# Providing Intensive Mental Health Care at Home:

## Key Factors for the Successful Implementation of Home Treatment

Thesis presented to the Faculty of Human Sciences
of the University of Bern for the degree of
Doctor of Philosophy

by Lea Sarina Wyder
of Zurich, ZH

Supervisor: Prof. Dr. phil. Martin grosse Holtforth
Co-Supervisor: Prof. Dr. med. Urs Hepp

Zurich, April 2018

## Acknowledgements

A number of great people have supported me during my three years of “PhD-ing” and have made important contributions to the creation of this thesis, which I am very grateful for. First, I would like to thank my supervisor Prof. Dr. phil. Martin grosse Holtforth for his valuable feedback and proficient advice on all documents I wrote on my way into the scientific jungle. My appreciation also goes to my co-supervisor Prof. Dr. med. Urs Hepp for his persistent effort in laying the clinical and political groundwork, paving the way for the implementation of our Home Treatment team, as well as for giving me the opportunity to collaborate on this innovative research project. Further, I would like to thank my third supervisor PD Dr. phil. Niklaus Stulz for his skilled insights on methodological problem-solving and for enlightening me about the astounding diversity of curse words associated with analysing vast quantities of hospital data.

A special thank you goes to all Home Treatment team members for welcoming me to numerous team meetings, lively lunchtime breaks, and for being such qualified and patient guinea pigs to our research. My appreciation further goes to my fellow doctoral candidates Sara and Hallie for numerous cheerful hours, the shared experience of teaching university courses or attending conferences, and for many creative study dates to deliberate on the workings of the academic universe. Further, I was fortunate to have three full-heartedly motivated Master students, Celia, Simone, and Olivia, who contributed valuable work to our various research group formations and projects, and who enlivened the “research spirit” at the PDAG, as did the members of our still relatively new research colloquium.

Another special thank you goes to Andrea, Nadja, and Michal for getting our working days off to a good start with laid-back, early morning train rides into foreign territories, and who together with my classmates at the PCA nourished my second psychological identity as a psychotherapist. I am very grateful to you, Stefan, for affectionately keeping my spirits up every day and for your love.

Finally, I thank all patients, relatives, and staff members participating in our studies and showing their interest in our research projects.

## Table of Contents

## List of Abbreviations

| | |
|---|---|
| ACT | Assertive Community Treatment |
| CM | Case Management |
| CMHT | Community Mental Health Team |
| CRT | Crisis Resolution Team |
| CRHT | Crisis Resolution and Home Treatment Team |
| DRG | Diagnosis Related Group |
| DSM-IV | Diagnostic and Statistical Manual of Mental Disorders ($4^{th}$ edition) |
| HT | Home Treatment |
| HT-RCT | Main study project [Home Treatment für die psychiatrische Akutbehandlung im Kanton Aargau] |
| ICD-10 | International Statistical Classification of Diseases and Related Health Problems ($10^{th}$ revision) |
| ICM | Intensive Case Management |
| INT | Intervention group |
| ITT | Intention-to-treat |
| PCG | Psychiatric Cost Group |
| PDAG | Psychiatrische Dienste Aargau AG |
| RCT | Randomised controlled trial |
| SCID I | Structural Clinical Interview for DSM-IV Axis I Disorders |
| TAU | Treatment as usual |
| UK | United Kingdom |
| WHO | World Health Organisation |

# 1 General Introduction

The aim of this thesis is to outline key factors associated with the successful implementation of home treatment (HT) for acute mental health problems. First, the introductory chapter starts with an overview of relevant societal developments and changes in psychiatric care that resulted in the emergence of community mental health services, such as HT. Then, the implementation of HT is delineated as a contemporary development within Swiss mental health care, followed by an outline of the main research project [Home Treatment für die psychiatrische Akutbehandlung im Kanton Aargau] underlying the three empirical studies of this thesis (ClinicalTrials.gov: NCT02322437). Since this research project followed a randomised controlled trial design (RCT) it will hereafter be referred to as *HT-RCT*. Such experimental studies on (mental) health services face particular methodological challenges because research is conducted in routine clinical settings. Additional efforts may become necessary to minimise interference with routine care processes: within the HT-RCT, a substudy was conducted in order to ensure common research standards for diagnosing psychiatric disorders. Accordingly, the first empirical study of this thesis (Study 1) evaluated the agreement of diagnostic procedures between routine and research settings in a subsample of the HT-RCT.

The introduction continues with a recollection of how the HT model has evolved and what it differentiates from other types of mental health services. This is followed by a report of international evidence on HT, including a summary of results from the HT-RCT. Then, current developments in HT research are presented, which provide the foundation for the two remaining empirical studies of this thesis. Study 2 applied the *service user involvement* approach (i.e. analysing priorities of stakeholders to develop services according to the needs of service users) (Wallcraft et al., 2011). Hence, patients', relatives' and staff members' experiences were analysed in order to identify effective components of HT (Study 2 part 1) and evaluate the implementation of the new HT service from a stakeholder perspective (Study 2 part 2). Finally, based on results from Study 2, the third empirical study of this thesis (Study 3) aimed to refine patient suitability for HT using patient characteristics.

Following the introduction, the second chapter comprises a summary of the three empirical studies, emphasising aims, methods and main results of each study (the corresponding manuscripts are attached in the appendix). Finally, the third chapter gathers and discusses important insights of Studies 1-3 and highlights implications for research and practice, ending with a conclusion.

## 1.1 Theoretical Context

Up until the 1950s, treatment of severe mental health problems and social abnormalities traditionally occurred in asylums – large institutions that were built separated from communities at the outskirts of towns (Perkins & Burns, 2001). Hospital stays in asylums often lasted years or even lifetimes, enlarging segregation of psychiatric patients (and mental health professionals) from society (Thornicroft & Tansella, 2002). This practice of *institutionalism* increasingly produced reports of poor care standards (Thornicroft & Tansella, 2002). Further, the institution's reduced environments often enhanced clinical problems and social disabilities, contributing to deterioration, hospitalism, and stigmatisation of psychiatric patients (Perkins & Burns, 2001). Augmented by significant advancements in medication and evolving behavioural interventions, from the late 1950s onwards, policies for mental health care shifted towards *deinstitutionalisation* of care. Service planning now involved the reduction of inpatient beds; long-term hospital patients were discharged to facilities within the community and outpatient and community mental health services were enhanced (Johnson, 2013; Thornicroft & Tansella, 2002). Equal rights, participation, and opportunities for psychiatric patients (e.g. social contacts, family, work, and living conditions) were emphasised and the importance of these factors for psychological and overall recovery (e.g. working ability) was highlighted (Perkins & Burns, 2001).

Today, the World Health Organisation (WHO) and contemporary treatment guidelines recommend a model of *balanced care* between hospital-based and community services for the provision of appropriate mental health care, depending on an area's resources and state of development (Gühne, Weinmann, Arnold, Becker, & Riedel-Heller, 2015; Thornicroft & Tansella, 2013). Community mental health care thereby includes a variety of services from traditional outpatient treatment for

relatively stable patients, to intermediate services like day clinics or mobile teams caring for more severely disturbed or chronically ill patients (Thornicroft & Tansella, 2013).

However, in spite of these recommendations for best practice, the implementation of balanced care is frequently haltered by structural barriers or financial cutbacks in health plans (Brenner, Junghan, & Pfammatter, 2000). In Switzerland (and Germany), this problem is particularly apparent. Here, dual financing systems of health care apply separate funding structures for inpatient and outpatient care, which complicate the implementation of cross-sectional or intermediate service models (Bundesamt für Gesundheit, 2016; Sturny, Cerboni, Christen, & Meyer, 2004). Although Swiss mental health care ranks high in quality, a recent federal report localised significant room for improvement concerning cross-sectional service models that would integrate traditional inpatient and outpatient care more towards balanced care (Bundesamt für Gesundheit, 2016). In Germany, progress was made in 2017 when a new law established the legal basis for financing "inpatient-equivalent" care (e.g. HT) for patients in mental health crises (Lambert, Karow, Gallinat, & Deister, 2017). There is a general consensus that scientific evidence is presently needed to demonstrate the practicability and effectiveness of such "inpatient-equivalent" or intermediate mobile services under local conditions (Hepp & Stulz, 2017; Horn, 2018).

The abovementioned HT-RCT administered to this need: this research project was designed to evaluate a new HT service at the Psychiatric Services Aargau AG (PDAG) during the first three years of its implementation (2015-2018), and to investigate whether HT represents a true alternative to inpatient care for patients in mental health crises. Hence, an intervention group (INT) of patients given the additional option of HT was compared to a control group receiving conventional inpatient treatment (treatment as usual, TAU*)*. The study's primary outcome was a comparison of length of hospital stays between the two groups. Secondary outcomes included the comparison of total treatment duration (number of hospital and HT days (INT) vs. hospital days (TAU)), direct treatment costs for sponsoring bodies (health department and health insurances), symptoms and social functioning, and satisfaction with care. Preliminary results of this study are reported in chapter 1.3.

Conducting such an experimental study at system level within a routine clinical setting brings about methodological challenges. RCTs are commonly based on a number of strict inclusion criteria in order to ensure high internal validity. This procedure aims to rule out most confounding factors, so that effects can be attributed almost exclusively to the intervention. Further, as participants of RCTs commonly receive extensive information on study procedures prior to randomisation in order to give their informed consent, a number of subjects may decide to drop out. Both of these practices produce a selection bias in the study sample and limit the external validity of results. However, in health care research high external validity is a key priority and requires comprehensive consideration. Additionally, real-world clinical studies hold the problem that patients may not be capable of giving informed consent at the point of study inclusion

As the HT-RCT set out to evaluate the effectiveness of a system intervention within a routine clinical setting and participant inclusion coincided with the vulnerable point of hospital admission, a pragmatic approach had to be chosen in order to ensure both ethical and methodological research standards. Therefore, study procedures were based on two steps: (1) for the randomisation process, a *single randomised consent design* was applied (Zelen, 1990). Thus, both study inclusion and randomisation of participants occurred prior to informed consent. Informed consent was later obtained only from patients receiving the HT intervention. This way, after having screened medical records for inclusion criteria, all patients deemed eligible were included and randomised, regardless of their mental state at admission. The sample of the HT-RCT therefore holds high transferability to real-world conditions (i.e. high external validity). The local ethics committee approved the study protocol including the outlined randomisation procedure on the condition that only routine data be utilised for this trial (EKNZ 2015-041).

(2) Since the outlined randomisation design of the HT-RCT did not allow for a structured clinical assessment prior to study inclusion, analyses relied exclusively on diagnoses from routine clinical interviews at admission. Consequently, additional effort was invested in order to retain high diagnostic assessment standards. Hence, a substudy was designed to evaluate the agreement between routine diagnoses and diagnoses obtained by the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID I) (First, Spitzer, Gibbon, & Williams, 1997) in a subsample of 100 randomly

chosen participants of the HT-RCT. Thereby, the validity of routine diagnoses was tested by comparing them to the “gold” standard of assessing psychiatric disorders (Rettew, Lynch, Achenbach, Dumenci, & Ivanova, 2009). This substudy represents the first empirical study of this thesis (Study 1).

## 1.2 Home Treatment – What it is and What it is not

The first reports of systematic home visits as an alternative to hospital admission date back to the 1930s: in Amsterdam, an admission-diversion system was established consisting of home visits by a psychiatrist and a social worker for patients referred to inpatient treatment and offering patients alternative treatment options to a hospital stay whenever possible (Querido, 1968). More team-based approaches followed in the wake of deinstitutionalisation during the 1960s and 1970s in Australia and the United States (Hoult, Hall, & Brockington, 1991; Polak & Kirby, 1976; Stein & Test, 1980). These services assessed patients in mental health crises at admission to inpatient facilities, offering them HT whenever feasible. HT continued beyond acute crises aiming to ensure long-term functioning within the community. However, after the first years of experience the conclusion arose that acute and long-term roles of HT teams should be separated and provided by different teams (Johnson & Thornicroft, 2008). While some of these original HT services still exist today and HT has spread in those two countries regionally, the implementation of HT did not manifest on a national level (Smyth & Hoult, 2000).

Similar approaches were developed in the UK throughout the 1980s and 90s. Initially only operating during office hours, these services evolved towards providing more intensive care and 24/7-availability. Further, treatment episodes were often limited to the duration of crises since this was found to be more effective in reducing hospital admissions (Dean, Phillips, Gadd, Joseph, & England, 1993; Johnson, 2013). These models were now frequently named Crisis Resolution Teams (CRTs) or in some cases Crisis Resolution and Home Treatment Teams (CRHT). In 2001, CRTs were introduced to UK national health policy and a nationwide implementation of 300+ CRTs followed (Department of Health, 2001). Outside the English-speaking world, CRTs/HT were implemented in Scandinavia and found their way into national

health policy in Norway (Hasselberg, Gråwe, Johnson, & Ruud, 2011), while in other European countries, the implementation of HT is still limited to regional pilot projects (Bundesamt für Gesundheit, 2016; Gühne et al., 2011).

HT represents one out of a range of community-based psychiatric service models between which organisational or functional distinctions are often unclear (Burns et al., 2001). Differences pertain to the intensity of care, stage of illness, length of treatment episodes, location of treatment, and individual or team-based approaches (Figure 1).

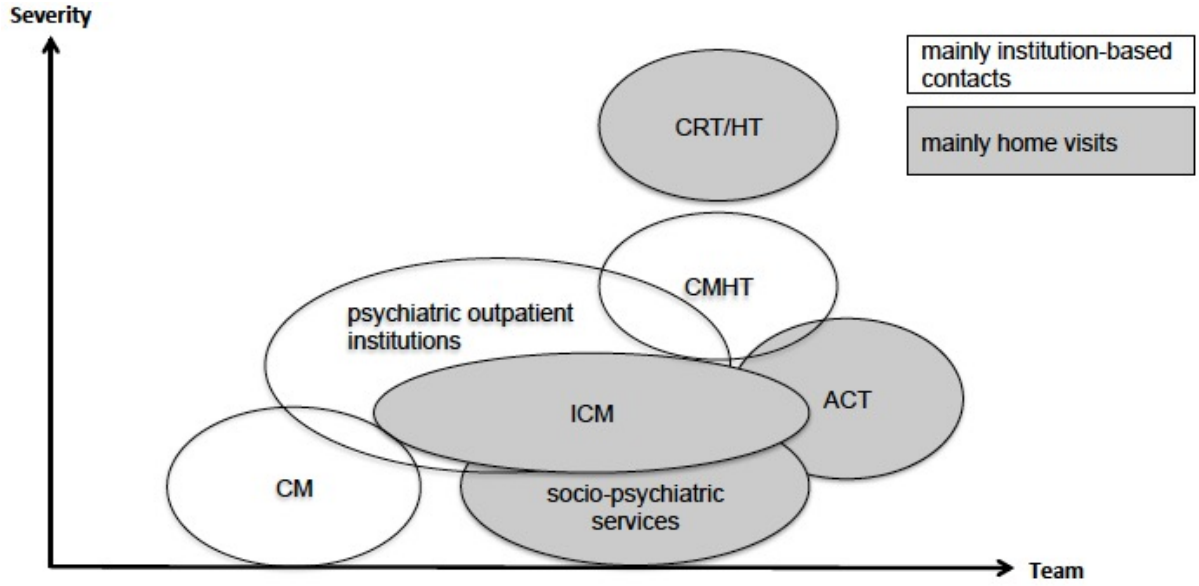



*Fig.1.* Distinction of community mental health services (adapted from: Becker, Hoffmann, Puschner, & Weinmann, 2008).

Assertive Community Teams (ACT) provide long-term support (including home visits) for rehabilitation within the community. Community Mental Health Teams (CMHT, mainly in UK) care for patients in acute and chronic stages of illness, and the majority of contacts occur in community mental health centres. Case Management (CM) and Intensive Case Management (ICM) offer long-term support (including home visits in ICM) for mental and social problems and are not team-based. Finally, CRT or

HT teams are multi-professional (including a psychiatrist), treat patients in acute phases of illness and cover both mental and social needs (Berhe, Puschner, Kilian, & Becker, 2005; Burns et al., 2001; Marshall, Gray, Lockwood, & Green, 2000; Marshall & Lockwood, 2000).

In Switzerland and Germany, there is no unified term for teams providing acute psychiatric care at home, their names range from “community integrated care” or “mobile crisis team” to “acute home care”, and teams vary regarding organisational compositions (Bundesamt für Gesundheit, 2016; Gühne et al., 2011). Yet, overviews generally refer to these services as “Home Treatment” and identify the CRT model as the underlying concept (Berhe et al., 2005; Gühne et al., 2011). The most apparent difference between UK CRTs and Swiss/German HT teams most likely pertains to the *gate-keeping* function: responsibility for mobile emergency assessment of all patients considered for inpatient treatment and gate-keeping access to inpatient beds is a vital aspect of the CRT concept (Johnson, 2013). Yet, implementation of gate-keeping by CRTs has not been accomplished UK-wide (Berhe et al., 2005; Bracken & Cohen, 1999). For Swiss and German HT services this component is generally not clearly specified (Berhe et al., 2005; Bundesamt für Gesundheit, 2016; Gühne et al., 2011).

To summarise, Table 1 lists organisational features and objectives of HT services (Berhe et al., 2005; Horn, 2018; Johnson, 2013; Smyth & Hoult, 2000).

