A Clinical Decision Support System for Adult ADHD Diagnostics Process

Juha Kemppinen
Eksote, Valto Käkelän katu 3,
FI-53100 Lappeenranta, Finland
juha.kemppinen@eksote.fi

Jukka Korpela
Roce Partners,
Tekniikantie 14, FI-02150
Espoo, Finland
jukka.korpela@roce.com

Jukka Korpela
Roce Partners,
Tekniikantie 14, FI-02150
Espoo, Finland
jukka.korpela@roce.com

Kalle Elfvengren
Lappeenranta University of
Technology, Skinnarilankatu 34,
FI-53850 Lappeenranta, Finland
kalle.elfvengren@lut.fi

Timo Salmisaari
Eksote
timo.salmisaari@eksote.fi

Jussi Polkko
Roce Partners
jussi.polkko@roce.com

Markku Tuominen
Lappeenranta University of
Technology
markku.tuominen@lut.fi

Abstract
Adult ADHD is a complex neuropsychiatric disorder, which is affecting the daily lives of 2-5 % of the adult population. This paper introduces a Clinical Decision Support System for diagnostics of ADHD. The introduced CDSS is currently in use in the South Karelia District of Social and Health Services (Eksote) in Finland. Eksote needed to establish the program for adult ADHD patients, and an evaluation, diagnosis and treatment process by a multi-professional team was developed. The new process was launched with tailor-made CDSS software support. The developed CDSS supports the implementation of the new adult ADHD patient evaluation, diagnosis and treatment process. The CDSS guarantees that the multi-professional team has from the start an algorithmic and extensive approach to the treatment of adult ADHD patients. The CDSS also warranted that Eksote has established a standard for the care of adult ADHD patients. The CDSS enables the possibility to make quick changes and development in the process.

1. Introduction
Adult ADHD (attention deficit hyperactivity disorder) is a complex neuropsychiatric disorder, which is affecting daily lives of 2-5 % of adult people. 10-20 % of people with common mental health problems have ADHD and 20 % of parents of ADHD children have adult ADHD [1]. An adult ADHD-patient has continuously difficulties in organizing, prioritizing and getting things started. He or she has difficulties in focusing, sustaining and shifting attention. Adult ADHD is currently underdiagnosed and undertreated in many European countries. Adult services for people with ADHD remain relatively scarce despite strong evidence for the benefits of diagnosing and treating ADHD in adults. [2]

Effective management of adult ADHD patients is justified from a health economic perspective since undiagnosed and untreated ADHD will lead to inefficient health care use, less satisfactory clinical outcomes, lower personal well-being and poorer social and professional interactions.

This paper presents a Clinical Decision Support System (CDSS) for effective diagnosis of adult ADHD patients. The goal of the developed CDSS was implement a new adult ADHD patient evaluation, diagnosis and treatment process.

The introduced CDSS is currently in use in the South Karelia District of Social and Health Services (Eksote) in Finland. Eksote arranges secondary health care, primary health care, care for the elderly, and social welfare services for its eight member municipalities. Eksote works for delivering patient-oriented care to the approximately 130 000 citizens of South Karelia. It employs approximately 4 100 people and has a budget of 370 million euros. Eksote operates in a geographical area of over 5 600 square kilometres.

2. Attention deficit hyperactivity disorder
Current advances in cognitive neuroscience, neuroimaging, and behavioral and molecular genetics have provided evidence that the attention deficit hyperactivity disorder (ADHD) is a complex neurobiological disorder. ADHD is a neurocognitive behavioral developmental disorder most commonly
seen in childhood and adolescence, often extending to the adult years. The ADHD prevalence was once estimated to be 3 to 5% of school-age children, but more recent studies place the figure closer to 7-8% of school-age children and 4-5% of adults.[3]

People with ADHD often have serious impairments in academic, social, and interpersonal functioning. An adult ADHD-patient has continuously difficulties in organizing, prioritizing and getting things started. The patient has difficulties in focusing, sustaining and shifting attention. He/she has difficulties in regulating alertness, sustaining effort and determining processing speed. He/she has daily difficulties in managing frustration and modulating emotions. He/she has problems in utilizing working memory and assessing recall. He/she has challenges in monitoring and self-regulating actions. These cognitive functions interact to serve as the management system of the mind.[4]

