. Salovey's work the Training of Emotional Intelligence focussed on three domains of deficits in schizophrenia: emotional perception, emotional understanding and emotional management. In the randomized controlled trial with 41 DSM-IV schizophrenic inpatients no differences were found in problem-solving and negative symptoms, both post treatment and in the 12 months-follow up. Additionally, there was a better outcome in affect decoding capacity post treatment, and a progress in regulation of negative effects in the follow up. Emotional role taking behaviour and social anxiety returned to baseline level, perhaps by reasons of no "booster sessions" in the follow up. Unfortunately, in contrast to our hypotheses we failed to show treatment-specific effects, which may be due to an underpowered statistical testing. There was only one exception of this: While the Integrated Psychological Therapy Program showed a greater reduction of global psychopathology

after treatment, the Training of Emotional Intelligence reduced psychopathology in the follow up more strongly. (12)

### Take home messages

- Psychosis prediction is based on clinical criteria in terms of risk symptoms and will be supplemented by a multi-level approach that includes neuropsychological, brain-structural and brain-functional as well as genetic data and biomarkers.
- The predictive power of psychosis prediction is similar to physical illnesses or dementia syndromes.
- Specialized early detection centres should be available for diagnostics to assess the risk of psychosis, should be easily accessible and expanded regionally.
- In psychosis prevention, cognitive behavioural therapy-oriented psychotherapeutic interventions have been established as measures of first choice.
- Second-line drugs are antipsychotics of the second generation, especially if the subjective burden of symptoms is high.
- The transition from child and adolescent psychiatry to adult psychiatry should be improved.
- Prevention of drug related relapses should be improved.
- General knowledge about risks of drugs and their effect on brain function as well as the risk to develop a drug induced psychosis should be improved.
- Systemic therapy might help prevent relapses, because a well-connected family or/and peer group may help to get better results

### Reference list:

1. Seidman LJ, Beth Israel Deaconess Medical Center, published online by JAMA Psychiatry, Nov.3,2016: Neurocognitive Deficits May Be a Red Flag for Psychosis
2. Best of PSYCH FORUM 2016: Schizophrenia: Preventing Deterioration and Returning to Baseline  
Nasrallah HA, MD  
Souers SW Professor Chair, Department of Psychiatry and Behavioural Neuroscience  
Saint Louis University School of Medicine  
St. Louis, MO
3. Meyers R, A New Approach in Diagnostics and Therapy of ADHD, lecture 2018, [www.meyers-hamburg.com](http://www.meyers-hamburg.com)
4. Klosterkoetter J und Mueller H, Prävention schizophrener und anderer psychotischer Störungen. [Hrsg.] Joachim Klosterkoetter und

- Wolfgang Maier. Handbuch präventive Psychiatrie. 2017; 11:227–83, Schattauer, Stuttgart
5. Gross G, Huber G und Klosterkoetter J, Linz M. Bonner Skala für die Beurteilung von Basissymptomen (BSABS; Bonn Scale for the Assessment of Basic Symptoms). Springer, Berlin 1987
  6. Nasrallah HA et al., Handbooks in Health Care Co., Newton, PA, USA, 2011
  7. Brockhaus-Dumke A, Psychotische Störungen früh erkennen und früh behandeln, In|Fo|Neurologie & Psychiatrie 2017; 19 (10)
  8. Hilker R, University of Copenhagen, Copenhagen, Denmark, <http://dx.doi.org/10.1016/j.biopsycho.2017.08.017>
  9. Deutsche Gesellschaft für Psychiatrie und Psychotherapie, Psychosomatik und Nervenheilkunde e. V. (DGPPN) (Hrsg.), S3-Leitlinie Schizophrenie, AWMF-Register Nr. 038-009, <https://www.awmf.org/leitlinien/detail/II/038-009.html>
  10. Meyers R, Erfolgsaussichten der ambulanten Behandlung von Suchtkranken mit Apomorphin, (medical thesis), University of Hamburg, Hamburg 1984
  11. Roder V, Brenner HD, Mueller D, Integriertes Psychologisches Therapieprogramm bei schizophrenen Erkrankten IPT, Beltz, 9.A., 13.5.2019
  12. Vauth R, Joe A, Seitz M, Dreher-Rudolph M, Olbrich H, Stieglitz R-D, Differenzielle Kurz- und Langzeitwirkung eines „Trainings Emotionaler Intelligenz“ und des „Integrierten Psychologischen Therapieprogramms“ für schizophrene Patienten, Fortschr Neurol Psychiatr 2001; 69(11): 518-525, DOI: 10.1055/s-2001-18383
  13. Bridget M-H et al., Psychotic disorder and cannabis use: Canadian hospitalization trends, 2006-2015, <https://doi.org/10.24095/hpcdp.40.5/6.06>
  14. Gahr M et al., Incidence of inpatient cases with mental disorders due to use of cannabinoids in Germany: a nationwide evaluation, <https://doi.org/10.1093/eurpub/ckab207> , European journal of public health (2022)