Table 1. Key features and objectives of HT services.

| | |
|---|---|
| HT features | • multi-professional team (including a psychiatrist)<br>• mobile care (daily home visits, more if needed)<br>• availability of team 24 hours a day, 7 days a week<br>• for patients in acute mental health crises, who would otherwise be hospitalised<br>• responsibility for mental and social care (medication, psychological interventions, social work)<br>• length of treatment episode is limited to duration of crisis<br>• intensive networking and linking patients to other services<br>• (gate-keeping: assessment of all patients considered for inpatient admission and initiating HT whenever feasible) |
| | |
| Objectives of HT | • prevention of hospital admissions or shortening of hospital stays<br>• inclusion of and cooperation with family and social environment<br>• rapid identification of personal and social resources<br>• building good therapeutic alliance<br>• practical help for everyday problems<br>• continuity of care through organisation of need-based after-care<br>• high satisfaction with care for patients and relatives<br>• reduction of stigmatisation<br>• improvement in quality of life<br>• reduction of treatment discontinuation |

## 1.3 Current State of Research

### *Evidence*

Effectiveness of HT is most frequently measured in terms of inpatient service use (admission rates or number of hospital/HT days); further outcomes include cost-effectiveness, clinical and functional outcome, and satisfaction with care. There are a considerable number of studies on the effectiveness of HT, but since most of them used naturalistic study designs (e.g. comparing service regions with and without CRTs or numbers of admission before and after the introduction of a CRT), the explanatory power of these studies is limited (Hubbeling & Bertram, 2012).

When considering studies with randomised controlled designs only, evidence for the CRT/HT model remains low to moderate: the most recent Cochrane review identified only eight randomised controlled trials ($N_{total}$ = 1144) comparing mobile crisis intervention to TAU (Murphy, Irving, Adams, & Waqar, 2015). For five of these studies, transferability of results to modern mental health care is questionable since they were carried out more than 25 years ago (F. R. Fenton, Tessier, & Struening, 1979; Hoult, Reynolds, Charbonneau-Powis, Weekes, & Briggs, 1983; Muijen, Marks, Connolly, & Audini, 1992; Pasamanick et al., 1964; Stein, Test, & Marx, 1975). Of the three remaining studies, two investigated models of crisis intervention offering treatment in home-like facilities or crisis-houses respectively, which likely do not offer the same sense of familiarity and transferability to everyday life as treatment in patients' actual homes (W. S. Fenton, Mosher, Herrell, & Blyler, 1998; Howard et al., 2010). This leaves the eighth and final study: Johnson and collegues (2005) compared an intervention group (inpatient and/or CRT care) with TAU. However, it is unclear to what extent participants truly were in severe mental health crises, since 30% of TAU patients were not admitted to inpatient care. Thus the validity of these results is questionable.

Overall, the available evidence from these studies suggests that mobile crisis intervention may reduce readmissions to inpatient care, lower family burden, and increase patients' and families' satisfaction with care. However, the research methods chosen were generally inadequate, or authors provided incomplete reports of data collection and analyses. Therefore, a need for well-designed studies using large samples and providing comprehensive reports of study procedures and

analyses in order to draw robust conclusions is repeatedly expressed (Murphy et al., 2015).

With these sparse findings in mind, criticism of the “premature” UK wide implementation of CRTs is not surprising (Hubbeling & Bertram, 2012). Indeed, since there was no robust evidence supporting their effectiveness in reducing hospital admissions, CRTs ceased to be mandatory in the UK in 2010 (Lloyd-Evans et al., 2017). Building upon these UK experiences, solid data have been called for in German-speaking countries to demonstrate feasibility and effectiveness of mobile crisis intervention/HT services in respective health care systems, prior to a widespread implementation (Berhe et al., 2005; Bundesamt für Gesundheit, 2016; Kilian, 2014).

To this end, preliminary results of the HT-RCT provide relevant evidence (see appendix I, Table 1). Modified intention-to treat (ITT) analyses of a sample of N = 707 patients (INT: *n* = 412, TAU: *n* = 295) showed that after an individual follow-up period of 18-months following the index admission, HT significantly reduced hospital days by 28.9% for INT compared to TAU, and there was no increase in overall treatment duration. However, hospital admissions per patient (including index admission) did not differ between the two groups. Clinical outcomes (Health of the Nations Outcome Scales, HoNOS) (Wing et al., 1998) were equal for both groups, as was patients’ satisfaction with care (Perception of Care-18, PoC-18) (ANQ, 2017).

During the individual 18-month follow-up period, the 412 INT patients accounted for 630 treatment cases (i.e. multiple admissions per patient); 273 (43.9%) of these cases were at least partially treated at home, whereas in 33 (12.1%) cases treatment occurred exclusively at home. Therefore the vast majority of HT cases (240 or 87.9%), received both, hospital and HT care with the former usually foregoing the latter. HT was initiated after an average hospital stay of *M* = 11.7 (*SD* = 16.2) days and lasted for *M* = 13.2 (*SD* = 7.0) days.

These results indicate that HT can successfully be implemented in a Swiss service region, with the objective of decreasing hospital use among patients in acute mental health crises; yet, the number of hospital admissions was not decreased through HT. These findings will be discussed to more detail in Chapter 3.

### *Current Research Efforts*

UK research projects currently focus on ways to further specify and standardise CRT services, since implementations of the CRT model show great variation (Johnson, 2013; Wheeler et al., 2015). Therefore, a model fidelity scale (CORE Crisis Resolution Team Fidelity Scale) was developed, which is currently undergoing validation and is hoped to improve the effectiveness of CRTs (Lloyd-Evans, Bond, et al., 2016; Lloyd-Evans, Fullarton, et al., 2016). Using the CORE fidelity scale, existing CRT services can be comprehensively audited and optimised where necessary.

In Switzerland and Germany, international findings on CRTs serve as guidance, but the primary interest remains to enable a successful adaptation of the CRT/HT model into local health care systems (Hepp & Stulz, 2017; Lambert et al., 2017; Längle, Gottlob, & Elsässer-Gaißmaier, 2017). Since such system interventions affect operating principles of new and existing health care services likewise (Lambert et al., 2017), Study 2 (part 2) of this thesis evaluated the implementation process of the new HT service at the PDAG through interviewing both, members of the HT team and hospital staff. The study aimed to identify specific challenges for the successful cooperation and continuous workflows between the new HT team and hospital staff, as well as staff members' recommendations on optimising implementation processes.

The primary challenge for the cooperation between the new HT team and hospital staff – as identified by the qualitative evaluation (Study 2 part 2) – was to determine which patients are most suitable for HT. Current model specifications including the CORE CRT fidelity scale state that CRTs provide care for anyone experiencing a mental health crisis that would otherwise be hospitalised (Johnson, 2013; Lloyd-Evans, Bond, et al., 2016). Few studies have yet examined factors (patient characteristics and/or contextual factors) associated with being treated at home and findings have been inconsistent (Cotton et al., 2007; Harrison, Alam, & Marshall, 2001; Munz et al., 2011; Werbeloff et al., 2017). Thus, in order for clinicians to make informed and accurate disposition decisions, a better understanding of which patients are most likely to benefit from HT is needed (Cotton et al., 2007; Werbeloff et al., 2017). Therefore, Study 3 of this thesis aimed to further refine the suitability for HT using patient characteristics. The study examined a subsample of patients from

the intervention group of the HT-RCT, comparing patients receiving HT to patients treated on inpatient wards.

### *Effective Components of HT*

Since evidence on HT's effectiveness is limited (Murphy et al., 2015), the identification of critical components that influence CRT/HT outcomes currently remains moderate (Wheeler et al., 2015). Available data suggest that the inclusion of a psychiatrist within the team and 24-hour availability may enhance CRTs' ability to reduce hospital admissions (Glover, Arts, & Babu, 2006; Hasselberg et al., 2011; Reding & Raphelson, 1995). Furthermore, there is some empirical support that regular home visits and the responsibility for both psychiatric and social care may contribute to more favourable outcomes (Catty et al., 2002).

The abovementioned methodological challenges for valid effectiveness studies in routine settings also impede the verification of effective components of HT/CRTs. A better understanding of critical components of the CRT/HT model ought to also be informed by stakeholders' evaluations (Wheeler et al., 2015). In fact, clinical effectiveness of HT and priorities of patients and/or relatives have been studied far less often than service use outcomes (Wheeler et al., 2015). Qualitative studies examining the significance of specific service components suggest that patients attribute a positive outcome of CRT care to communication, care at home/dealing with crises in an everyday life context, easy access and availability, integration with other mental health services, staff continuity, and being understood as a "normal human being" (Wheeler et al., 2015; Winness, Borg, & Kim, 2010). Study 2 (part 1) of this thesis aimed to further refine effective components of HT from a stakeholder perspective, using the service user involvement approach. Contrary to earlier studies, the sample was not restricted to service users (patients) but also included relatives and staff members involved with the new HT service.

# 2 Summary of Empirical Studies

Chapter 2 provides an overview of the three empirical studies this thesis is based on (full texts of the manuscripts are included in the appendix). The summaries comprise descriptions of respective aims, methods, samples, and results of the three studies. A general discussion of the findings follows in Chapter 3.

## 2.1 Study 1: Validity of Routine Clinical Diagnoses in Acute Psychiatric Inpatients

**Zander, E., Wyder, L., grosse Holtforth, M., Schnyder, U., Hepp, U., & Stulz, N. (2018). *Psychiatry research*, *259*, 482-487. doi.org/10.1016/j.psychres.2017.11.004**

### *Aim*

Study 1 represents a substudy of the HT-RCT with the aim to examine the validity of psychiatric diagnoses obtained by clinicians during routine clinical examinations.

### *Methods* and Analyses

Routine clinical diagnoses were obtained by attending psychiatrists and clinical psychologists within 24 hours of admission as part of routine examination procedures. One member of the research team screened medical records; eligible patients were then randomly selected using a weighted algorithm accounting for prevalence rates of diagnoses. Participants with the following routine primary diagnoses (ICD-10) were included: schizophrenia, delusional, or other psychotic disorder (F2), mood (affective) disorder (F3), or anxiety, dissociative, stress-related, and somatoform disorder (F4). Structured clinical diagnoses were assessed by blinded members of the research team using the SCID I (First et al., 1997) and were carried out within *Md* = 5 (range 1-18) days of admission. The agreement between routine and research diagnoses was calculated using Cohen's κ (Cohen, 1960).

***Sample***

A sample of *N* = 100 inpatients of the department of general psychiatry aged 18–64 years was analysed.

***Results***

Diagnoses were specified on two levels of accuracy: level 1 aggregated diagnoses on a high level of abstraction based on shared predominant symptoms (e.g. “psychotic disorders”), while level 2 distinguished disorders more subtly (e.g. “single depressive episode” and “recurrent depressive disorder” represented separate categories). On level 1, the overall diagnostic agreement between primary routine and SCID I diagnoses was *good* (κ = .65, 95% CI = .54 - .77), ranging from *fair* (κ = .45) for anxiety and stress-related disorders to *excellent* (κ = .88) for psychotic disorders. However, if more specific primary diagnoses (level 2) and secondary diagnoses were considered, diagnostic agreement fell to *poor* (κ = .39 - .42) for single depressive episodes and for anxiety and stress-related disorders (κ = .29 - .45). Overall, SCID I assessments rendered more diagnoses per patient (*M* = 1.73) than did unstructured routine interviews (*M* = 1.36, *p* <.001). The most frequently missed secondary diagnoses in routine assessments were anxiety disorders and substance (cannabis) abuse disorders.

## 2.2 Study 2: How does home treatment work out in practice? A qualitative study among patients, relatives, and staff [Wie gelingt Home Treatment in der Praxis? Eine qualitative Studie unter Einbezug von Patienten, Angehörigen und Mitarbeitenden]

**Wyder, L., Fawcett, C., Hepp, U., grosse Holtforth, M., & Stulz, N. (2018)**
***Psychiatrische Praxis, 45(08), 405-411.***
***doi: 10.1055/a-0665-6094***

### *Aim*

The aim of this study was to identify effective components of HT (part 1) and to evaluate the implementation of the new HT service (part 2) from a stakeholder perspective

### *Methods and Analyses*

Part 1: Semi-structured interviews were carried out with patients, relatives and staff members. All interviews were transcribed and thematic analysis was applied to determine key themes using the software MAXQDA (VERBI Software, 2016).

Part 2: An online questionnaire based on previous literature was newly developed for this study and was sent out via email to the entire hospital staff at the department of general psychiatry, including the HT team. Answers to the online questionnaire were interpreted using descriptive analysis.

### *Sample*

Part 1: Twenty-five interviews were carried out with 11 patients (6 in HT and 5 in hospital treatment), 4 relatives of HT patients, and 10 staff members (5 from the HT team and 5 from hospital wards). The interviews' duration ranged from 15 to 60 minutes.

Part 2: Seventy of 219 questionnaires were returned (32.0%). Participants were: 3 physicians, 11 psychologists, 41 nursing staff, and 15 others (e.g. social workers). Eleven (15.7%) questionnaires were from members of the HT team.

***Results***

Part 1: Four key themes emerged through thematic analysis: individualisation, proximity to daily life, organisational aspects, and requirements (for patients and for the service model). Effective components of HT as evaluated by stakeholders were: familiar environment, frequent and undisturbed conversations, personal and individual access to the team, communication at eye-level, inclusion of relatives, and networking with other service providers.

Part 2: Major challenges regarding the implementation of HT as identified by hospital and HT staff were: clinical indication for HT, integrating the HT option into regular treatment processes on wards, timing of transfer from hospital ward to HT, and handing over of responsibility from ward staff to the HT team.

## 2.3 Study 3: Is Home Treatment for Everyone? Characteristics of Patients Receiving Intensive Mental Health Care at Home

**Wyder, L., Hepp, U., grosse Holtforth, M., & Stulz, N. (in preparation).**

### *Aim*

This study aimed to determine differential characteristics of patients treated by a HT team compared to patients treated in hospital wards.

### *Methods and Analyses*

A six-month cohort of patients from the intervention group of the HT-RCT was examined: These patients received HT instead of hospital treatment whenever feasible from a clinical point of view and if patients and relatives agreed. For patients with multiple admissions, only the index admission was analysed. Patients receiving HT were compared to patients for whom HT was not feasible. Comparisons included univariate and multivariate analyses of routinely available sociodemographic and clinical characteristics.

### *Sample*

Of 198 consecutively admitted patients, 98 (49.5%) were at least partially treated at home, whereas 100 (50.5%) received hospital treatment only. For HT patients, transfer from hospital ward to HT occurred after an average of $M$ = 9.10 days at the hospital ($SD$ = 9.15, Range 0 – 47 days).

### *Results*

In univariate analyses, HT patients significantly differed from hospital patients regarding age ($p$ = .010), marital status ($p$ = .031), employment status ($p$ = .016), and primary diagnosis ($p$ = .002). A multivariate logistic regression model identified a primary diagnosis of anxiety or stress-related disorders to decrease (OR = .17; 95% CI = .06 - .46, $p$ < .001), and current employment to increase (OR = 2.53; 95% CI = 1.32 – 4.84, $p$ = .005) the odds of being treated at home.

# 3 General Discussion

## 3.1 Discussion of the Results

This thesis delineated HT as a contemporary approach to the treatment of mental health crises that offers patients an alternative to inpatient care. Specific challenges concerning international research in this field and the practical implementation of HT into Swiss mental health care were highlighted. The three empirical studies of this thesis were conducted within one large research project (HT-RCT) and aimed to provide helpful insights supporting the further implementation of HT. Results of Study 1-3 will be discussed and their implications illustrated hereafter.

Maintaining RCT procedures within routine clinical settings pose a major challenge for studies on effectiveness of HT and largely account for the sparse evidence on this service model (Johnson, Nolan, Pilling, et al., 2005; Murphy et al., 2015). Since randomisation for the HT-RCT occurred at the point of hospital admission, structured assessments of participants prior to study inclusion were not feasible. Study 1 demonstrated an effort of ensuring common methodological research standards for diagnosing psychiatric disorders in accordance with the outlined study design of the HT-RCT. Only few studies had previously examined the agreement between routine and research diagnostic assessments and they were mostly carried out in less acute inpatient or outpatient settings (Andreas, Theisen, Mestel, Koch, & Schulz, 2009; Shear et al., 2000; Steiner, Tebes, Sledge, & Walker, 1995). Study 1 showed that the agreement between routine and research diagnoses in an acute inpatient setting was high on a broad level of diagnostic categories (i.e. ICD-10 F2, F30-F31, F32-F33, and F4). Analyses in health care research usually rely on data from routine clinical procedures. In those studies, diagnostic subgroups are often defined through grouping primary diagnoses on broad levels (e.g. *psychotic disorders (F2)*). The results of Study 1 imply that routine diagnostic procedures in inpatient settings generate valid data (on a broad level of categorisation), and therefore offer an accurate basis for analyses within health care studies like the HT-RCT.

However, Study 1 further indicated that for more precise specifications of diagnoses as well as secondary diagnoses, the agreement between routine and

research assessments was poor for some specific disorders. For instance, single depressive episodes (primary diagnosis), and anxiety disorders or substance abuse (secondary diagnoses) were frequently missed in routine assessments. This finding demonstrates room for improvement regarding diagnostic procedures in acute psychiatric inpatient settings. As for primary diagnoses, the distinction of adjustment disorders from depressive disorders (single and recurrent episodes) should be improved. Regarding secondary diagnoses, more attention should be paid towards detecting anxiety and substance use disorders.

Extensive structured diagnostic interviews (e.g. SCID) are widely acknowledged as the “gold standard” of diagnostic assessment, yet they are very time consuming and therefore not applicable in routine inpatient settings (Rettew et al., 2009). Improving the validity of diagnostic procedures in inpatient settings represents a highly relevant concern in light of the new reimbursement system based on Diagnosis Related Groups (DRG) (Drozd et al., 2006), introduced to Swiss psychiatric hospitals in January 2018 (Meyer & Rohner, 2016). Thereby, primary and secondary diagnoses are essential for building Psychiatric Cost Groups (PCG). The results of Study 1 suggest that current routine diagnostic assessment procedures may only partially provide a valid database (particularly in regard to secondary diagnoses) for a further differentiation of PCGs. Future studies should therefore investigate strategies to improve comprehensive diagnostic screening and assessment techniques for acute inpatient settings, focusing on primary diagnoses as well as comorbid psychiatric disorders.