People suffering from adult ADHD are stereotyped as lazy, bad or aggressive. They are considered to have a behavioral or special needs problem instead of a mental health disorder that requires treatment. Clinical pictures of adult ADHD vary with age and gender. Clinical presentation of ADHD may vary according to age and stage of development and there are cultural differences in the level of activity and inattention that are regarded as a problem. Adult ADHD is currently underdiagnosed and treated in many European countries. Adult services for people with ADHD remain relatively scarce despite strong evidence for the benefits of diagnosing and treating ADHD in adults.[2]

Diagnostic criteria of adult ADHD include four main criteria[5]. Diagnosis requires that there should be clear evidence of clinically significant impairment in social, academic, or occupational functioning[6]. The diagnosis of ADHD in adults is a complex procedure which should include retrospective assessment of childhood ADHD symptoms either by patient recall or third party information, diagnostic criteria according to DSM-IV, current adult ADHD psychopathology including symptom severity and pervasiveness, functional impairment, quality of life and comorbidity. ADHD rating scales can be very useful for establishing a systematic database to support diagnosis and evaluation[7].

Adult ADHD is associated with several comorbid condition and disorders such as mood and anxiety disorders, substance abuse disorders, disruptive behavior disorders and learning disabilities[3]. Comorbidity is the rule, with 75% of clinical patients having at least one other psychiatric disorder. The mean number of comorbidities is three. Adult ADHD patients have mood, anxiety, sleep, conduct and substance use disorders and personality disorders. Undiagnosed ADHD in substance use disorders population has been estimated to be 11-54%. Thus evaluation of co-morbid psychiatric disorders is a key component of the ADHD assessment using appropriate clinical diagnostic approaches[1][8]. Without comorbidities, ‘uncomplicated’ ADHD exists in about 20 to 25% of adults with ADHD. Even relatively successful treatment of the ADHD symptoms may be associated with only modest functional improvements in the real world. Diligent attempts to clarify the co-occurring conditions and related features (for example, poor social skills, low academic abilities) become essential in cases resistant to treatment[3].

Diagnosis of adult ADHD patient should include, according to the European consensus statement of adult ADHD, extensive psychiatric workup: detailed account of the developmental history, both current and retrospective account of ADHD symptoms and impairment and associated co-morbidities, before starting the treatment. The consensus statement proposes that diagnostic and treatment services for adult ADHD should be established throughout Europe[3]. However, education about adult ADHD has not been included in most college courses for medical and psychology students or in the training of professionals in adult mental health. Referral to specialist clinics should be possible where secondary care physicians lack sufficient training for more complex cases[1].

Pharmacological treatment is the treatment of choice in adult ADHD. Pharmacological treatment and early diagnosis have a positive impact on outcomes, long term prognosis, and quality of life in adults with ADHD[9].

The poor long term prognosis of untreated adult ADHD has implications for the costs of illness. In health economic assessments, costs are usually divided into direct and indirect costs. Direct costs refer to consumption of resources as a direct consequence of a state or disease, such as medical treatment. Indirect costs refer to indirect consequences due to a state or disease, such as the inability to perform work, thereby resulting in costs to society due to production loss. It is often the case that all costs and sacrifices of relevance from a societal perspective are not included in the assessments due to the difficulties in measuring and quantifying them. Examples of costs that are often omitted are the time relatives spend in giving care and support, psychological distress of patients and relatives (intangible costs), etc. Annual costs to society, excluding production losses due to inability to work, are work-impeding psychosocial problems 106000 euros (30 years 254 350 euros), mental illness 37 250 euros (30 years 916 100 euros) and drug abuse 66 000 euros (30 years 1 620 050 euros).[10]
Effective management of adult ADHD patients is justified from a health economic perspective since undiagnosed and untreated ADHD will lead to inefficient health care use, less satisfactory clinical outcomes, lower personal wellbeing and poorer social and professional interactions.

3. CDSS for mental health care literature review

Decision support systems (DSS) are computer technology solutions that can be used to support complex decision-making and problem-solving [11]. The fundamental task for DSS is to help decision makers in building up and exploring the implications of their decisions [12]. One subcategory of DSS is Expert Systems. An expert system is a computer system that emulates the decision-making ability of a human expert [13]. Among many fields in which Expert System is involved, medicine holds a large domain [14]. There are specialized expert systems used as decision support for different areas in medicine, and these systems are also known by general term Clinical Decision Support Systems (CDSS). Clinical Decision Support Systems are “active knowledge systems which use two or more items of patient data to generate case-specific advice” [15]. According to Sim et al. [16] CDSS is software that is designed to be a direct aid to clinical decision-making in which the characteristics of an individual patient are matched to a computerized clinical knowledge base, and patient-specific assessments or recommendations are then presented to the clinician and/or the patient for a decision.