While Study 1 focused on a methodological aspect, Studies 2 and 3 investigated more practical elements associated with the implementation of HT. Since the CRT concept was originally developed to function within the UK mental health system, the adaptation of this service model into other health care systems requires consideration of the new service’s interfaces with existing service providers (e.g. psychiatric hospitals) (Längle et al., 2017). Study 2 (part 2) evaluated the implementation process of the new PDAG HT service as experienced by both hospital and HT staff, and assembled suggestions for improvement.

To interpret these results, the common pathway of care for patients receiving HT within the HT-RCT should be borne in mind: 87.9% of the 273 treatment cases involving HT were first treated on hospital wards for approximately 12 days before

being transferred to HT, which on average lasted 13 days. Thus, these procedures required both hospital and HT staff to communicate and collaborate throughout the care process of a patient in order to identify suitable patients and ensure well-timed and seamless transfers from hospital to HT.

Results of Study 2 (part 2) identified the most challenging steps in this process to involve aspects of *information* (sufficient information about the new service model, clinical indication/suitability for HT), *organisation* (integrating the HT option into regular treatment processes on wards, timing of transfer from hospital ward to HT) and *collaboration* (handing over of treatment information and responsibility from ward staff to the HT team). Further, hospital staff members expressed that getting to know the HT team personally would increase their confidence in transferring rather instable patients to home care. Accordingly, recommendations of staff members to facilitate the cooperation between hospital and HT staff included HT team members presenting functioning and limitations of the new service model on hospital wards (and at outpatient facilities). Using case reports they could demonstrate common pathways of care and treatment outcomes. Furthermore, areas of responsibility between the different service providers and suggestions on how/when the transfer from hospital to HT is best organised could be discussed. Contextual conditions facilitating or impeding good HT care are currently not well understood (Morant et al., 2017). The findings of Study 2 (part 2) provide valuable cues about the functioning of HT services within complex service configurations; future studies may build on these insights to evaluate strategies for service improvement.

Identifying those patients suitable for HT amongst all inpatient admissions was a major challenge as indicated by hospital and HT staff (Study 2 part 2). Multiple factors, e.g. psychiatric symptoms, mental distress, and concerns with safety influence admissions to inpatient care (George, Durbin, Sheldon, & Goering, 2002; Schnyder, Klaghofer, Leuthold, & Buddeberg, 1999; Way & Banks, 2001). The availability of HT extends care options for patients in mental health crises. This entails that the new service model is incorporated in triage decisions; hence clinicians in charge need to be adequately informed about HT, especially if gate-keeping and triaging referrals to inpatient care is not performed by HT services (Berhe et al., 2005; Bundesamt für Gesundheit, 2016; Gühne et al., 2011). This was also the case for the HT-RCT: at the PDAG hospital, an established triage unit was in

charge of gate-keeping referrals and triaging hospital admissions (Stulz et al., 2014), this may have contributed to the fact that most HT patients were initially treated on hospital wards before being transferred to HT (see above). Additionally, study procedures (i.e. randomisation prior to informing patients about the study) prevented triage staff from immediately offering patients the HT option if they deemed a referral suitable for HT. Instead, the clinician in charge needed to phone the research team amidst an intake interview and await the randomisation outcome before further treatment planning. It remains unclear if this "detour" affected triage staff members' decisions to admit patients, thus, postponing the randomisation process and the deliberation of a transfer to HT to the next day (the research team regularly screened all new admissions of the previous day and marked the randomisation outcome in patients' medical charts).

The primary outcome of the HT-RCT indicated that HT decreased hospital bed days by 28.9% in the intervention group; yet, HT did not reduce the number of admissions to inpatient care. Hence, the HT option may have predominantly served as *facilitated discharge* from hospital, which besides reducing hospital admissions, constitutes the second and far less well studied function of the CRT concept (Tulloch, Khondoker, Thornicroft, & David, 2015). If HT provides patients with an early discharge option, this implies that the identification and referral of patients suitable for HT falls on hospital ward staff. Study 3 aimed to characterise patient suitability for HT in order to establish some basic features indicating which patient groups may be most likely to benefit from HT. Previous findings on patient and contextual characteristics associated with the feasibility of HT were somewhat inconsistent but suggested that this may apply to female gender, referral during office hours, and higher age (Cotton et al., 2007; Harrison et al., 2001; Munz et al., 2011; Werbeloff et al., 2017). The results of Study 3 further indicated that current employment may *increase,* and a primary diagnosis of anxiety or stress-related disorders may *decrease* the probability of HT.

This finding diverges from staff members' estimates of anxiety disorders to indicate suitability for HT (Study 2 part 2). A closer look at these estimates from Study 2 reveals that ward staff members tended to weigh psychopathological syndromes more heavily in their appraisal of suitability (anxiety disorder) or counter-indication (substance abuse, acute manic or psychotic symptoms) for HT, whereas

HT team members mainly emphasised contextual factors (stable social environment, involvement of young children) and the ability to adhere to no-harm agreements. Estimates of HT team members were thus to a lesser extent tied to specific psychopathological syndromes.

Overall, the explanatory power of the analyses in Study 3 was limited (i.e. the multivariate model was only able to classify 66.1% of cases correctly), which may reflect the complexity of patient and contextual factors in play. Thus, a more precise definition of the patient group most suitable for HT may be difficult to attain. On the one hand, these findings imply that HT indeed represents a care option for a very heterogeneous group of patients suffering from mental health crises. On the other hand, it remains difficult to provide hospital ward staff with guidelines on evaluating suitability for HT.

The PDAG HT team developed a solution to this problem that has proved very useful (in routine practice). They implemented *suitability assessments* foregoing the initiation of HT to filter out suitable referrals. Thereby, all patients referred to HT through ward staff are seen by a member of the HT team upon referral in order to evaluate suitability and feasibility of home care in each specific case. Only if both, the clinician and patient agree that HT is an appropriate care option, and relatives living with the patient also approve, a transfer to HT is organised in a timely manner.

These *suitability assessments* implemented by the PDAG HT team represent one step within a practical adaptation of the CRT concept into local health care structures. The further adaption of this service model (as well as further developments of the original model) should be augmented by stakeholders' priorities, since the quality of quantitative evidence on critical CRT components is low and some of the reported effects may not apply in the same manner to health care systems outside the UK (Längle et al., 2017; Wheeler et al., 2015). Study 2 (part 1) therefore aimed to identify effective HT components through evaluating patients', relatives', and staff members' experiences. While effectiveness in quantitative studies essentially pertains to the reduction of inpatient admissions and decreasing the length of hospital stays, "effectiveness" in qualitative contexts differs from these measures. Hence, qualitative studies examine perceived determinants of outcomes such as service quality, satisfaction with care, and patients' recovery process (Wheeler et al., 2015; Winness et al., 2010).

Study 2 (part 1) focused on stakeholders' accounts of components perceived to be critical for patients' recovery in HT. Through the applied thematic analysis, four key themes emerged: *individualisation, proximity to daily life, organisational aspects*, and *requirements* (*for patients and for the service model*). The stakeholders outlined effective components of HT to involve the familiar environment, frequent and undisturbed conversations, personal and individual access to the team, communication at eye-level, inclusion of relatives, and intensive networking with other service providers.

The first three key themes (see Study 2, Fig. 1) and the identified effective components correspond with findings of previous studies (Carpenter & Tracy, 2015; Hopkins & Niemiec, 2007; Morant et al., 2017; Winness et al., 2010). From a psychological point of view, these findings give rise to interpretations about how specific components may take effect on patients' recovery. Previous studies have highlighted the centrality of therapeutic relationship in psychiatric acute care (Morant et al., 2017). In Study 2 (part 1), HT patients indicated that forming therapeutic alliance with the HT team was positively affected by (a) the setting (home environment), (b) high frequency of consultations and (c) an equal balance of power between the patient and staff members. (a) Being on-site helped staff members to quickly identify clinical and social problems as well as individual resources. For patients, being surrounded by their relatives and familiar environment increased their sense of "being yourself". This holistic perception allowed all stakeholders to regard patients' personal strengths and weaknesses throughout the process of crisis. Through this, HT may foster a better understanding of the crisis within its psycho-social context (Karlsson, Borg, & Kim, 2008). By being able to carry on familiar daily tasks and routines, staying at home during an episode of serious mental distress may further have a de-stigmatising and normalising effect on patients' self-perception (Carpenter & Tracy, 2015).

(b) Frequent and undisturbed conversations in a one-to-one setting helped patients to establish confidence in the team within a relatively short time. Staff members felt that the recovery process was accelerated by the intensity of visiting patients daily, whereas patients attributed clinical improvement to having the clinicians' full attention for one hour a day. This made them feel recognised as an individual instead of being one patient among many, which has been characterised

as HTs' focus on *personhood* (as opposed to hospitals rather emphasising *patienthood*) (Karlsson et al., 2008; Winness et al., 2010).

(c) Contrary to the hospital setting where ward rules and fixed routines determine power structures, during home visits, patients and relatives received team members in their homes, where their own "house rules" applied. Clinicians felt the feeling of being a guest challenging their professional roles. Thus, all stakeholder groups felt that social interactions were characterised by communication at eye-level and respect. Patients felt that this increased their autonomy and gave them a greater sense of control concerning treatment decisions. Yet, staff members reported that they frequently encountered situations in which they had to critically revise their own professional role (e.g. that although sitting on a balcony surrounded by the patient's family and dogs, they had not merely come over for a cup of coffee and a friendly chat but to provide professional support throughout a time of serious mental distress). Moreover, repeatedly being on-site together with patients and relatives sometimes required extensive effort of staff members in sustaining emotional distance form patients' situations. "Being almost like a friend" whilst upholding a professional role may represent a key ability of HT staff in helping patients to humanise their experience of mental health crisis (Hopkins & Niemiec, 2007). Similar challenges for mental health professionals caring for residents in sheltered living facilities have been described (Solomon, Alexander, & Uhl, 2010). Thereby, the importance for staff members to constantly be aware of the "delicate balance between emotional over-involvement and professional interest" is emphasised (Van Humbeeck et al., 2001), since the former may negatively affect residents' general condition and quality of life (Solomon et al., 2010).

The fourth key theme resulting from thematic analysis of Study 2 (part1) – *requirements* (*for patients and for the service model*) – highlights aspects vital to the feasibility of HT, which need to be weighted up continuously in every individual case. Care at home during a mental health crisis entails the absence of important protective functions of a hospital. Concerning elements of safety, patients and relatives emphasised that for them knowing someone was on call 24/7 represented a key aspect of HT. Staff members stated that patients' ability to adhere to no-harm agreements, i.e. not to harm themselves or others, represented the primary criterion for them to determine whether HT could be initiated or continued. Further, all

stakeholders agreed that during an episode of HT, patients needed to be capable of maintaining some kind of daily routine, which for patients often posed a great challenge. These aspects all combine one feature of constantly negotiating shares of responsibility between patients and HT staff (and relatives). Bearing responsibility in times of mental distress is challenging but may have a valuable effect on recovery through empowering patients to actively shape their recovery process and being jointly responsible for bringing about change to their situation (Winness et al., 2010). This implies for staff members to be trained in continuously sensing the appropriate timing and degree of responsibility being handed over.

Future studies should investigate whether the effective components identified through qualitative evaluations of stakeholders' experiences (e.g. familiar environment, personal and individual access to the team, communication at eye-level, inclusion of relatives, and intensive networking with other service providers) measurably impact recovery-related outcomes. These studies may provide a better understanding of how HT affects clinical outcomes (e.g. symptoms), subjective parameters (e.g. self-efficacy, quality of life), and social outcomes (ability to work).

### 3.2 Limitations

Interpreting the findings of the three empirical studies as well as results from the HT-RCT bears several limitations. First, all data obtained relate to one single HT service. Hence, it remains unclear to what extent the reported results may be specific to the studied service or to distinctive characteristics of the region's mental health system. Secondly, the PDAG HT team was newly formed in 2015. There is some evidence suggesting that new mental health service teams generally attract rather well-motivated and qualified staff which may boost the new service's ability in reaching defined goals (in regard to study outcomes and service planning) (Hannigan, 2013; Nelson, Johnson, & Bebbington, 2009). Thus, future research should evaluate the sustainability of attained results, examining how new HT services manage to establish themselves into routine care, and if potentially boosting "novelty effects" fade away with time. Third, the ethics committee approved the outlined randomisation procedures on condition that only routine data were used for this

study. This approach ensured high external validity of the sample but prevented further investigation on course and outcome of clinical and social parameters. Relevant findings hereto may soon be available, since a recently published study protocol of a very similar trial to the HT-RCT incorporates repeated assessments of psychological well-being and personal recovery as well as patients', relatives' and staffs' satisfaction with care (Cornelis et al., 2018).

## 3.3 Conclusion

The main HT-RCT project attended to the requirement of large, good quality studies evaluating the effectiveness of HT. This study was able to successfully demonstrate that HT represents a feasible alternative to inpatient care for patients in mental health crises. It further illustrated how HT can be implemented in a mental health care system outside the UK. The empirical studies 1-3 provided additional insights concerning the adaptation of the CRT model and the practical implementation of HT into Swiss mental health care. Overall, these studies delineated possible solutions to conducting research in the complex field of mental health care, where research and practice are closely linked together.

Developments within mental health care systems involve multiple societal domains, with stakeholders from politics, health insurances, research, mental health institutions, and service user groups playing their parts. Furthermore, priorities in mental health care are also shaped by prevalent cultural atmospheres. The aspiration of implementing HT therefore links well with contemporary psychiatric movements of recovery, social participation, and user empowerment.

# 4 References


Andreas, S., Theisen, P., Mestel, R., Koch, U., & Schulz, H. (2009). Validity of routine clinical DSM-IV diagnoses (Axis I/II) in inpatients with mental disorders. *Psychiatry Research*, *170*(2–3), 252–255. http://doi.org/10.1016/j.psychres.2008.09.009

ANQ. (2017). National Quality Assessment of Inpatient Psychiatry. Retrieved from http://www.anq.ch/psychiatrie/ (accessed 30.04.2017)

Becker, T., Hoffmann, H., Puschner, B., & Weinmann, S. (2008). *Versorgungsmodelle in Psychiatrie und Psychotherapie*. Kohlhammer.

Berhe, T., Puschner, B., Kilian, R., & Becker, T. (2005). [Home treatment for severe mental illness. What and how effective ist it?]. *Der Nervenarzt*, *76*, 822–831. http://doi.org/10.1007/s00115-004-1865-6

Bracken, P., & Cohen, B. (1999). Home treatment in Bradford. *Psychiatric Bulletin*, *23*, 349–352. http://doi.org/10.1192/pb.23.6.349

Brenner, H. D., Junghan, U., & Pfammatter, M. (2000). [Community-integrated care for acute psychiatric disease. Possibilities and limitations]. *Der Nervenarzt*, *71*(9), 691–699. http://doi.org/10.1007/s001150050652

Bundesamt für Gesundheit. (2016). *Die Zukunft der Psychiatrie in der Schweiz*. Bern.

Burns, T., Knapp, M., Catty, J., Healey, A., Henderson, J., Watt, H., & Wright, C. (2001). *Home treatment for mental health problems: a systematic review*. *Health technology assessment* (Vol. 5). NIHR Health Technology Assessment Programme.

Carpenter, R. A., & Tracy, D. K. (2015). Home treatment teams: what should they do? A qualitative study of patient opinions. *Journal of Mental Health*, *24*(2), 98–102.

Catty, J., Burns, T., Knapp, M., Watt, H., Wright, C., Henderson, J., & Healey, A. (2002). Home treatment for mental health problems: a systematic review. *Psychological Medicine*, *32*, 383–401. http://doi.org/10.1017/S0033291702005299

Cohen, J. (1960). A Coefficient of Agreement for Nominal Scales. *Educational and Psychological Measurement*, *20*(1), 37–46. http://doi.org/10.1177/001316446002000104

Cornelis, J., Barakat, A., Dekker, J., Schut, T., Berk, S., Nusselder, H., … Blankers, M. (2018). Intensive home treatment for patients in acute psychiatric crisis situations: a multicentre randomized controlled trial. *BMC Psychiatry*, *18*. http://doi.org/10.1186/s12888-018-1632-z

Cotton, M.-A., Johnson, S., Bindman, J., Sandor, A., White, I. R., Thornicroft, G., … Bebbington, P. E. (2007). An investigation of factors associated with psychiatric hospital admission despite the presence of crisis resolution teams. *BMC Psychiatry*, *7*(52). http://doi.org/10.1186/1471-244X-7-52

Dean, C., Phillips, J., Gadd, E. M., Joseph, M., & England, S. (1993). Comparison of community based service with hospital based service for people with acute, severe psychiatric illness. *BMJ*, *307*, 473–476. http://doi.org/10.1136/bmj.307.6902.473

Department of Health. (2001). *Crisis Resolution/Home Treatment Teams: The Mental Health Policy Implementation Guide*. London.

Drozd, E., Cromwell, J., Gage, B., Maier, J., Greenwald, L. M., & Goldman, H. H. (2006). Patient Casemix Classification for Medicare Psychiatric Prospective Payment. *American Journal of Psychiatry*, *163*(4), 724–732. http://doi.org/10.1176/appi.ajp.163.4.724

Fenton, F. R., Tessier, L., & Struening, E. L. (1979). A Comparative Trial of Home and Hospital Psychiatric Care. *Archives of General Psychiatry*, *36*(10), 1073–1079. http://doi.org/10.1001/archpsyc.1979.01780100043003

Fenton, W. S., Mosher, L. R., Herrell, J. M., & Blyler, C. R. (1998). Randomized Trial of General Hospital and Residential Alternative Care for Patients With Severe and Persistent Mental Illness. *American Journal of Psychiatry*, *155*(4), 516–522. http://doi.org/10.1176/ajp.155.4.516

First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. (1997). *Structured Clinical Interview for DSM-IV Axis I disorders (SCID I)*. New York.

George, L., Durbin, J., Sheldon, T., & Goering, P. (2002). Patient and Contextual Factors Related to the Decision to Hospitalize Patients From Emergency Psychiatric Services. *Psychiatric Services*, *53*(12), 1586–1591. http://doi.org/10.1176/appi.ps.53.12.1586

Glover, G., Arts, G., & Babu, K. S. (2006). Crisis resolution/home treatment teams and psychiatric admission rates in England. *The British Journal of Psychiatry:*

*The Journal of Mental Science*, *189*(5), 441–445. http://doi.org/10.1192/bjp.bp.105.020362

Gühne, U., Weinmann, S., Arnold, K., Atav, E.-S., Becker, T., & Riedel-Heller, S. G. (2011). [Home treatment: systematic review and implementation in Germany]. *Psychiatrische Praxis*, *38*(3), 114–122. http://doi.org/10.1055/s-0030-1248598

Gühne, U., Weinmann, S., Arnold, K., Becker, T., & Riedel-Heller, S. G. (2015). S3 guideline on psychosocial therapies in severe mental illness: evidence and recommendations. *European Archives of Psychiatry and Clinical Neuroscience*, *265*(3), 173–188. http://doi.org/10.1007/s00406-014-0558-9

Hannigan, B. (2013). Connections and consequences in complex systems: insights from a case study of the emergence and local impact of crisis resolution and home treatment services. *Social Science & Medicine*, *93*, 212–219. http://doi.org/10.1016/j.socscimed.2011.12.044

Harrison, J., Alam, N., & Marshall, J. (2001). Home or away: which patients are suitable for a psychiatric home treatment service? *Psychiatric Bulletin*, *25*, 310–313. http://doi.org/10.1192/pb.25.8.310

Hasselberg, N., Gråwe, R. W., Johnson, S., & Ruud, T. (2011). An implementation study of the crisis resolution team model in Norway: are the crisis resolution teams fulfilling their role? *BMC Health Services Research*, *11*(96). http://doi.org/10.1186/1472-6963-11-96

Hepp, U., & Stulz, N. (2017). Home Treatment: Von der Forschung zur klinischen Umsetzung. *Psychiatrische Praxis*, *44*(7), 371–373. http://doi.org/10.1055/s-0043-117369

Hopkins, C., & Niemiec, S. (2007). Mental health crisis at home: service user perspectives on what helps and what hinders. *Journal of Psychiatric and Mental Health Nursing*, *14*(3), 310–318. http://doi.org/10.1111/j.1365-2850.2007.01083.x

Horn, A. (2018). Neue Konzepte im Rahmen von Home Treatment: ein Update. *DNP - Der Neurologe & Psychiater*, *19*(1), 44–52. http://doi.org/10.1007/s15202-018-1876-y

Hoult, J., Hall, P., & Brockington, I. F. (1991). Home treatment in New South Wales. In P. Hall & I. F. Brockington (Eds.), *The closure of mental hospitals* (pp. 107–114). London, England: Gaskell/Royal College of Psychiatrists.

Hoult, J., Reynolds, I., Charbonneau-Powis, M., Weekes, P., & Briggs, J. (1983). Psychiatric Hospital Versus Community Treatment: The Results of a Randomised Trial. *Australian and New Zealand Journal of Psychiatry*, *17*(2), 160–167.

Howard, L., Flach, C., Leese, M., Byford, S., Killaspy, H., Cole, L., … Johnson, S. (2010). Effectiveness and cost-effectiveness of admissions to women's crisis houses compared with traditional psychiatric wards: pilot patient-preference randomised controlled trial. *The British Journal of Psychiatry. Supplement*, *53*(S53), s32-40. http://doi.org/10.1192/bjp.bp.110.081083

Hubbeling, D., & Bertram, R. (2012). Crisis resolution teams in the UK and elsewhere. *Journal of Mental Health*, *21*(3), 285–295. http://doi.org/10.3109/09638237.2011.637999

Johnson, S. (2013). Crisis resolution and home treatment teams: an evolving model. *Advances in Psychiatric Treatment*, *19*(2), 115–123. http://doi.org/10.1192/apt.bp.107.004192

Johnson, S., Nolan, F., Pilling, S., Sandor, A., Hoult, J., McKenzie, N., … Bebbington, P. E. (2005). Randomised controlled trial of acute mental health care by a crisis resolution team: the north Islington crisis study. *BMJ (Clinical Research Ed.)*, *331*(7517). http://doi.org/10.1136/bmj.38519.678148.8F

Johnson, S., & Thornicroft, G. (2008). The development of crisis resolution and home treatment teams. In S. Johnson (Ed.), *Crisis Resolution and Home Treatment in Mental Health*. New York, NY, USA: Cambridge University Press.

Karlsson, B., Borg, M., & Kim, H. S. (2008). From good intentions to real life: introducing crisis resolution teams in Norway. *Nursing Inquiry*, *15*(3), 206–215. http://doi.org/10.1111/j.1440-1800.2008.00416.x

Kilian, R. (2014). [Integrated Health Care Managed by Community Psychiatric Services - Pro]. *Psychiatrische Praxis*, *41*(4), 182–183.

Lambert, M., Karow, A., Gallinat, J., & Deister, A. (2017). [Evidence-Based Implementation of Crisis Resolution in Germany]. *Psychiatrische Praxis*, *44*(2), 62–64. http://doi.org/10.1055/s-0043-100494

Längle, G., Gottlob, M., & Elsässer-Gaißmaier, H.-P. (2017). Umsetzung des §115d PsychVVG: Stationsäquivalente Behandlung – Die nächsten Schritte. *Psychiatrische Praxis*, *44*(7), 417–419. http://doi.org/10.1055/s-0043-110597

Lloyd-Evans, B., Bond, G. R., Ruud, T., Ivanecka, A., Gray, R., Osborn, D., … Johnson, S. (2016). Development of a measure of model fidelity for mental health Crisis Resolution Teams. *BMC Psychiatry*, *16*(427). http://doi.org/10.1186/s12888-016-1139-4

Lloyd-Evans, B., Fullarton, K., Lamb, D., Johnston, E., Onyett, S., Osborn, D., … Johnson, S. (2016). The CORE Service Improvement Programme for mental health crisis resolution teams: study protocol for a cluster-randomised controlled trial. *Trials*, *17*(158). http://doi.org/10.1186/s13063-016-1283-7

Lloyd-Evans, B., Paterson, B., Onyett, S., Brown, E., Istead, H., Gray, R., … Johnson, S. (2017). National implementation of a mental health service model: A survey of Crisis Resolution Teams in England. *International Journal of Mental Health Nursing*, *27*(1), 214–226. http://doi.org/10.1111/inm.12311

Marshall, M., Gray, A., Lockwood, A., & Green, R. (2000). Case management for people with severe mental disorders. *The Cochrane Database of Systematic Reviews*, (2), CD000050. http://doi.org/10.1002/14651858.CD000050

Marshall, M., & Lockwood, A. (2000). Assertive community treatment for people with severe mental disorders. *The Cochrane Database of Systematic Reviews*, (2), CD001089. http://doi.org/10.1002/14651858.CD001089

Meyer, B., & Rohner, B. (2016). TARPSY 1.0: Das neue Tarifsystem für die stationäre Psychiatrie. *Schweizerische Ärztezeitung*, *97*(41), 1404–1406.

Morant, N., Lloyd-Evans, B., Lamb, D., Fullarton, K., Brown, E., Paterson, B., … Johnson, S. (2017). Crisis resolution and home treatment: stakeholders' views on critical ingredients and implementation in England. *BMC Psychiatry*, *17*(1), 254. http://doi.org/10.1186/s12888-017-1421-0

Muijen, M., Marks, I., Connolly, J., & Audini, B. (1992). Home based care and standard hospital care for patients with severe mental illness: a randomised controlled trial. *BMJ*, *304*(6829), 749–754. http://doi.org/10.1136/bmj.304.6829.749

Munz, I., Ott, M., Jahn, H., Rauscher, A., Jäger, M., Kilian, R., & Frasch, K. (2011). [Comparison of "home treatment" with traditional inpatient treatment in a mental hospital in rural southern Germany]. *Psychiatrische Praxis*, *38*(3), 123–128. http://doi.org/10.1055/s-0030-1248591

Murphy, S. M., Irving, C. B., Adams, C. E., & Waqar, M. (2015). Crisis intervention for

people with severe mental illnesses. *Cochrane Database of Systematic Reviews*. http://doi.org/10.1002/14651858.CD001087.pub5

Nelson, T., Johnson, S., & Bebbington, P. E. (2009). Satisfaction and burnout among staff of crisis resolution, assertive outreach and community mental health teams. A multicentre cross sectional survey. *Social Psychiatry and Psychiatric Epidemiology*, *44*(7), 541–549. http://doi.org/10.1007/s00127-008-0480-4

Pasamanick, B., Scarpitti, F. R., Lefton, M., Dinitz, S., Wernert, J. J., & McPheeters, H. (1964). Home vs Hospital Care for Schizophrenics. *JAMA: The Journal of the American Medical Association*, *187*(3), 177–181. http://doi.org/10.1001/jama.1964.03060160005001

Perkins, R., & Burns, T. (2001). Home Treatment. *International Journal of Social Psychiatry*, *47*(3), 55–66. http://doi.org/10.1177/002076400104700306

Polak, P., & Kirby, M. (1976). A model to replace psychiatric hospitals. *Journal of Nervous and Mental Disease*, *162*, 13–22.

Querido, A. (1968). The Shaping of Community Mental Health Care. *The British Journal of Psychiatry*, *114*(508), 293–302. http://doi.org/10.1192/bjp.114.508.293

Reding, G. R. M., & Raphelson, W. (1995). Around-the-Clock Mobile Psychiatric Crisis Intervention: Another Effective Alternative to Psychiatric Hospitalization. *Community Mental Health Journal*, *31*(2), 179–187.

Rettew, D. C., Lynch, A. D., Achenbach, T. M., Dumenci, L., & Ivanova, M. Y. (2009). Meta-analyses of agreement between diagnoses made from clinical evaluations and standardized diagnostic interviews. *International Journal of Methods in Psychiatric Research*, *18*(3), 169–184. http://doi.org/10.1002/mpr.289

Schnyder, U., Klaghofer, R., Leuthold, A., & Buddeberg, C. (1999). Characteristics of psychiatric emergencies and the choice of intervention strategies. *Acta Psychiatrica Scandinavica*, *99*(3), 179–187.

Shear, M. K., Greeno, C., Kang, J., Ludewig, D., Frank, E., Swartz, H. A., & Hanekamp, M. (2000). Diagnosis of Nonpsychotic Patients in Community Clinics. *American Journal of Psychiatry*, *157*(4), 581–587.

Smyth, M. G., & Hoult, J. (2000). The home treatment enigma. *BMJ (Clinical Research Ed.)*, *320*(7230), 305–308.

Solomon, P., Alexander, L., & Uhl, S. (2010). The relationship of case managers' expressed emotion to clients' outcomes. *Social Psychiatry and Psychiatric*

*Epidemiology*, *45*(2), 165–174. http://doi.org/10.1007/s00127-009-0051-3

Stein, L. I., & Test, M. A. (1980). Alternative to Mental Hospital Treatment I. Conceptual model, treatment program, and clinical evaluation. *Archives of General Psychiatry*, *37*(4), 392–397. http://doi.org/10.1001/archpsyc.1980.01780170034003

Stein, L. I., Test, M. A., & Marx, A. J. (1975). Alternative to the hospital: A controlled study. *The American Journal of Psychiatry*, *132*(5), 517–522.

Steiner, J. L., Tebes, J. K., Sledge, W. H., & Walker, M. L. (1995). A comparison of the structured clinical interview for DSM-III-R and clinical diagnoses. *Journal of Nervous and Mental Disease*, *183*(6), 365–369.

Stulz, N., Nevely, A., Hilpert, M., Bielinski, D., Spisla, C., Maeck, L., & Hepp, U. (2014). Referral to Inpatient Treatment Does not Necessarily Imply a Need for Inpatient Treatment. *Administration and Policy in Mental Health*, *42*(4), 474–483. http://doi.org/10.1007/s10488-014-0561-5

Sturny, I., Cerboni, S., Christen, S., & Meyer, P. (2004). *Daten zur Versorgung psychisch Kranker in der Schweiz*. Neuchatel.

Thornicroft, G., & Tansella, M. (2002). Balancing community-based and hospital-based mental health care. *World Psychiatry: Official Journal of the World Psychiatric Association (WPA)*, *1*(2), 84–90.

Thornicroft, G., & Tansella, M. (2013). The balanced care model for global mental health. *Psychological Medicine*, *43*(4), 849–863. http://doi.org/10.1017/S0033291712001420

Tulloch, A. D., Khondoker, M. R., Thornicroft, G., & David, A. S. (2015). Home treatment teams and facilitated discharge from psychiatric hospital. *Epidemiology and Psychiatric Sciences*, *24*, 402–414. http://doi.org/10.1017/S2045796014000304

Van Humbeeck, G., Van Audenhove, C., Pieters, G., De Hert, M., Storms, G., Vertommen, H., … Heyrman, J. (2001). Expressed emotion in staff-patient relationships: the professionals' and residents' perspectives. *Social Psychiatry and Psychiatric Epidemiology*, *36*(10), 486–492. http://doi.org/10.1007/s001270170013

VERBI Software. (2016). MAXQDA. Berlin: Sozialforschung GmbH.

Wallcraft, J., Amering, M., Freidin, J., Davar, B., Frogatt, D., Jafri, H., … Herrman, H.

(2011). Partnerships for better mental health worldwide: WPA recommendations on best practices in working with service users and family carers. *World Psychiatry*, *10*(3), 229–236. http://doi.org/10.1002/j.2051-5545.2011.tb00062.x

Way, B. B., & Banks, S. (2001). Clinical Factors Related to Admission and Release Decisions in Psychiatric Emergency Services. *Psychiatric Services*, *52*(2), 214–218. http://doi.org/10.1176/appi.ps.52.2.214

Werbeloff, N., Chang, C.-K., Broadbent, M., Hayes, J. F., Stewart, R., & Osborn, D. P. J. (2017). Admission to acute mental health services after contact with crisis resolution and home treatment teams: an investigation in two large mental health-care providers. *The Lancet Psychiatry*, *4*(1), 49–56. http://doi.org/10.1016/S2215-0366(16)30416-3

Wheeler, C., Lloyd-Evans, B., Churchard, A., Fitzgerald, C., Fullarton, K., Mosse, L., … Johnson, S. (2015). Implementation of the Crisis Resolution Team model in adult mental health settings: a systematic review. *BMC Psychiatry*, *15*(74). http://doi.org/10.1186/s12888-015-0441-x

Wing, J. K., Beevor, A. S., Curtis, R. H., Park, S. B., Hadden, S., & Burns, A. (1998). Health of the Nation Outcome Scales (HoNOS). Research and development. *The British Journal of Psychiatry*, *172*(1), 11–18. http://doi.org/10.1192/bjp.172.1.11

Winness, M. G., Borg, M., & Kim, H. S. (2010). Service users' experiences with help and support from crisis resolution teams. A literature review. *Journal of Mental Health*, *19*(1), 75–87. http://doi.org/10.3109/09638230903469178

Zelen, M. (1990). Randomized consent designs for clinical trials: An update. *Statistics in Medicine*, *9*(6), 645–656. http://doi.org/10.1002/sim.4780090611

# 5 Curriculum Vitae

| | |
|---|---|
| Date of birth: | 06.10.1989 |
| Place of birth: | Zurich, ZH |
| Nationality: | Swiss |

## Education

| | |
|---|---|
| 2016 – | pca.acp Swiss Association for the Person-Centred Approach in Psychotherapy |
| 2015 – 2018 | University of Bern: Doctoral Candidate |
| 2013 – 2015 | University of Zurich: Master of Science in Clinical and Health Psychology |
| 2009 – 2012 | University of Zurich: Bachelor of Science in Psychology (major) and Popular Culture Studies (minor) |
| 2005 – 2006 | Walcha Central High School, NSW, Australia |
| 2002 – 2008 | Cantonal School Rämibühl, Zurich |

## Employment

| | |
|---|---|
| 2017 – | Psychiatric Services Aargau AG: Clinical Psychologist |
| 2015 – 2018 | Psychiatric Services Aargau AG: Research Assistant |
| 2014 | University of Zurich, Institute of Psychology (Department of Motivation, Volition, and Emotion): Research Assistant |
| 2012 | Klinik Aadorf: Internship in clinical psychology |
| 2012 | University of Zurich, Institute of Psychology (Department of Psychopathology and Clinical Intervention): Research Assistant |

# 6 Appendix I

Table 1. Preliminary results of the HT-RCT.

| | INT | TAU | *p* -value |
|---|---|---|---|
| | *M (SD*) | *M (SD*) | |
| Hospital days | 31.7 (42.2) | 44.6 (51.2) | $p < .001$ |
| Total treatment days[a] | 40.5 (43.2) | 44.6 (51.2) | $p = .642$ |
| Number of admissions | 1.53 (0.93) | 1.50 (1.09) | $p = .254$ |
| Clinical outcome[b,c] | 9.8 (5.4) | 9.7 (5.9) | $p = .862$ |
| Satisfaction with care[b,d] | 0.78 (0.22) | 0.80 (0.20) | $p = .540$ |

[a]INT: hospital and HT days, TAU: hospital days.
[b]multiple treatment cases per patient were aggregated across all eligible and completed treatment cases per patient.
[c]Data available for $n = 396$ (INT) and $n = 279$ (TAU).
[d]Data available for $n = 244$ (INT) and $n = 152$ (TAU).

# 7 Appendix II

## 7.1 Study 1: Validity of Routine Clinical Diagnoses in Acute Psychiatric Inpatients

Eduard Zander[a], Lea Wyder[a,b], Martin grosse Holtforth[b,c], Ulrich Schnyder[d], Urs Hepp[e*], Niklaus Stulz[a,b]

[a]Psychiatric Services Aargau AG, [b]University of Bern, Department of Psychology, [c]Inselspital, Psychosomatic Competence Center, [d]University Hospital Zurich, Department of Psychiatry and Psychotherapy, [e]Integrated Psychiatric Services Winterthur – Zurcher Unterland

**Abstract**

Aim: To examine the validity of diagnoses obtained by clinicians during routine clinical examination on acute psychiatric inpatient wards.