CDSS has become increasingly more popular worldwide [17]. The advantages of CDSS include automation of a diagnosis process and the objective measurements and observations of selected parameters. CDSS provide support to the decision-making process, but it do not make any actual decisions; the role of the clinical expert is fundamental in the decision making [18]. However, there is a demand for a flexible, user-friendly and effective platform for the intelligent support of diagnostic medical decisions [19]. In addition, all clinical decisions are complex, but compared to other aspects of health care, psychology or mental disorders are the hardest in diagnosis and treatment as they lies in an abstract area [20]. According to Suhasini et al. [21] psychological distress and disabilities are increasingly identified among general population. On analyzing recent development, it becomes clear that the trend is to develop new method for decision making using computer in psychiatry and to evaluate these methods in practice [21].

Despite significant advances in software and hardware technology over the past decades, effective clinical expert systems are still largely an unrealized dream in the medical field [22]. Early medical expert systems such as MYCIN [23] generated optimism, but following systems like INTERNIST-I and CADUCEUS have been failures despite over a decade of development [22][24]. However, small scale medical DSS’s, which are in use, have contributed notable improvements in the quality of health care delivery [25][26].

A number of medical expert systems or CDSS’s have been developed to address problems in health care, but there are only few clinical decision support systems for psychiatry problems [14][21]. Some recent research articles aim to provide CDSS in the fields of psychology and psychiatry (e.g. [21][27][28][30][31]).

A Brazilian university group of psychiatrists have developed a CDSS for diagnosing schizophrenia [27]. Their SADDESQ system is a tool for the students to diagnose psychotic disorders. The knowledge for the CDSS was extracted from experts through interviews. The interviews explored the expert’s diagnostic decision-making process for the diagnosis of schizophrenia. A graph methodology was used to identify the elements involved in the reasoning process.

Suhasini et al. [21] proposed a method to identify the psychiatric problems among patients using multimodel decision support system. Backpropagation neural networks, radial basis function neural network and support vector machine models was used to design the DSS. 44 factors were considered for feature extraction. The features was collected from 400 patients and divided into four sets of equal size. Experimental results show that their CDSS achieved an accuracy of 98.75% for identifying the psychiatric problems. [21]

Trivedi et al. [28] presented a CDSS for the treatment of major depressive disorder using evidence based guidelines. They have transferred the knowledge gained from the Texas medication algorithm project. CompTMAP, which was developed at the University of Texas Southwestern Medical Center, is a CDSS for the treatment of depression and some other psychiatric illnesses. Introduced CDSS provides support in diagnosis treatment follow up and preventive care. Later the barriers of implementation of the CDSS system for depression were studied in real clinical settings [29]. The clinicians and support staff was concerned about lack of time and the impact of the program on clinical workflow. The clinical support system was merged with an existing electronic health record in a public mental health care system and it became a routine part of the system of care.
Rollman et al. [32] examined the results of an electronic medical record system in a primary care setting that provided electronic feedback to physicians in the diagnosis of depression found that some primary care physicians do agree with the diagnosis provided by the CDSS feedback and used it to base their decisions to start therapy.

Yong et al. [14] introduced DECES, an interactive self-help online expert system, developed to diagnose patients’ depressive conditions and provide recommendations to decrease their levels of depressions. The DECES captures expertise knowledge and make it available to sufferers, who are not seeking or procrastinate in getting help, to do self-assessing and obtain advice. Decision flowchart was used to represent expertise knowledge and further extracted into rules as the knowledge base for the system. A comparison of the system’s diagnosis using real cases with psychologists’ diagnosis on similar cases revealed a high degree of correspondence.

Harmonex group have a DSS for the use of mental health settings. The Harmonex neuroscience research division deals for example with depression, schizophrenia, bipolar disorders, ADHD, anxiety. Their CliniCom DSS uses electronic medical records. CliniCom is a computer assisted intake and assessment tool designed for use in mental health settings. It generates clinical reports by gathering information directly from patients, parents, and/or guardians prior to an initial evaluation. CliniCom provides doctors with an unprecedented level of information regarding their patients’ condition. (www.harmonex.us)

4. ADHD diagnostics challenges at Eksote

In November 2010, Eksote established a new acute emergency walk-in clinic/ward where referrals are not needed for the adult mental and substance abuse patients. Clinic is open from 8:30 am to 20:30 pm weekly. In the nights and weekends patients are evaluated by the emergency department of the mental health hospital, which is located in the same building and nearby the somatic emergency facilities.