Methods: N=100 inpatients with a broad spectrum of major mental disorders were randomly selected in a mental hospital's department of general psychiatry. Patients were diagnosed by independent assessors within *M*=5 (Range: 1-18) days of admission using the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID I) in order to examine the validity of the diagnoses given by the clinical staff based on routine assessments.

Results: The commonly used clinical examination technique had good overall agreement with the SCID I assessments regarding primary diagnoses at the level of main categories (F2, F30-31, F32-F33, F4; κ=0.65). However, agreement between routine clinical diagnoses and the SCID I diagnoses tended to be low for some specific mental disorders (e.g., depressive disorders) and for secondary diagnoses.

Conclusions: The validity of routine clinical diagnoses established in acute inpatient settings is limited and should be improved.

## 1. Introduction

Careful and sound diagnostic assessment of mental disorders according to the criteria of ICD-10 (World Health Organization, 1992), DSM-IV (American Psychiatric Association, 1994) or DSM-5 (American Psychiatric Association, 2013) is of crucial importance in psychiatric research and practice. Psychiatric diagnoses inform treatment decisions suggested by treatment guidelines for specific mental disorders (American Psychiatric Association, 2006), and they facilitate the communication between clinicians, researchers, and other stake holders such as health insurances or governmental health departments. With the implementation of Diagnoses-Related-Groups (DRG), accurate diagnostic procedures also gain importance regarding the reimbursement of (inpatient) mental health care in many countries (Drozd et al., 2006).

Comprehensive structured diagnostic interviews such as the SCID (First et al., 1997, 1994) are widely acknowledged as the “gold standard” for diagnostic assessment. However, they are often considered too time-consuming for everyday clinical practice and are therefore mainly used in the context of research (Rettew et al., 2009). In routine inpatient care, diagnoses are usually obtained by means of unstructured intake interviews. Despite their importance and far reaching implications, only few studies assessed the accuracy and validity of routine clinical diagnoses (Egan et al., 2003; Kashner et al., 2003; Ramirez Basco et al., 2000; Shear et al., 2000). Most related studies were either restricted to specific disorders (e.g., depression) or conducted in outpatient or community mental health settings. To our knowledge, there are only very few studies that examined the accuracy and validity of routinely assessed clinical diagnoses among inpatients in mental hospitals (Andreas et al., 2009; Miller et al., 2001; Steiner et al., 1995). These studies examined rather small samples of 53 to 56 inpatients, and thus provide limited informative value for agreement within diagnostic subgroups. Futhermore, Andreas et al. (2009) only included female patients from a psychotherapy ward with a markedly different diagnostic distribution compared to an acute inpatient setting.

The heterogeneous results of these studies point to the need for further validation of commonly used procedures for routine diagnostic assessment of mental disorders in inpatient settings (Andreas et al., 2009). Therefore, the aim of the current

study was to analyze the diagnostic agreement between routine clinical practices (techniques) and the diagnoses rendered by structured research interviews for the most common mental disorders in general psychiatric inpatient care.

## 2. Methods

### 2.1. Participants

Participants were inpatients on acute general psychiatry wards of a mental hospital in Switzerland. Further inclusion criteria were: aged 18-64 years, and one of the following primary routine clinical diagnoses according to ICD-10 (World Health Organization, 1992): schizophrenia, delusional, or other psychotic disorder (F2), mood (affective) disorder (F3), or anxiety, dissociative, stress-related, and somatoform disorder (F4). These are the most prevalent diagnoses in general psychiatry and restricting our analyses to these diagnoses ensured for sufficient sample sizes in diagnostic subgroups. In Switzerland, health insurances require diagnoses to be coded according to ICD-10, therefore our analyses rest upon F-codes of chapter V of the ICD-10. Exclusion criteria of the current study were secondary diagnoses of organic mental disorders (F0) or intellectual disabilities (F7).

### 2.2. Measures

The SCID I (First et al., 1997) is a standardized interview consisting of a screening section and a subsequent structured interview to diagnose major (DSM-IV Axis I) mental disorders (except for personality disorders) based on DSM-IV criteria (American Psychiatric Association, 1994). SCID I is a widely used interview schedule (usually considered the “gold standard” for DSM-IV Axis I disorders) with moderate to excellent inter-rater agreement of the Axis I disorders ($\kappa$=0.60 to 0.83) ( Lobbestael et al., 2011).

### 2.3. Procedures

Participants were randomly drawn from all patients who were admitted to one of seven acute general psychiatry wards (143 beds) of a Swiss mental hospital between January and September 2016. Attending psychiatrists and psychologists assigned clinical diagnoses according to ICD-10 (World Health Organization, 1992) to all patients at the day of admission as part of routine procedures. Clinical diagnoses were based on unstructured clinical interviews during routine clinical examination and, where available, on additional medical data and/or reports by

relatives of the patient. A senior psychiatrist supervised clinical assessments by resident psychiatrists and psychologists in routine daily case conferences.

Whenever the independent and blinded SCID I assessors had capacity to perform the next interview they contacted an independent member of the research team. This team member screened all newly admitted patients for eligibility and randomly drew the next SCID participants. On weekdays, these participants were randomly drawn from all new admissions of the prior day, except for Mondays when participants were drawn from all admissions of the last three days (i.e. Friday to Sunday).

A weighted random algorithm that accounted for different prevalence rates (baseline probabilities) of specific mental disorders in the hospital was used for patient selection. This aimed at attaining a disproportionally stratified sample with roughly equal numbers of patients in the following diagnostic groups (primary diagnoses) according to ICD-10: (a) F20, F23-F24; (b) F25, F30-F31; (c) F32-F33; and (d) F4. Patients with a routine clinical primary diagnosis of a bipolar affective disorder (F30-F31), for example, had a higher probability of being drawn for the study sample than patients with an unipolar affective disorder (F32-F33), since bipolar patients had been much less frequent (13.6%) in the past year than unipolar patients (30.9%).

The four diagnostic groups are equivalent to ICD-10 classifications except for group (b). We merged this residual category of schizoaffective (F25) and bipolar disorders (F30-F31) for two reasons: First, diagnostic reliability of schizoaffective disorder is generally poor, and the ongoing debate on nosology of this condition remains inconclusive in terms of an empirically supported allocation to either the psychotic or affective group of disorders (Jäger et al., 2011). Second, prevalence rates of schizoaffective and bipolar disorders are considerably lower than those of, e.g., schizophrenia or depression; through forming an additional subgroup we were able to ensure sufficient cell sizes.

SCID I interviews were conducted by a senior psychiatrist (E.Z.) and a postgraduate psychologist (L.W.). On average, the structured interviews were conducted within *Md*=4 days (Range: 1-11 days, $75^{th}$ percentile: <5 days) of the routine clinical assessment at intake. To accomodate patient resources, in 24 cases the structured assessment was split into two sessions. On average, these interviews

were completed within *Md*=5 days (Range: 2-18 days, 75$^{th}$ percentile: <6 days) of the initial routine clinical assessment.

Both interviewers had received extensive training on the SCID I prior to the study. Inter-rater reliability of the two SCID raters was calculated as follows: Nine interviews were videotaped and rated by the other interviewer. Due to the small number of cases, we analyzed the inter-rater reliability using the percentage of agreement for assigned primary SCID diagnoses, which resulted in an overall inter-rater agreement of $P_0$=77.8%. This figure complies with previously reported inter-rater reliability of the SCID ($P_0$=82%) (Ventura et al., 1998).

The current study was embedded into a larger home treatment research program (ClinicalTrials.gov: NCT02322437). It was approved by the local ethics committee and conducted according to the declaration of Helsinki. All patients gave written informed consent.

2.4. Data analysis

The structured research diagnoses were assessed using the SCID I (First et al., 1997) according to the criteria of DSM-IV (American Psychiatric Association, 2013), and the resulting diagnoses were subsequently translated into ICD-10 codes (World Health Organization, 1992) according to the rules given in the SCID I manual. The primary outcome of this study was the agreement between clinical diagnoses and structured research diagnoses, which was calculated using Cohen's κ (Cohen, 1960). Cohen's κ has proved the most preferred measure to determine diagnostic agreement, as it takes the agreement by chance into account by incorporating base rates of categories (Rettew et al., 2009). The κ coefficient determines agreement between two nominal scores (e.g. presence or absence for a diagnosis of schizophrenia for the same individual derived from one research and one clinical assessment). Cohen's κ ranges from -1.00 to +1.00; κ values are classified as poor (κ≤0.40), fair (0.41 to 0.59), good (0.60 to 0.74) and excellent κ≥0.75 agreement (Landis and Koch, 1977). Analyses were performed using SPSS, Version 21 (SPSS Inc., 2009).

## 3. Results

One hundred (57.1%) of the 175 randomly selected patients were interviewed using the SCID I. Reasons for non-participation were: patients' refusal to participate (*n*=39), an acute mental health state that did not allow for a structured clinical assessment (*n*=25), hospital discharge before the SCID could be performed (*n*=19), and other defined reasons (e.g., patients previously known to the interviewers; *n*=9). Participants did not differ significantly from non-participants with respect to sex (42.4% vs. 49.3% female; $X^2$=0.822, *p*=0.365), but they were younger than non-participants (*M*=38.1 vs. *M*=43.0 years; *U*=2926.00, *Z*=-2.391. *p*=0.017), and were less often diagnosed with psychotic disorders based on routine clinical diagnoses (28.0% vs. 52.0%; $X^2$=11.15, *p*=0.011). The final, disproportionally stratified sample consisted of *N*=100 patients (age: *M*=38.1 years, *SD*=13.0 years; 42% female), with roughly equal numbers of patients in the following clinically-derived diagnostic groups: schizophrenia, delusional or brief psychotic disorder (*n*=26; 26%); schizoaffective or bipolar affective disorders (*n*=21; 21%); depressive disorders (*n*=26; 26%); and anxiety or stress-related disorders (*n*=27; 27%). Of these N=100 patients, 74 were admitted on weekdays (*M*=14.8 per day) and 26 were admitted on weekends (*M*=13.0 per day). The average number of primary and secondary diagnoses per patient given after unstructured routine clinical interviews was *M*=1.36 (*SD*=0.87) and *M*=1.73 (*SD*=0.81) pursuant to SCID I assessments (*Z*=-3.491; *p*<0.001).

All diagnoses were specified on two levels, representing different degrees of diagnostic accuracy: on level 1, specific diagnoses were grouped on a relatively high level of abstraction based on shared predominant symptoms; e.g. schizophrenia, delusional, and schizoaffective disorders were grouped into psychotic disorders (Table 1). On level 1, overall diagnostic agreement between primary clinical diagnoses and primary SCID diagnoses was good (κ=0.65, 95% CI=0.54-0.77), with kappa values ranging from fair (κ=0.45) for anxiety and stress-related disorders to excellent (κ=0.88) for psychotic disorders (Table 1). The overall diagnostic agreement was only slightly higher (κ=0.71, 95% CI=0.60-0.81) if SCID assessors had used additional information from medical records to potentially modifiy their diagnostic classification. We therefore report SCID diagnoses without medical record

information only. When considering both primary and secondary diagnoses, diagnostic agreement within level 1 diagnostic groups ranged from κ=0.29 for anxiety and stress-related disorders to κ=0.88 for psychotic disorders (Table 2). Note that analyses within diagnostic groups were performed only for disorders that were diagnosed at least five times by both the clinicians and the SCID assessors (Lobbestael et al., 2011; Steiner et al., 1995).

At level 2, diagnostic agreement was analyzed for more specific categories of mental disorders; e.g., a single depressive episode was distinguished from a recurrent depressive disorder (Table 3). At this second level, the overall diagnostic agreement between clinically-derived and structured diagnoses was still fair (κ=0.59, 95% CI=0.49-0.70) for primary diagnoses, and it was again only slightly increased if SCID assesors had considered additional information from medical records (κ=0.65, 95% CI=0.55-0.75). Except for single depressive episodes (κ=0.39), diagnostic agreement was still fair (κ=0.55) to excellent (κ=0.83) for all remaining specific primary disorders at level 2 (Table 3). When also taking into account secondary diagnoses, diagnostic agreement between unstructured and sctructured clinical interviews ranged from κ=0.42 for depressive episodes and for reaction to severe stress and adjustment disorders, respectively, to κ=0.83 for bipolar mood disorders (Table 4).

## 4. Discussion

This study examined the agreement between clinical diagnoses derived from unstructured clinical interviews commonly used under routine inpatient conditions and the diagnoses generated by the SCID I in recently admitted psychiatric inpatients with a broad spectrum of specific mental disorders (ICD-10: F2-F4). Routine clinical interviews demonstrated a good overall agreement with SCID I assessments by independent raters regarding the main type of primary diagnosis (κ=0.65). Within these main diagnostic groups, diagnostic accuracy ranged from fair (κ=0.45) for anxiety and stress-related disorders (ICD-10: F4) to excellent (κ=0.88) for psychotic disorders (F2).

If more specific primary diagnoses or secondary diagnoses were considered, however, the diagnostic validity of unstructured routine interviews was found to be poor for single depressive episodes (F32; κ=0.39-0.42) and for anxiety and stress-related disorders (F4; κ=0.29-0.45). These results are in line with previous findings (Andreas et al., 2009; North et al., 1997; Shear et al., 2000; Steiner et al., 1995). The particularly low diagnostic sensitivity of routine clinical interviews to detect depressive episodes (sensitivity=0.50) and recurrent depressive disorders (sensitivity=0.52) suggests that some of the most prevalent conditions in psychiatric inpatients as well as in the general population are missed by unstructured diagnostic assessment techniques in almost half of the cases. In fact, the most frequent diagnostic discrepancy involved cases where clinicians in routine assessments diagnosed an adjustment disorder, while structured interviews resulted in a diagnosis of a depressive disorder (remarkably, more often recurrent than one single depressive episode) (Table 3). Hence, it seems that for patients presenting with depressive symptoms after a stressful life event, the reactive component of the mental disturbance often outweighed symptom severity in clinicians' judgment of the present primary diagnosis. Here, our results may reflect the more cross-sectional nature of clinical interviews under routine conditions, where the circumstances leading to hospital admission and clarification of treatment objectives are the focus of interest. By contrast, in structured interviews both current and past diagnostic information is extensively explored regardless of their immediate significance for treatment. As a

result, e.g., past depressive episodes may be detected more reliably when using a structured interview.

Similarly, co-morbid anxiety and stress-related disorders (sensitivity = 0.45) were also frequently missed by routine interviews. One further possible explanation for these findings could be the ubiquity of anxiety and depressive symptoms, which tend to occur in and are shared with various other mental disorders. Thus, without the guidance of a structured clinical interview, clinicians seem to frequently miss distinct anxiety and depressive disorders. Likewise in our sample, clinicians often missed co-morbid substance use disorders, and particularly cannabis use disorder, when relying on unstructured interviews (sensitivity = 0.46). Overall, SCID assessments rendered significantly more diagnoses per patient ($M$=1.73) than did unstructured clinical assessments ($M$=1.36, $p$<0.001).

For schizophrenia and bipolar mood disorders, the agreement between routine and structured clinical assessments was excellent (κ=0.79-0.83). The very salient and more distinctive symptomatology of these very severe mental disorders seems to facilitate the establishment of a valid diagnosis during routine clinical examinations. The diagnostic accuracy for schizophrenia and bipolar mood disorders tended to be even higher in our study than in previous research (North et al., 1997; Shear et al., 2000; Steiner et al., 1995). This may be explained by the fact that the majority of patients were emergency referrals presenting with manifest and very acute symptomatology at intake, potentially making diagnostic classification easier for clinicians than in previous studies where patients were typically recruited in less acute inpatient or outpatient settings (Andreas et al., 2009; Shear et al., 2000; Steiner et al., 1995).

Structured clinical interviews such as the SCID (Spitzer et al., 1992) are widely acknowledged as the “gold standard” for diagnostic assessment of mental disorders, particularly in research settings. Their usefulness for routine clinical practice has also been critized, however. They usually are too time consuming for everyday clinical practice, they still pose limitations regarding the interpretation of symptoms, and their strictly prescribed sequence of questions has been criticized to jeopardize the therapeutic alliance (Spitzer, 1983). Spitzer (1983) therefore proposed the *Longitudinal Expert Evaluation using all available Data* (LEAD) standard in order to

maximize the validity of psychiatric diagnoses. In fact, previous findings suggest that combining the SCID with additional information from medical records yields more accurate diagnoses than the structured interview alone (Ramirez Basco et al., 2000). In our study, however, agreement rates with unstructured clinical interviews did not improve markedly when the SCID diagnoses were refined after additionally considering all available information from the patient's medical history. For instance, the overall agreement regarding the primary diagnosis increased only slightly from κ=0.59 (95% CI=0.49-0.70) to κ=0.65 (95% CI=0.55-0.75) when enriching SCID data with information from medical records.

4.1. Limitations and further perspectives

Some limitations of our study merit attention: First, no validated German version of the SCID for DSM-5 (American Psychiatric Association, 2013) was available at the time when the study was conducted. We therefore used the SCID I for diagnosing DSM-IV disorders. DSM-IV diagnoses were then transfered to ICD-10 codes following manualized rules, as routine clinical diagnoses in the hospital were coded according to ICD-10. While this may be considered an important limitation of our study, there are no significant differences between DSM-IV and DSM-5 or between DSM-IV and ICD-10, respectively, regarding the diagnostic criteria of the major mental disorders examined in our study.

Second, we restricted our analyses to the most prevalent major mental disorders of general psychiatry (i.e., schizophrenia, affective disorders, and anxiety and stress-related disorders). Examining the diagnostic validity of routine diagnostic assessment techniques for e.g. substance use disorders or personality disorders should be the subject of further research.

Third, for some patients (*n*=13), no psychiatric diagnosis had been documented in their medical records at intake. These patients were excluded from our study since we aimed at examining the validity of the routine clinical diagnoses given at intake. Some patients (*n*=27) were excluded since they presented with very ambiguous symptoms at intake, which prevented resident physicians from making a diagnosis on the day of intake. The exclusion of these patients, as well as the

exlusion of patients for whom no structured assessment was possible within seven days of admission (e.g., due to a very severe mental disturbance) (*n*=25), might have biased our findings.

Fourth, whereas the diagnostic spectrum included in our study was representative for acute inpatients in general psychiatry, participants were significantly younger than non-participants. This may also limit the generalizability of our findings.

Finally, though the spreading of information about details of the ongoing study on diagnostic accuracy within the hospital was tried to keep as limited as possible, clinicians could still have become aware of it. This might have affected their behavior when assessing clinical diagnoses and hence may have impacted on the study results.

### 4.2. Conclusions

In summary, unstructured clinical interviews as usually conducted under routine inpatient conditions seem to provide valid diagnoses in terms of the main type of the primary mental disorder (F2, F3 and F4). However, regarding more specific primary diagnoses (e.g., F32 vs. F33) or secondary diagnoses, routine diagnostic assessment techniques tend to have poor agreement with SCID I assessments for some mental disorders. As sound and valid diagnoses may be clinically relevant for treatment courses and outcomes, further research should aim at refining strategies to improve the diagnostic process in acute inpatient settings.

**Conflict of interests**

None.

**Funding**

This study was funded by a grant from the Hugo & Elsa Isler foundation.

**References**

American Psychiatric Association, 2013. Diagnostic and statistical manual of mental disorders, 5th ed. APA, Washington, DC.

American Psychiatric Association, 2006. Practice guidelines for the treatment of psychiatric disorders. Arlington, VA.

American Psychiatric Association, 1994. Diagnostic and statistical manual of mental disorders, 4th ed. Washington, DC.

Andreas, S., Theisen, P., Mestel, R., Koch, U., Schulz, H., 2009. Validity of routine clinical DSM-IV diagnoses (Axis I/II) in inpatients with mental disorders. Psychiatry Research 170, 252–255. doi:10.1016/j.psychres.2008.09.009

Cohen, J., 1960. A Coefficient of Agreement for Nominal Scales. Educational and Psychological Measurement 20, 37–46. doi:10.1177/001316446002000104

Drozd, E., Cromwell, J., Gage, B., Maier, J., Greenwald, L.M., Goldman, H.H., 2006. Patient Casemix Classification for Medicare Psychiatric Prospective Payment. American Journal of Psychiatry 163, 724–732. doi:10.1176/appi.ajp.163.4.724

Egan, S., Nathan, P., Lumley, M., 2003. Diagnostic concordance of ICD-10 personality and comorbid disorders: a comparison of standard clinical assessment and structured interviews in a clinical setting. Australian and New Zealand Journal of Psychiatry 37, 484–491. doi:10.1046/j.1440-1614.2003.01226.x

First, M.B., Spitzer, R.L., Gibbon, M., Williams, J.B., 1997. Structured Clinical Interview for DSM-IV Axis I disorders (SCID I). New York.

First, M.B., Spitzer, R.L., Gibbon, M., Williams, J.B., Benjamin, L., 1994. Structured Clinical Interview for DSM-IV Axis II personality disorders (SCID II). New York.

Jäger, M., Haack, S., Becker, T., Frasch, K., 2011. Schizoaffective disorder - an ongoing challenge for psychiatric nosology. European psychiatry : the journal of the Association of European Psychiatrists 26, 159–165. doi:10.1016/j.eurpsy.2010.03.010

Kashner, M.T., Rush, A.J., Suris, A., Biggs, M.M., Gajewski, V.L., Hooker, D.J., Shoaf, T., Altshuler, K.Z., 2003. Impact of Structured Clinical Interviews on Physicians' Practices in Community Mental Health Settings. Psychiatric services 54, 712–718.

Landis, J.R., Koch, G.G., 1977. The measurement of observer agreement for categorical data. Biometrics 33, 159–174.

Lobbestael, J., Leurgans, M., Arntz, A., 2011. Inter-rater reliability of the Structured Clinical Interview for DSM-IV Axis I Disorders (SCID I) and Axis II Disorders (SCID II). Clinical Psychology & Psychotherapy 18, 75–79. doi:10.1002/cpp.693

Miller, P.R., Dasher, R., Collins, R., Griffiths, P., Brown, F., 2001. Inpatient diagnostic assessments: 1. Accuracy of structured vs. unstructured interviews. Psychiatry Research 105, 255–264. doi:10.1016/S0165-1781(01)00317-1

North, C.S., Pollio, D.E., Thompson, S.J., Ricci, D.A., Smith, E.M., Spitznagel, E.L., 1997. A Comparison of Clinical and Structured Interview Diagnoses in a Homeless Mental Health Clinic. Community Mental Health Journal 33, 531–543. doi:10.1023/A:1025052720325

Ramirez Basco, M., Bostic, J.Q., Davies, D., Rush, A.J., Witte, B., Hendrickse, W., Barnett, V., 2000. Methods to Improve Diagnostic Accuracy in a Community Mental Health Setting. American Journal of Psychiatry 157, 1599–1605. doi:10.1176/appi.ajp.157.10.1599

Rettew, D.C., Lynch, A.D., Achenbach, T.M., Dumenci, L., Ivanova, M.Y., 2009. Meta-analyses of agreement between diagnoses made from clinical evaluations and standardized diagnostic interviews. International journal of methods in psychiatric research 18, 169–184. doi:10.1002/mpr.289

Shear, M.K., Greeno, C., Kang, J., Ludewig, D., Frank, E., Swartz, H.A., Hanekamp, M., 2000. Diagnosis of Nonpsychotic Patients in Community Clinics. American Journal of Psychiatry 157, 581–587.

Spitzer, R.L., 1983. Psychiatric diagnosis: are clinicians still necessary? Comprehensive psychiatry 24, 399–411.

Spitzer, R.L., Williams, J.B., Gibbon, M., First, M.B., 1992. The Structured Clinical Interview for DSM-III-R (SCID). I: History, rationale, and description. Archives of general psychiatry 49, 624–629.

SPSS Inc., 2009. PASW Statistics for Windows.

Steiner, J.L., Tebes, J.K., Sledge, W.H., Walker, M.L., 1995. A comparison of the structured clinical interview for DSM-III-R and clinical diagnoses. Journal of Nervous and Mental Disease 183, 365–369.

Ventura, J., Liberman, R.P., Green, M.F., Shaner, A., Mintz, J., 1998. Training and quality assurance with the Structured Clinical Interview for DSM-IV (SCID-I/P). Psychiatry research 79, 163–173.

World Health Organization, 1992. The ICD-10 classification of mental and behavioural disorders. Geneva.

Table 1
Coefficients of agreement for grouped primary diagnoses (level 1) between nonstructured routine clinical interviews vs. SCID. (Diagnostic groups with n≥5 cases in both interview types only.)

| Diagnosis (ICD-10) | 2 x 2 Table a / c | b / d | Diagnostic sensitivity | Diagnostic specificity | PPV | NPV | Overall agreement | κ (95% CI) |
|---|---|---|---|---|---|---|---|---|
| Psychotic disorders (F2) | 25 | 3 | 0.93 | 0.96 | 0.89 | 0.97 | 0.95 | 0.88 (0.77-0.98) |
| | 2 | 70 | | | | | | |
| Bipolar mood disorders (F30-F31) | 16 | 3 | 0.89 | 0.96 | 0.84 | 0.98 | 0.95 | 0.83 (0.69-0.98) |
| | 2 | 79 | | | | | | |
| Unipolar depressive disorders (F32-F33) | 19 | 7 | 0.58 | 0.90 | 0.73 | 0.81 | 0.79 | 0.50 (0.31-0.68) |
| | 14 | 60 | | | | | | |
| Anxiety and stress-related disorders (F4) | 14 | 13 | 0.67 | 0.84 | 0.52 | 0.90 | 0.80 | 0.45 (0.25-0.66) |
| | 7 | 66 | | | | | | |

Notes: a = SCID (+) and routine clinical interview (+); b = SCID (−) and routine clinical interview (+); c = SCID (+) and routine clinical interview (−); d = SCID (−) and routine clinical interview (−); PPV = positive predictive value; NPV = negative predictive value.

Table 2
Coefficients of agreement for grouped primary and secondary diagnoses (level 1) between nonstructured routine clinical interviews vs. SCID. (Diagnostic groups with n≥5 cases in both interview types only.)

| Diagnosis (ICD-10) | 2 x 2 Table<br>a<br>c | <br>b<br>d | Diagnostic sensitivity | Diagnostic specificity | PPV | NPV | Overall agreement | κ (95% CI) |
|---|---|---|---|---|---|---|---|---|
| Substance use disorders (F1) | 12<br>14 | 2<br>72 | 0.46 | 0.97 | 0.86 | 0.84 | 0.84 | 0.51 (0.31-0.71) |
| Psychotic disorders (F2) | 26<br>2 | 3<br>69 | 0.93 | 0.96 | 0.90 | 0.97 | 0.95 | 0.88 (0.77-0.98) |
| Bipolar mood disorders (F30-F31) | 16<br>2 | 3<br>79 | 0.89 | 0.96 | 0.84 | 0.98 | 0.95 | 0.83 (0.69-0.98) |
| Unipolar depressive disorders (F32-F33) | 24<br>11 | 8<br>57 | 0.69 | 0.88 | 0.75 | 0.84 | 0.81 | 0.57 (0.40-0.74) |
| Anxiety and stress-related disorders (F4) | 19<br>23 | 10<br>48 | 0.45 | 0.83 | 0.66 | 0.68 | 0.67 | 0.29 (0.11-0.48) |

Notes: a = SCID (+) and routine clinical interview (+); b = SCID (−) and routine clinical interview (+); c = SCID (+) and routine clinical interview (−); d = SCID (−) and routine clinical interview (−); PPV = positive predictive value; NPV = negative predictive value.

Table 3
Coefficients of agreement for specific primary diagnoses (level 2) between nonstructured routine clinical interviews vs. SCID. (Diagnostic groups with n≥5 cases in both interview types only.)

| Diagnosis (ICD-10) | 2 x 2 Table a c | b d | Diagnostic sensitivity | Diagnostic specificity | PPV | NPV | Overall agreement | κ (95% CI) |
|---|---|---|---|---|---|---|---|---|
| Schizophrenia (F20) | 18<br>1 | 6<br>75 | 0.95 | 0.93 | 0.75 | 0.99 | 0.93 | 0.79 (0.07-0.65) |
| Bipolar mood disorders (F31) | 16<br>2 | 3<br>79 | 0.79 | 0.96 | 0.84 | 0.98 | 0.95 | 0.83 (0.69-0.98) |
| Depressive episode (F32) | 4<br>4 | 6<br>86 | 0.50 | 0.93 | 0.40 | 0.96 | 0.90 | 0.39 (0.09-0.69) |
| Recurrent depressive disorders (F33) | 13<br>12 | 3<br>72 | 0.52 | 0.96 | 0.81 | 0.86 | 0.85 | 0.55 (0.35-0.74) |
| Reaction to severe stress, and adjustment disorders (F43) | 12<br>3 | 11<br>74 | 0.80 | 0.87 | 0.52 | 0.96 | 0.86 | 0.55 (0.35-0.74) |

Notes: a = SCID (+) and routine clinical interview (+); b = SCID (−) and routine clinical interview (+); c = SCID (+) and routine clinical interview (−); d = SCID (−) and routine clinical interview (−); PPV = positive predictive value; NPV = negative predictive value.

Table 4
Coefficients of agreement for specific primary and secondary diagnoses (level 2) between nonstructured routine clinical interviews vs. SCID. (Diagnostic groups with n≥5 cases in both interview types only.)

| Diagnosis (ICD-10) | 2 x 2 Table a c | b d | Diagnostic sensitivity | Diagnostic specificity | PPV | NPV | Overall agreement | κ (95% CI) |
|---|---|---|---|---|---|---|---|---|
| Mental and behavioural disorders due to use of cannabinoids (F12) | 7<br>9 | 2<br>82 | 0.44 | 0.98 | 0.78 | 0.90 | 0.89 | 0.50 (0.13-0.25) |
| Schizophrenia (F20) | 19<br>1 | 6<br>74 | 0.95 | 0.93 | 0.76 | 0.99 | 0.93 | 0.80 (0.66-0.94) |
| Bipolar mood disorders (F31) | 16<br>2 | 3<br>79 | 0.89 | 0.96 | 0.84 | 0.98 | 0.95 | 0.83 (0.69-0.98) |
| Depressive episode (F32) | 5<br>3 | 7<br>85 | 0.63 | 0.92 | 0.42 | 0.97 | 0.90 | 0.42 (0.13-0.70) |
| Recurrent depressive disorders (F33) | 14<br>12 | 4<br>70 | 0.54 | 0.95 | 0.78 | 0.85 | 0.84 | 0.54 (0.34-0.73) |
| Reaction to severe stress, and adjustment disorders (F43) | 12<br>7 | 13<br>68 | 0.63 | 0.84 | 0.48 | 0.91 | 0.80 | 0.42 (0.21-0.63) |

Notes: a = SCID (+) and routine clinical interview (+); b = SCID (−) and routine clinical interview (+); c = SCID (+) and routine clinical interview (−); d = SCID (−) and routine clinical interview (−); PPV = positive predictive value; NPV = negative predictive value.

## 7.2 Study 2: How does home treatment work out in practice? A qualitative study among patients, relatives, and staff [Wie gelingt Home Treatment in der Praxis? Eine qualitative Studie unter Einbezug von Patienten, Angehörigen und Mitarbeitenden]

Lea Wyder[a,b], Celia Fawcett[c], Urs Hepp[d], Martin grosse Holtforth[b,e], Niklaus Stulz[a,b]

[a]Psychiatrische Dienste Aargau AG, [b]Universität Bern, Abteilung für Klinische Psychologie und Psychotherapie, [c]Universität Zürich, Medizinische Fakultät, [d]Integrierte Psychiatrie Winterthur – Zürcher Unterland, [e]Inselspital, Kompetenzzentrum für Psychosomatik

**Zusammenfassung**

Ziel der Studie: Identifikation von Wirkmechanismen und von Faktoren für eine erfolgreiche Umsetzung von Home Treatment (HT) aus Stakeholder-Sicht.

Methoden: Thematische Analyse halbstrukturierter Interviews mit Patienten, Angehörigen und Mitarbeitenden, Online-Umfrage mit Mitarbeitenden.

Ergebnisse: 25 Interviews und 70 Fragebögen wurden analysiert.

Schlussfolgerung: Zentrale Themen sind: Individualisierung und Alltagsnähe der Behandlung, Behandlungskonzept, sowie Anforderungen. Herausforderungen für die Umsetzung betreffen Indikationsstellung, Zuweisungszeitpunkt und Verantwortungsübernahme.

**Abstract**

Objective: To identify effective components of home treatment (HT) and to evaluate the implementation of a new HT team from a service user perspective.

Methods: Experiences of patients, relatives and staff were assessed using semi-structured interviews and an online questionnaire. Thematic analysis was applied to determine key themes.

Results: 25 interviews and 70 questionnaires were analysed. Four key themes emerged: individualisation, proximity to daily life, conceptual aspects, and requirements (for patients and for the service model). Major challenges for the implementation of HT were the suitability for HT, time of referral to HT, and handing over of responsibility from hospital staff to the HT team.

Conclusion: Essential requirements for HT are no-harm agreements, patients' ability to maintain daily routines, and shared responsibility between patients and staff. Implementing HT within an existing care system should be accompanied by sufficient information on the new service model for other service providers involved. This may be achieved through HT team members visiting hospital wards and outpatient facilities, illustrating functioning and limitations of HT using case reports.

## Einleitung

### Hintergrund

Psychiatrisches Home Treatment (HT) umfasst die tägliche, wohnfeldbasierte, rund um die Uhr verfügbare und zeitlich begrenzte Behandlung von krisenhaft erkrankten Menschen durch ein multiprofessionelles Team [1,2]. Das HT fokussiert in akuten Krankheitsphasen auf Krisenintervention, Medikation und Gespräche unter unmittelbarem Einbezug des sozialen Umfelds und stellt somit eine Alternative zum stationären Aufenthalt dar [2,3].

### Evidenz und Wirksamkeit

Im angelsächsischen Raum findet das HT-Konzept bereits seit 15 Jahren weite Verbreitung [4]. Dabei zeigte sich, dass HT die Anzahl stationärer Wiedereintritte sowie die Anzahl stationärer Behandlungstage senken und Behandlungsabbrüche reduzieren kann [5]. Weiter berichten Angehörige von HT-Patienten eine tiefere Belastung, und sowohl HT-Patienten als auch deren Angehörige geben eine höhere Behandlungszufriedenheit an als ausschließlich stationär behandelte Vergleichsgruppen [5].

Zu den Wirkfaktoren von HT werden u.a. regelmäßige Hausbesuche, die gemeinsame Verantwortung für die psychiatrische und die soziale Versorgung, längere Servicezeiten als Institutsambulanzen, das Vorhandenseins eines Psychiaters im Team, die Arbeitserfahrung und das Engagement von Mitarbeitenden, sowie die intensive Vernetzung mit weiteren psychiatrischen Angeboten gezählt [6–8]. Qualitative Untersuchungen identifizieren aus der Nutzer-Sicht folgende drei zentrale Aspekte: Niederschwelliger Zugang/rasche Verfügbarkeit, „als Mensch verstanden zu werden“ und der Umgang mit Krisen im Alltagskontext [9].