In the new clinic the mental health and addiction care professionals were not segregated, as it has been tradition, between mental health and addiction patients, but they build up an integrated mental and addiction care system. Since the opening of the clinic the professionals face new and earlier untreated patient groups, and adult ADHD patients were one of them. The clinic did not have anything to offer to adult ADHD patients. The neuropsychiatric clinic of the university hospital is 250 kilometres away and they do not have possibilities to evaluate all adult ADHD-patients in the Eksote area. According to the prevalence rates (4-5 %) the Eksote area has 5000-6000 adult ADHD patients. Most of them are undiagnosed. They are surely met in various facilities which are established for helping people with functional impairments (for example unemployment agencies, social security system, addiction treatment facilities and mental health services).

The emergency open clinic met many new untreated adult patients, who have possibly ADHD. The clinic did not have any procedures for adult ADHD-patient diagnosis or treatment, and faced the problem of diagnosing adult ADHD-patients, who have almost always many comorbid psychiatric disorders. The clinic has also a need to make the diagnoses more accurate and to establish efficient assessing and treating processes in unselected populations, who came to the new emergency department.

To overcome these problems the mental health and addiction care professionals of the emergency clinic started to develop a computer-assisted diagnostic process which includes the whole complex ADHD-diagnostics procedure. The clinic needed to establish a program for adult ADHD patients, and thus a evaluation, diagnosis and treatment process by a multi-professional team was developed. The multi-professional evaluation group includes a psychiatrist, four psychologists, an ADHD nurse, an addiction nurse, a social worker and an occupational therapist. Each of the team members developed his/her expertise sheet, which includes all the important themes for assessing and diagnosing adult ADHD-patients and patients’ functional impairments. The multi-professional evaluation was launched with support by a tailor-made CDSS provided by a consulting company, ROCE Partners. The CDSS supports the implementation of the new adult ADHD patient evaluation, diagnosis and treatment process. The CDSS guaranteed that the multi-professional team has from the start an algorithmic and extensive work-up of adult ADHD patients. Appendix 1 clarifies the common contents of the extensive work-up. The CDSS also warranted that Eksote has established standards for the care of adult ADHD patients. The CDSS enables the possibility to make quick changes in the process and to develop the work-up for adult ADHD patients on a continuous basis.
5. Adult ADHD diagnostics solution

5.1. New process design and supporting computer solution

In order to overcome the challenges in the ADHD diagnostics process, Eksote decided to utilize an agile BPM approach to develop a new computer-based solution for the process. The development platform used was Serena Business Manager (www.serena.com/products/sbm/) which was chosen based on earlier experiments in other process areas. Eksote co-operated with an external partner, ROCE Partners (www.roce.com) in process and solution development.

The objectives set for the new process and solution were the following:

- **Effective workflow management:** During the ADHD diagnostics process, the patient will be examined and diagnosed by multiple persons. In order to have an efficient process in place, the status of each patient in the process must be known in real time. Furthermore, the process and the solution must guide all participating persons of the mental health care staff by showing each person the tasks they have to complete.

- **Process standardization:** The new process and solution must unify the diagnostics process by including the jointly agreed diagnostics approaches and tools, question templates and logic. Thus, in addition to workflow management features, the new solution includes elements of an expert system which is used for standardizing the diagnostics approach and performance within the Eksote mental health care unit. The new solution provides the tool for educating new members of the staff about the Eksote way of working.

5.2. Phases of the development project

The development project was executed by following the principles of agile business process development. The project team consisted of six persons representing the different parties involved in the ADHD diagnostics process. One external consultant was included in the project team, and he was in charge of leading the development work.

The development project was divided into four main phases:

- **Process definition:** The first phase of the project was to agree on the new process definition for the ADHD diagnostics process. The objectives of this phase were to analyze the current way of working, to identify the development areas and to agree on the new, common process design which was the basis for the solution development phase. In addition to the definition of the process steps, an important aspect of this phase was to define the common diagnostics tools to be used in the different parts of the process. The process definition phase lasted about two weeks and the main tasks included interviews of the various stakeholders in the process and workshops for the project team.