International zeigt sich eine erhebliche konzeptuelle Heterogenität von Modellen zur häuslichen Akutbehandlung [1,5,10] und die Nachhaltigkeit neuer HT-Angebote bedarf generell weiterer Erforschung [11]. Im deutschsprachigen Raum beschränkt sich der Implementierungsstand von HT bisher auf wenige Modellprojekte [12–15], was vorwiegend in der streng sektorisierten Finanzierung (ambulant vs. stationär) begründet liegt [16]. Mit der 2016 in Deutschland geschaffenen

gesetzlichen Grundlage für die „stationsäquivalente Behandlung“ ist die Implementierung von HT in die psychiatrische Grundversorgung einen Schritt voran getreten [17]. Es stellt sich nun die Herausforderung, dass eine solche Systemintervention Zielkonflikte hervorruft, da Kompetenzen bestehender Versorgungsanbieter tangiert werden und Anpassungen von klinischen Arbeitsprozessen erforderlich werden [17,18]. Aktuell besteht ein Bedarf an praxisorientierten Studien, die eine nachhaltige Umsetzung von HT aufzeigen. Neben quantitativen Wirksamkeitsnachweisen sollte die Etablierung des HT auch von qualitativen Erkenntnissen aus der Nutzerperspektive begleitet werden. Diese Herangehensweise stützt sich auf Bestrebungen der WHO, die Neu-/Weiterentwicklung von wirksamen und bedürfnisangepassten Behandlungsangeboten durch Einbinden der *Service-User* zu optimieren [19–21].

## Zielsetzung

Die vorliegende Studie untersuchte Wirkmechanismen des HT aus Sicht verschiedener Stakeholder. Es wurden Erfahrungsberichte von Patienten, Angehörigen und Mitarbeitenden integriert (Teilstudie 1). Weiter wurde die klinikinterne Implementierung des HT-Angebots aus Sicht von Klinik- und HT-Mitarbeitenden qualitativ evaluiert (Teilstudie 2).

## Fragestellungen

Teilstudie 1 – Interviews mit Patienten, Angehörigen und Mitarbeitenden

- Wie wirkt HT?
- Was sind Vor- und Nachteile von HT im Vergleich zur stationären Behandlung?

Teilstudie 2 – Mitarbeiterumfrage zur Etablierung des HT-Angebots

- Was sind spezifische Herausforderungen für eine erfolgreiche Zusammenarbeit zwischen Klinikmitarbeitenden und HT-Team?
- Für welche Patienten und in welchen Situationen ist das HT ein geeignetes (bzw. ungeeignetes) Behandlungsmodell?
- Gibt es strukturelle Verbesserungsmöglichkeiten?

## Methoden

### Rahmendaten

Das HT-Angebot der Psychiatrischen Dienste Aargau (PDAG) wurde 2015 im Rahmen eines dreijährigen Pilotprojekts eingeführt und anhand einer randomisierten, kontrollierten Begleitstudie evaluiert (ClinicalTrials.gov: NCT02322437). Es wurden ausschließlich Patienten im HT behandelt, die folgende Einschlusskriterien erfüllten: Alter zwischen 18-64 Jahren, ICD-10-Hauptdiagnose F2-F6, F8-F9, fester Wohnsitz in weniger als 30 Minuten von der Klinik erreichbar und ausreichende Deutschkenntnisse. Ausschlusskriterien waren Alkohol-, Kokain- oder Opioidabhängigkeit, organische psychiatrische Störungen sowie Intelligenzminderung.

Patienten wurden dem HT-Team entweder direkt vom klinikinternen Triagezentrum nach Feststellung einer stationären Behandlungsbedürftigkeit zugewiesen [22], häufiger aber erst nach einigen Tagen stationärer Stabilisierung (z.B. bei akuter Suizidalität) von den Klinikstationen überwiesen. Zeitgleich konnten ca. 12 Patienten im HT behandelt werden. An Wochentagen fand täglich ein Patientenrapport im Team statt. In Notfällen war der HT-Bereitschaftsdienst rund um die Uhr telefonisch erreichbar und bei Bedarf innerhalb von 30 Minuten vor Ort. Das HT-Team der PDAG bestand aus Ärzten, Psychologen, Pflegefachpersonen, einer Sozialarbeiterin und einer Teamassistentin. Hausbesuche fanden an mindestens sechs Tagen pro Woche statt, mit zusätzlicher Möglichkeit von Telefonkontakten. Inhalte des HT waren die medikamentöse Einstellung, psychotherapeutische Interventionen im Einzel-, Paar- oder Familiensetting, Beratung und Begleitung in sozialen Angelegenheiten, sowie die Vermittlung von geeigneten Anschlusslösungen.

### Durchführung und Design

Die Datenerhebung der qualitativen Untersuchung erfolgte von Mai bis Dezember 2016. Um die Repräsentativität der Stichprobe zu erhöhen, wurden alle Interviewpartner gemäß einer *Purposive Sampling-Strategie* [23] ausgewählt. Es wurden sowohl HT-Patienten als auch Klinikpatienten die ein HT abgelehnt hatten, interviewt, um möglichst unterschiedliche Perspektiven bezüglich wahrgenommener

Vor-/ und Nachteile des HT abzudecken. Zudem wurden HT- und Klinikmitarbeitende befragt. Angehörige wurden nur nach Zustimmung der jeweiligen Patienten kontaktiert. Die Studie wurde von der zuständigen Ethikkommission genehmigt (EKNZ 2015-041). Alle Teilnehmenden wurden über Sinn und Zweck der Befragung aufgeklärt und unterzeichneten eine informierte Einwilligungserklärung.

Instrumente und Datenerhebung

Die Interviewleitfäden wurden in Anlehnung an bestehende Literatur [24–26] eigens für die vorliegende Studie konzipiert. Inhaltlich wurden folgende Themen integriert: Behandlungszufriedenheit und -qualität, Wirkmechanismen von HT, Vor-/Nachteile von HT im Vergleich zur Krankenhausbehandlung, sowie die Beurteilung struktureller Bestandteile und Abläufe des HT. In die Entwicklung des Online-Fragebogens wurden Erkenntnisse aus den vorangegangenen Interviews integriert. Beide Instrumente wurden im Forschungsteam umfassend besprochen und schrittweise revidiert. Die Interviews wurden in der Klinik, bei Patienten/Angehörigen zu Hause, oder an deren Arbeitsplatz durchgeführt, auf Tonband aufgezeichnet und anschließend transkribiert. Soziodemographische Daten der Patientenstichprobe wurden dem Klinikinformationssystem entnommen.

Datenanalyse

Zur Auswertung der Interviews erfolgte eine Thematische Analyse [27] mittels der Software MAXQDA [28]. Dieses Verfahren ermöglicht die Erarbeitung eines Codierschemas durch Kombination deduktiver und induktiver Vorgehensweisen. Demnach flossen potentiell wichtige Themen (theorie- und literaturbasiert) in die Leitfadenkonstruktion ein, wobei mögliche Codes bereits notiert wurden. L.W. und C.F. führten alternierend die Codierung je der Hälfte der Transkripte durch und überprüften die Codierung der jeweilig anderen Hälfte, abweichende Zuordnungen wurden konsensuell überarbeitet. Die Codes und deren Zuordnungen zu Textstellen wurden so laufend revidiert und anhand von (Sub-)Themen verfeinert. Abschließend wurde die Themenstruktur und die Reduktion auf vier zentrale Themen im Forschungsteam diskutiert und konsensuell beschlossen. Die Auswertung des Online-Fragebogens erfolgte deskriptiv.

## Resultate

Teilstudie 1 – Stichprobe und thematische Analyse der Interviews

Insgesamt wurden 25 Interviews à 15–60 Minuten durchgeführt, darunter 11 mit Patienten (6 HT-Patienten und 5 Klinikpatienten, Tab. 1), 4 mit Angehörigen und 10 mit Mitarbeitenden (je 5 HT- und 5 Klinikmitarbeitende, darunter 3 Ärztinnen, 2 Psychologinnen und 5 Pflegefachpersonen). Die thematische Analyse resultierte in vier zentralen Themen: Individualisierung, Alltagsnähe, Behandlungskonzept und Anforderungen (Abb. 1).

Thema 1 – Individualisierung

Das Empfangen von Fachpersonen im privaten Wohnraum führte zu Offenheit; Gespräche fanden rasch auf einer persönlichen Ebene statt und *Patienten* fiel es einfacher, Vertrauen in die Behandelnden zu fassen, als im Krankenhaus. Allerdings stellte dieser Eingriff in die Privatsphäre für einige Patienten auch einen Grund zur Ablehnung des HT dar.

Die Therapiebeziehung im HT wurde durch Begegnungen auf Augenhöhe geprägt, was beidseitig geschätzt wurde. Für *Mitarbeitende* war es dabei sehr anspruchsvoll, in diesem kollegialen Rahmen Professionalität und Abgrenzung aufrechtzuerhalten.

> *Man ist eine Fachperson, die respektiert wird, aber man ist Gast bei den Menschen zuhause. Sie machen die Hausregeln. In der Klinik gelten die Stationsregeln, da ist es genau umgekehrt. (HT-Mitarbeitende)*

Das HT konnte flexibel auf individuelle Bedürfnisse abgestimmt werden. Hausbesuche konnten auch in Form von Aktivierung (Spaziergänge) oder Exposition im öffentlichen Raum stattfinden. Die Behandlung zuhause wurde von beiden Seiten als intensiv erlebt, *Patienten* schätzten es, täglich eine Stunde lang ungestört Gespräche führen zu können.

> *Man hat weniger das Gefühl, einer unter vielen zu sein. Auch wenn das natürlich so ist, aber man spürt es weniger. Man kann sich fokussieren, ist weniger unter Stress vorwärts zu machen. [...] In dieser Stunde ist dann nichts anderes. (HT-Patient)*

*Mitarbeitende* forderte diese Intensität in ihrer täglichen Arbeit, sie sahen auch den Behandlungsprozess davon geprägt.

> *Die Behandlung ist zwar einseitig [v.a. verbale, wenig nonverbale Elemente], aber es finden ca. 6 Stunden Gespräche statt pro Woche, plus manchmal noch Therapieaufgaben, die wir dann wieder anschauen. Das ist intensiv, und das beschleunigt den Heilungsprozess oftmals. (HT-Mitarbeitende)*

Thema 2 – Alltagsnähe

*Patienten* und *Angehörige* sahen das gewohnte Umfeld (u.a. Schlafen im eigenen Bett, Anwesenheit von vertrauten Menschen und Haustieren, Aufrechterhaltung alltäglicher Aktivitäten) als zentralen Faktor für einen positiven Genesungsverlauf

> *Ich bin hier zuhause, kann so sein wie ich bin und fühle mich wohl, das hilft mir sehr. (HT-Patientin)*

Die zielgerichtete Unterstützung in sozialen Belangen bedeutete für *Patienten* und *Angehörige* eine wichtige Hilfe. *Mitarbeitende* konnten die psychosoziale Situation direkt vor Ort beurteilen, was eine detaillierte Einschätzung vorhandener Problembereiche und Ressourcen erlaubte. Familien-/Paargespräche konnten unmittelbar organisiert, und Patienten zu Arbeitgebergesprächen direkt an den Arbeitsplatz begleitet werden. Die Organisation einer individuell abgestimmten Nachsorge erforderte seitens der *Mitarbeitenden* Expertise bezüglich ambulanter Unterstützungsangeboten und eine intensive Vernetzungstätigkeit.

*Angehörige* wurden oft in die Behandlung miteinbezogen, was von allen Seiten als Bereicherung erlebt wurde. Die Begegnung mit den Fachpersonen auf Augenhöhe, die leichte Erreichbarkeit, und die fachliche und emotionale Unterstützung wurde von Angehörigen geschätzt.

> *Es gab eine Erleichterung. [...] Sonst hatte ich das Gefühl, dass ich alleine verantwortlich bin, es wurde mir eine Last abgenommen. [...] Ich musste nicht ständig besorgt sein, mich fragen wie es ihm geht. Ich wusste ja, dass jemand vorbeikommt. (Angehörige)*

*Alle Stakeholder* schrieben dem HT Potential zur Entstigmatisierung der Psychiatrie zu und begründeten dies im niederschwelligen Zugang zur fachgerechten Behandlung und der unmittelbaren Nähe zur Lebensrealität im Vergleich zur oft als

fremd empfundenen  Klinikumgebung. *Mitarbeitende* beurteilten das HT daher gerade für Patienten, welche Angst vor der Klinik oder schlechte Erfahrungen damit gemacht hatten, als geeignete Behandlungsalternative.

Thema 3 – Behandlungskonzept

*Patienten* und *Angehörige* fühlten sich durch die jederzeitige Erreichbarkeit des Teams und die zuverlässige Kommunikation gut aufgehoben.

> *Wenn ich an einem Tag mit einer Person etwas besprochen hatte, war dies am nächsten Tag schon zur nächsten Person kommuniziert, das war sehr gut für mich. (HT-Patient)*

Trotz Fallführungssystem und möglichst konstanter Bezugsperson wurde der Personalwechsel von *Patienten* als schwierig empfunden, es brauchte Überwindung eine weitere fremde Person in die eigenen vier Wände zu lassen und sich erneut zu öffnen. Einige Patienten sahen dies aber auch als Übungsfeld oder nahmen die unterschiedlichen Arbeitsweisen der Mitarbeitenden als Bereicherung wahr. Bedauert wurde hingegen das Fehlen stützender Kontakte zu Mitpatienten.

*Mitarbeitende* sahen ihre tägliche Arbeit durch viel Eigenverantwortung geprägt, was eine selbständige Arbeitsweise und Kreativität zuließ. Infolgedessen berichteten die Mitarbeitenden ein hohes persönliches Engagement. Ebenfalls beschrieben sie ein Gefühl der Verbundenheit zu den Patienten, welches aufgrund der unmittelbaren Nähe zu deren Alltagsleben entstand. Jedoch bedauerten die Mitarbeitenden die spärlichen Möglichkeiten zum persönlichen Kontakt innerhalb des Teams, da außerhalb von Rapporten und Teamsitzungen wenig räumliche Nähe und Zeit für informellen Austausch blieb. Von allen Beteiligten wurde der Wunsch nach längeren Behandlungsepisoden geäußert, spezifisch wurde ein schrittweises „Ausschleichen“ der Hausbesuche gewünscht.

Thema 4 – Anforderungen

Eine HT-Behandlung bedingte seitens *Patienten* die Fähigkeit zur Selbstverantwortung (Absprachefähigkeit bezüglich Selbst- und Fremdgefährdung). Auch *Angehörige* übernahmen häufig mehr Verantwortung und erfuhren kurzfristig eine geringere Entlastung als bei einem Klinikaufenthalt. *Patienten* und *Angehörige* benötigten die Gewissheit, dass immer jemand erreichbar ist, denn schützende

Funktionen der Klinik fielen im HT für alle Beteiligten in einer kritischen Phase der Krankheit weg. *Mitarbeitende* sahen die teilweise Verantwortungsübergabe an Patienten als eine Herausforderung, welche viel Fingerspitzengefühl erforderte und oft anspruchsvolle Entscheidungen beinhaltete.

> *Die Absprachefähigkeit [...] da sind Grenzen [des HT], wenn jemand nicht erreichbar ist, nicht lenkbar, das geht nicht. Dort wo ich im stationären Bereich an eine Abschirmung zu denken beginnen würde, das sind Indikatoren auf die ich schaue. Teilweise muss man es einfach ausprobieren. (HT-Mitarbeitender)*

*Patienten*, welche sich für eine Behandlung zuhause entschieden hatten, schätzten die Freiheit und Autonomie, die sie im HT genossen, sie fühlten sich weniger bevormundet und konnten mehr selbst entscheiden. Während dem HT eine eigene Tagesstruktur aufrechtzuerhalten wurde von Patienten als Herausforderung erlebt und stellte mit das größte Hindernis dar, das HT überhaupt in Anspruch zu nehmen.

> *Es ist hier [in der Klinik] nicht so anstrengend, man kann es sich hier gemütlich machen, es ist nicht wie arbeiten, aber hier zwingen sie mich in die Therapien zu gehen, ich muss nicht alles selber entscheiden. Ich werde geweckt am Morgen, dann gibt es Sitzung um 8 Uhr, obligatorisch. Und dann gehe ich in die Therapie, so schaffe ich es auch regelmäßig zu essen und weniger zu rauchen. (Klinikpatientin)*

Teilstudie 2 – Stichprobe und Ergebnisse der Mitarbeiterumfrage

Zur Teilnahme an der Online-Fragebogenstudie wurden alle 219 Mitarbeitenden der allgemeinpsychiatrischen Abteilungen per E-Mail eingeladen. 70 (32.0%) füllten den Fragebogen zumindest teilweise aus, davon waren 48 (68.8.%) vollständig. Die 22 unvollständigen Fragebögen unterschieden sich in keiner Variable von den kompletten und wurden daher mit ausgewertet. Insgesamt nahmen 3 Ärzte, 11 Psychologen, 41 Pflegefachpersonen sowie 15 Personen weiterer Berufsgruppen (z.B. Sozialdienst, Fachtherapeuten) an der Befragung teil, 11 (15.7%) der Fragebögen stammten von Mitarbeitenden des HT.

In Tab. 2 werden die Antworten der Klinikmitarbeitenden denen der HT-Mitarbeitenden gegenübergestellt. Das größte Konfliktpotential für eine gute Zusammenarbeit sahen Klinikmitarbeitende in der Indikationsstellung für HT. Während die Einplanung der HT-Option in den stationären Behandlungsprozess und der optimale Verlegungszeitpunkt (von Station ins HT) von beiden Seiten als große Herausforderungen eingestuft wurde. Das HT wurde von Mitarbeitenden besonders für Patienten mit einem stabilen Umfeld und/oder kleinen Kindern zuhause als sinnvolle Behandlungsoption gesehen. Hingegen wurden als Kontraindikation fehlende Absprachefähigkeit bezüglich Selbst-/Fremdgefährdung, Abhängigkeitserkrankungen, sowie eine problematische Wohnsituation oder Verwahrlosung genannt.