- **Solution development:** Using the process design as the basis, an initial version of the new computer-based solution was created by the external consultant within a week. An important feature in the development process was iteration of the solution design in quick cycles. The project team had frequent meetings where they went through the existing version of the solution and defined the needed changes and adjustments. The external consultant created new versions of the solution between the project team meetings. Normally, the interval between the project team meetings was two weeks. The iterative approach was very effective as the project team was involved intensively in the actual solution development process: the project team was able to steer and control the solution development by giving their comments and seeing almost instantly the impact of their change requests.

- **User acceptance testing and training:** The user acceptance testing phase was started after the project team felt satisfied with the solution. The objective of this phase was to test the usability of the developed solution with a wider user group and to identify potential errors. The testing phase lasted two months and it resulted in many changes in the solution. For example, the process workflow was slightly changed, more diagnostics tools were added and some features were finetuned.

- **User training and implementation:** The fourth phase of the project was user training and implementation of the solution. The user training was organized as a joint session for all users but individual support was also given afterwards when needed. The actual implementation of the solution was a straightforward task as the solution had been finetuned and tested extensively in the earlier phases of the project. This proved to be one of the strengths of the iterative development approach as there were no negative surprises concerning the functionalities of the solution in the implementation phase.
5.3. Process workflow

The outcome of the first main phase of the development project (process definition) was the new ADHD diagnostics process workflow (Figure 1). The new workflow is based on the needs and requirements of Eksote and it consists of seven main phases. The main phases are the following:

1. Enter a new patient: The first step in the process workflow is to enter the details of a new patient into the ADHD diagnostics solution. The information entered at this stage includes the personal details of a person but also an evaluation of the new patient’s situation by a social worker.

2. Organize the preparatory diagnostic meeting: The second main step in the process is to organize a preparatory diagnostic meeting where the information of each new patient is reviewed and the decision concerning the need for various psychiatric examinations is made. The participants of the preparatory meeting are the members of the ADHD team: the psychiatrist, the ADHD nurse, the social worker and the psychologist. The outcome of the meeting is a task list for each meeting participant which shows which examinations they have to carry out for each patient.

3. Carry out the examinations: During the third step of the process workflow, the members of the ADHD team carry out the defined examinations for each patient. The examinations are carried out by using the diagnostic tools built into the ADHD solution. The results of the examinations are recorded in the ADHD solution giving thus visibility to the progress of the process.

4. Organize the final diagnostic meeting: The fourth step of the process is the final diagnostic meeting where the decisions concerning the further treatment or rehabilitation of each patient are made. The final meeting is organized only when all defined examinations for each patient have been carried out. The developed ADHD solution shows which patients are ready for the final meeting thus eliminating the danger of having meetings organized in vain.

5. Place the patient to rehabilitation: Based on the decision of the final diagnostic meeting, the patient is placed to rehabilitation. The duration of the rehabilitation period is individually defined.

6. Evaluate the patient’s condition: The condition of the patient is diagnosed on a regular basis while he/she is in the rehabilitation. The ADHD solution is used for carrying out the examinations and for comparing the results to the earlier ones. Depending on the progression in the patient’s condition, decisions are made concerning the rehabilitation and the methods for further treatment.

7. Place the patient to the decided rehabilitation or treatment: The final step of the process is to place the patient to the decided long term treatment or rehabilitation.

5.4. The diagnostics tools included in the solution

As discussed above, there are multiple different actors involved in the process. The diagnostics tools used by these actors have been built into the ADHD process solution as an integrated part. Thus, when the members of the ADHD team carry out the examination of a patient, they choose the needed diagnostic tool in the solution menu and fill in the form that opens.

The main diagnostics tools are the following:
- social worker: Designed functioning level questionnaire, SOFAS, AUDIT
- ADHD nurse: ASRS 1.1 and DIVA 2.0
- psychologist: DIVA 2.0, WAIS-III, WMS-III and a wide range of specific neuropsychological assessment tools (the results of these methods are modified for the solution)
- addiction nurse: addiction evaluation and SDS, part of EuropASI and PRISM
- psychiatrist: BPRS, MADRS, MDQ, YMRS, PROD and broadened SCID
- occupational therapist: AMPS, MOHOST, OSA and HOME assessment.

The diagnostics tools provide the actors in the process with a standardized, easy-to-use approach to evaluating the condition of a patient. Most of the questions in the tools have a drop-down list of alternative choices for answers. Furthermore, deductive logic has been built in where possible meaning that the ADHD process solution proposes a conclusion based on the information entered. The built-in deductive

![Figure 1. Adult ADHD diagnostics process workflow](image)
logic is based on both generally used and ADHD-specific psychiatric rating scales and diagnostic criteria.

The created solution automatically composes a summary of the results of all diagnostics tools thus providing a complete overview of the analyses conducted on a patient. Creating the summary is a straightforward task as all diagnostic tools are an integral part of the ADHD solution. Thus, no interfaces with other systems are required. The summary shows the consensus view of the ADHD team on the condition of each patient as the potential differences of opinion have been addressed in the joint final diagnostic meeting with regard to each patient.

The diagnostics process confirms if a patient is suffering from adult ADHD or not and establishes the basis for making the decisions concerning treatment solutions and rehabilitation options. These decisions are recorded in the ADHD solution, and thus the solution can be used for following up the chosen treatment paths.

5.5. Experiences of the developed ADHD solution

The developed ADHD diagnostics solution has been in use at Eksote since early 2012. The solution is a Clinical Decision Support System that combines a process workflow management system with a decision support system. The usage and experiences are being followed up on a continuous basis in regular meetings of the Eksote mental health care management team and the group of main users. Based on the experiences so far, the following main benefits have been identified:

- The workflow management features of the solution have improved the efficiency of the organization as all actors have now clearly defined task lists with due dates and status notifications. There is total transparency about the status of the tasks in the organization and thus the joint meetings are only organized when all participants are ready for them. Before the new solution was taken into use, unnecessary and inadequately prepared meetings where a significant source of inefficiency in the organization.
- The multiple diagnostics tools in the developed solution standardize the way patients are analyzed at Eksote. Standardized tools ensure that all actors in the ADHD diagnostics process utilize the same approaches and fulfill the defined performance standards. Furthermore, the standardized tools provide an effective training tool for new members in the Eksote team.
- The solution can be developed and changed flexibly. Based on user experiences, new ideas and requirements for the development of the tool have been identified. The agile development approach and the agile features of the used software platform allow for making changes to the solution in a quick manner.
- The developed solution includes comprehensive reporting possibilities. For example, the process lead times can be measured to identify bottlenecks and the results of the individual diagnostics tools can be cross-referenced to identify correlations. All information and changes including the time of editing and the actor doing the editing can be accessed and reported. Reporting provides the Eksote personnel with possibilities to develop the process and the ADHD solution further. Furthermore, profession-specific reports can easily be generated to satisfy the needs of each member of the ADHD team.

![Figure 2. The target architecture for the mental health care CDSS](image-url)
The main source of dissatisfaction among the users has been that the included diagnostics tools are quite extensive and thus time consuming to fill in. However, the management at Eksote have made a conscious decision to utilize these tools to set the standards for diagnosis approach. If the current tools prove to be too laborious to use, they can be easily modified or removed.

6. Conclusions

Due to the multiple challenges identified in the adult ADHD diagnosis process at Eksote, an agile business process development approach was applied to create a Clinical Decision Support System for it. The developed CDSS combines a workflow management tool with a decision support system. The solution has improved the efficiency of the process, standardized the use of diagnosis tools in the organization and given total transparency to the process with extensive reporting possibilities.

The adult ADHD evaluation and diagnostic procedure has enabled a real dialogue about adult ADHD patients care between various mental health and addiction care professionals, because each adult ADHD team member has been obliged to add something concrete and central from own professional specialized evaluation and diagnosing tool, which is valuable for the whole process of adult ADHD patient care.

The experiences from the actual usage of the adult ADHD diagnostics solution have been encouraging and thus the next steps in development have already been started. The main focus in further development is to extract the individual diagnostics tools from the adult ADHD solution into individual modules. These modules can then be utilized in other diagnosis processes as well. This will improve the efficiency of the diagnosis processes further as the results of an individual diagnosis tool can be utilized across multiple processes. The overall target (Figure 2) for the development is to create a comprehensive CDSS that includes all diagnosis tools, can be applied to all major mental disorders and gives the possibility to plan and manage the rehabilitation phase for each patient.

7. References


### APPENDIX: THE EXTENSIVE WORK-UP INCLUDES

<table>
<thead>
<tr>
<th>Team</th>
<th>Tools / tasks</th>
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| **Social worker** | - Designed functioning level questionnaire of social situation, based on interview  
- SOFAS (Social and Occupational Functioning Assessment Scale) assessing social, occupational and relationship functioning in the last year (current, past and best in ongoing year); is an overall functioning scale  
- AUDIT (Alcohol Use Disorders Identification Test), describes how to use it to identify persons with hazardous and harmful patterns of alcohol consumption. The AUDIT was developed by the World Health Organization (WHO) as a simple method of screening for excessive drinking and to assist in brief assessment. It can help in identifying excessive drinking as a cause of the presenting illness. It also provides a framework for intervention to help hazardous and harmful drinkers reduce or cease alcohol consumption and thereby avoid the harmful consequences of their drinking. |
| **ADHD-nurse** | - ASRS v1.1 (A- and B-parts), WHO Adult ADHD Self-Report Scale (ASRS) Symptom Checklist. A-part is self-report questionnaire, B-part is evaluation part, which ADHD nurse is filling  
- DIVA (Diagnostic Interview for ADHD in adults) 2.0 Summary A and H/I about symptoms, based on interview of the relatives of adult ADHD patients  
- interviews concerning childhood and adulthood, teacher interview, life style interview |
| **Psychologist** | - DIVA (Diagnostic Interview for ADHD in adults) 2.0 Summary A and H/I about symptoms, based on interview of adult ADHD patients  
- WAIS-III (Wechsler Adult Intelligence Scale - III) for assessment current intellectual functioning  
- WMS -III (Wechler Memory Scale -III) for assessment of overall memory skills  
- a wide range of standardised neuropsychological test batteries for assessing specific cognitive strengths and weaknesses: language, speech and communication skills, attention, concentration and executive functioning, reading and writing skills |
| **Addiction nurse** | - Urine specimen, screening for drugs  
- SDS (The Severity of Dependence Scale); provides a short, easily administered scale which can be used to measure the degree of dependence experienced by users of different types of drugs. The SDS contains five items, all of which are explicitly concerned with psychological components of dependence. These items are specifically concerned with impaired control over drug taking and with preoccupation and anxieties about drug use.  
- EuropASI (European Addiction Severity Index), only the part screening drugs  
- nurses part of PRISM (Psychiatric Research Interview for Substance and Mental Disorders): the PRISM is a semi-structured clinician-administered interview that measures DSM-III, DSM-III-R, and DSM-IV diagnoses (current and past) of alcohol, drug, and psychiatric disorders and continuous measures of severity, organic, etiology, treatment, and functional impairment |
| **Occupational therapist** | - AMPS, The AMPS is comprised of 16 ADL motor skill items and 20 ADL process skill items that the occupational therapist scores across two ADL tasks (72 items in total). As a result, the AMPS is a highly sensitive measure of ADL performance  
- MOHOST (The model of Human Occupational Screening Tool), addresses client’s motivation for occupation, pattern of occupation, communication, process and motor skills and environment  
- OSA (Occupational Self Assessment), is designed to capture client’s perception of their own occupational competence on their occupational adaptation  
- Home Assessment, the role of assessing the home environment from the person’s perspective is critical to person’s daily routines and self esteem |
| **Psychiatrist** | - BPRS (The Brief Psychiatric Rating Scale) is rating scale which a clinician or researcher may use to measure psychiatric symptoms such as depression, anxiety, hallucinations and unusual behaviour. Each symptom is rated 1-7 and depending on the version between a total of 18-24 symptoms are scored  
- MADRS (The Montgomery–Asberg Depression Rating Scale) is a ten-item diagnostic questionnaire which psychiatrists use to measure the severity of depressive episodes in patients with mood disorders.  
- MDQ (The Mood Disorder Questionnaire), screening instrument for bipolar spectrum disorder, developed by Robert Hirschfeld  
- YMRS (Young Mania Rating Scale); a rating scale used to evaluate manic symptoms at baseline and over time in individuals with mania. The scale has 11 items and is based on the patient’s subjective report of his or her clinical condition over the previous 48 hours.  
- PROD-screening; for prodromal symptoms of psychosis, PROD-screen consists of 29 questions assessing performance and symptoms  
- Applied and lengthened broadened SCID (Structured Clinical Interview for DSM-IV Axis I Disorders); to facilitate writing psychiatric reports for various purposes (for example to social security authorities, police, courtroom and employment authorities) |