Strukturelle Verbesserungsmöglichkeiten verorteten sowohl HT- als Klinikmitarbeitende insbesondere in der früheren Triagierung von Patienten (im Sinne von direkten Zuweisungen ins HT ohne „Umweg“ über vorausgehende Aufnahmen auf Klinikstationen). Allgemein wurden von beiden Seiten besser funktionierende Prozesse gewünscht, u.a. durch bessere Kommunikation, mehr Austausch über Behandlungsverläufe, mehr Informationen über das HT-Behandlungskonzept und den Arbeitsalltag im HT sowie persönlichem Kennenlernen der HT-Mitarbeitenden. Als zukünftige Erweiterung des HT wurden ein vielfältigeres Therapieangebot (Ergo-/Kunsttherapie oder ein Gruppenangebot), sowie die nationale Vernetzung von HT-Mitarbeitenden verschiedener Projektteams zwecks Erfahrungsaustausch und Weiterbildung vorgeschlagen.

## Diskussion

Drei der in dieser Studie identifizierten, zentralen Themen (Individualisierung, Alltagsnähe und Behandlungskonzept) greifen bereits früher genannte wichtige HT-Komponenten auf. Diese umfassen u.a. die gewohnte Umgebung, den persönlichen Zugang zum Behandlungsteam, regelmäßige/ungestörte Gespräche, Kommunikation auf Augenhöhe, Miteinbezug bei Entscheidungen, Einbezug von Angehörigen und die Vernetzung mit anderen sozialpsychiatrischen Akteuren [9,24,29–31]. Darüber hinaus beschreibt das vierte zentrale Thema (Anforderungen) Aspekte, welche für das Gelingen von HT von hoher Relevanz sind: Im HT fällt der stabilisierende Rahmen der Klinik weg, zentral ist daher aus Sicht von Patienten und Angehörigen die „Gewissheit, dass jederzeit jemand erreichbar ist“. Dies wurde unabhängig davon berichtet, ob die Möglichkeit einer notfallmäßigen Kontaktaufnahme genutzt worden war. Die Sensibilisierung und Schulung von HT-Mitarbeitenden für in diesem Setting besondere Anforderungen bezüglich Verantwortung und Sicherheit stellen eine neue fachliche Herausforderung dar [18]. Aus der Perspektive der Mitarbeitenden gliedern sich Anforderungen auf zwei Ebenen. Diese betreffen (1) das Zustandekommen und (2) die Aufrechterhaltung von HT: (1) Für das Zustandekommen des HT stellen eine passende Zuweisung und die Absprachefähigkeit der Patienten die Grundvoraussetzungen dar. Erkenntnisse aus der Mitarbeiterumfrage verdeutlichen die Komplexität dieser Grundvoraussetzungen: Die HT-Indikationsstellung wird von den Klinikmitarbeitenden als größte Herausforderung gesehen. Es ist für sie schwierig abzuschätzen, welches Maß an psychischer Instabilität im Rahmen einer Behandlung zuhause tragbar ist und zu welchem Zeitpunkt eine Zuweisung zum HT (schon oder noch) angezeigt ist. Folglich wünschen sich die Klinikmitarbeitenden möglichst anschauliche Informationen über das HT-Konzept (z.B. anhand von Fallberichten), über den Arbeitsalltag im HT, sowie ein persönliches Kennenlernen der HT-Mitarbeitenden. Für HT-Mitarbeitende wiederum ist es wichtig, umfassende Informationen zum Krankheits-/Behandlungsverlauf des unmittelbar vorangegangenen stationären Aufenthaltes zu erhalten, um eine reibungslose Übernahme und weiterführende Behandlung zu gewährleisten. (2) Für die Aufrechterhaltung einer HT-Behandlung setzt das HT-Team von den Patienten die Fähigkeit zur Tagesstrukturierung (unterstützt durch Wochenpläne und

Aktivitätenlisten) und zum Mittragen von Verantwortung voraus. Treffenderweise wurde die (fehlende) Fähigkeit zur eigenständigen Tagesstrukturierung auch von jenen Klinikpatienten hervorgehoben, welche sich gegen ein HT entschieden hatten.

Einschränkungen

Die vorliegende Befragung umfasste lediglich Stakeholder eines einzelnen HT-Projekts. Es bleibt daher unklar, welche Aspekte spezifisch für das hiesige Angebot sind. Außerdem befindet sich das untersuchte HT-Modell in einem anhaltenden Etablierungsprozess. Gerade die Herausforderungen bezüglich Zusammenarbeit mit bestehenden Versorgungsanbietern verändern sich mit steigendem Bekanntheitsgrad des HT. Die vorliegende Studie lieferte dennoch wichtige Erkenntnisse, die spezifisch für die Anfangsphase der Implementierung eines neuen Behandlungsangebots von Nutzen sein können.

**Konsequenzen für Klinik und Praxis**

- Klinikinterne Herausforderungen bezüglich HT sind die Indikationsstellung, Zuweisung (Zeitpunkt) und Verantwortungsübernahme/-gabe.
- Auf Patientenebene sind die Voraussetzungen für HT eine ausreichende Absprachefähigkeit, selbständige Tagesstrukturierung und das Mittragen von Verantwortung.
- Die Etablierung eins neuen HT-Angebots sollte von umfassenden Informationen begleitet werden (Vorstellen des HT durch HT-Mitarbeitende auf/in Klinikstationen/Ambulanzen, Veranschaulichung des HT-Behandlungsalltags, z.B. anhand von Fallvignietten, Möglichkeit zum tageweisen Hospitieren)

**Danksagung**

Herzlichen Dank an alle Studienteilnehmende sowie an das HT-Team für Ihren täglichen engagierten Einsatz.

**Interessenskonflikte**

Keine.

## Literatur


[1] Berhe T, Puschner B, Kilian R, Becker T. „Home treatment“ für psychische Erkrankungen. Nervenarzt 2005; 76: 822–831

[2] Burns T, Knapp M, Catty J, Healey A, Henderson J, Watt H, Wright C. Home treatment for mental health problems: a systematic review. NIHR Health Technology Assessment Programme, 2001

[3] Thornicroft G, Tansella M. Components of a modern mental health service: a pragmatic balance of community and hospital care: overview of systematic evidence. Brit J Psychiat 2004; 185: 283–290

[4] Hubbeling D, Bertram R. Crisis resolution teams in the UK and elsewhere. J Ment Health 2012; 21: 285–295

[5] Murphy SM, Irving CB, Adams CE, Wagar M. Crisis intervention for people with severe mental illnesses. Cochrane Db Syst Rev 2015; 12: CD001087

[6] Catty J, Burns T, Knapp M, Watt H, Wright C, Henderson J, Healey A. Home treatment for mental health problems: a systematic review. Psychol Med 2002; 32: 383–401

[7] Wheeler C, Lloyd-Evans B, Churchard A, Fitzgerald C, Fullarton K, Mosse L, Paterson B, Zugaro CG, Johnson S. Implementation of the Crisis Resolution Team model in adult mental health settings: a systematic review. BMC Psychiatry 2015; 15

[8] Bauer E, Kleine-Budde K, Stegbauer C, Kaufmann-Kolle P, Goetz K, Bestmann B, Szecsenyi J, Bramesfeld A. Structures and processes necessary for providing effective home treatment to severely mentally ill persons: a naturalistic study. BMC Psychiatry 2016; 16

[9] Winness MG, Borg M, Kim HS. Service users’ experiences with help and support from crisis resolution teams. A literature review. J Ment Health 2010; 19: 75–87

[10] Irving CB, Adams CE, Rice K. Crisis intervention for people with severe mental illnesses. Cochrane Db Syst Rev 2006; CD001087

[11] Wright C, Catty J, Watt H, Burns T. A systematic review of home treatment services. Soc Psych Psych Epid 2004; 39: 789–796

[12] Hepp U, Stulz N. Home Treatment: Von der Forschung zur klinischen

Umsetzung. Psychiat Prax 2017; 44: 371–373

[13] Gühne U, Weinmann S, Arnold K, Atav E-S, Becker T, Riedel-Heller SG. Akutbehandlung im häuslichen Umfeld: Systematische Übersicht und Implementierungsstand in Deutschland. Psychiat Prax 2011; 38: 114–122

[14] Bundesamt für Gesundheit. Die Zukunft der Psychiatrie in der Schweiz. Bern, 2016

[15] Widmann F, Bachhuber G, Riedelsheimer A, Schiele A, Ullrich S, Kilian R, Becker T, Frasch K. Home Treatment. Fortschr Neurol Psyc 2016; 84: 42–49

[16] Weinmann S, Gaebel W. Versorgungserfordernisse bei schweren psychischen Erkrankungen. Nervenarzt 2005; 76: 809–821

[17] Lambert M, Karow A, Gallinat J, Deister A. Evidenzbasierte Implementierung von stationsäquivalenter Behandlung in Deutschland. Psychiat Prax 2017; 44: 62–64

[18] Noeker M, Juckel G. Implementierung stationsungebundener Leistungen in der Psychiatrie. Nervenarzt 2017; 88: 299–302

[19] Krumm S, Becker T. Der Einbezug von Nutzern psychiatrischer Angebote in die psychiatrische Versorgungsforschung. Psychiat Prax 2006; 33: 59–66

[20] Thornicroft G, Tansella M. Growing recognition of the importance of service user involvement in mental health service planning and evaluation. Epidemiol Psichiat S 2005; 14: 1–3

[21] World Health Organization. Mental Health Declaration for Europe. Facing the Challenges, Building Solutions. Helsinki, 2005

[22] Stulz N, Nevely A, Hilpert M, Bielinski D, Spisla C, Maeck L, Hepp U. Referral to Inpatient Treatment Does not Necessarily Imply a Need for Inpatient Treatment. Adm Policy Ment Hlth 2014; 42: 474–483

[23] Barbour RS. Checklists for improving rigour in qualitative research: a case of the tail wagging the dog? BMJ 2001; 322

[24] Carpenter RA, Tracy DK. Home treatment teams: what should they do? A qualitative study of patient opinions. J Ment Health 2015; 24: 98–102

[25] Hubbeling D, Bertram R. Hope, happiness and home treatment: a study into patient satisfaction with being treated at home. Psychiatr Bull 2014; 38: 265–269

[26] Khalifeh H, Murgatroyd C, Freeman M, Johnson S, Killaspy H. Home treatment

as an alternative to hospital admission for mothers in a mental health crisis: a qualitative study. Psychiat Serv 2009; 60: 634–639

[27] Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol 2006; 3: 77–101

[28] VERBI Software. MAXQDA. 2016;

[29] Hopkins C, Niemiec S. Mental health crisis at home: service user perspectives on what helps and what hinders. J Psychiatr Ment Hlt 2007; 14: 310–318

[30] Karlsson B, Borg M, Kim HS. From good intentions to real life: introducing crisis resolution teams in Norway. Nurs Inq 2008; 15: 206–215

[31] Magez J, Ruppert D, Valentini J, Stegbauer C, Götz K. „Die Krücke steht in der Ecke …“ – Erfahrungen psychisch kranker Menschen in einem Versorgungsmodell der ambulanten sektorenübergreifenden vernetzten Versorgung. Psychiat Praxis 2017

Tab. 1. Patientenmerkmale der Teilstudie 1.

| Teilnehmer | Geschlecht | Alter | Diagnose (ICD-10) | Wohnsituation | HT | Frühere HT-Behandlungen | Frühere stationäre Behandlungen | Interview Angehörige |
|---|---|---|---|---|---|---|---|---|
| 1 | m | 64 | F33.1, F40.1 | alleine | kein HT | 2 | 2 | – |
| 2 | m | 36 | F25.1 | alleine | kein HT | 0 | 8 | – |
| 3 | m | 37 | F41.2 | mit Eltern | HT | 1 | 0 | Partnerin |
| 4 | m | 38 | F33.2 | alleine | HT | 1 | 3 | Mutter |
| 5 | m | 25 | F22, F60.31 | Wohngemeinschaft | HT | 2 | 7 | Mutter |
| 6 | f | 44 | F33.1, Z73 | mit Partner | HT | 2 | 1 | – |
| 7 | m | 54 | F31.2 | mit Mutter | HT | 0 | 1 | – |
| 8 | f | 40 | F33 | mit Familie | kein HT | 0 | 0 | – |
| 9 | m | 51 | F20.0, F63.0 | mit Ehefrau | kein HT | 0 | 23 | – |
| 10 | f | 32 | F25 | mit Partner | HT | 0 | 1 | – |
| 11 | f | 35 | F20.0 | alleine | kein HT | 0 | 6 | – |
| (12[a] | f | 57 | F43.2 | mit Ehemann | HT | 0 | 0) | Ehemann |

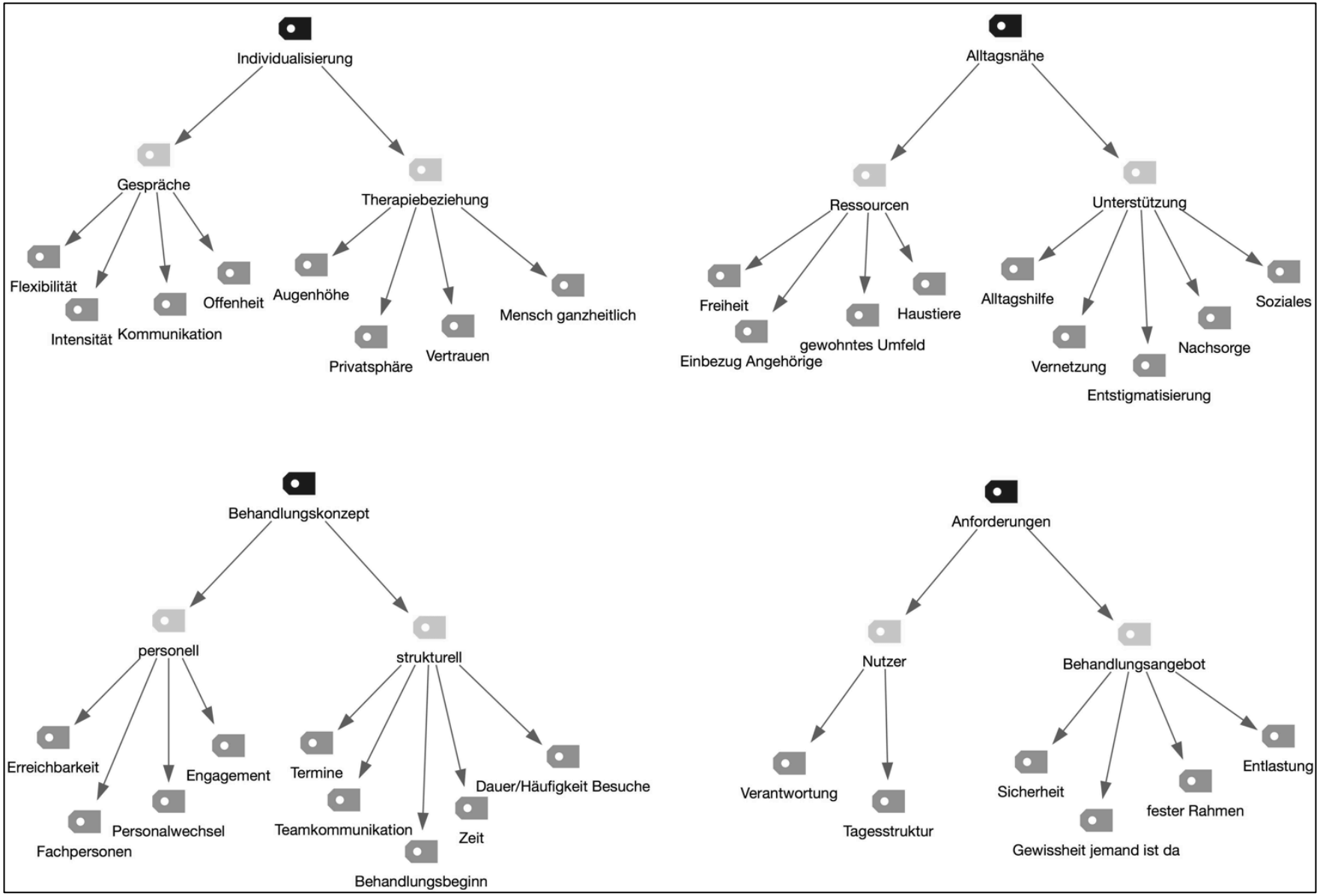
Notiz: [a]Interview nur mit Ehemann

Tab. 2. Antworthäufigkeiten aus der Mitarbeiterumfrage (Teilstudie 2).

| | Klinikmitarbeitende | HT-Mitarbeitende | Total |
|---|---|---|---|
| Konfliktpotential für Zusammenarbeit HT und Klinikstationen | n=40[a] | n=8[a] | n=48[a] |
| Indikationsstellung für HT | 18 (45%) | 2 (25%) | 20 (41.7%) |
| Einplanung der HT-Option in stationären Behandlungsprozess | 12 (30%) | 7 (87.5%) | 19 (39.6%) |
| Optimaler Zeitpunkt der Verlegung von Station ins HT | 13 (32.5%) | 5 (62.5%) | 18 (37.5%) |
| Verantwortungsübernahme bei Verlegung ins HT | 13 (32.5%) | 4 (50%) | 17 (35.4%) |
| Mangelndes Wissen/Information über HT-Konzept | 11 (27.5%) | 5 (62.5%) | 16 (33.3%) |
| Übergabe (Verlaufsinformationen) | 8 (20%) | 7 (87.5%) | 15 (31.3%) |
| Kommunikation | 12 (30%) | 3 (37.5%) | 15 (31.3%) |
| Zielgruppe HT | n=42[a] | n=9[a] | n=51[a] |
| Stabiles, unterstützendes Umfeld | 12 (28.6%) | 6 (66.7%) | 18 (35.3%) |
| Mit (Klein-)kindern wohnend | 13 (31%) | 5 (55.6%) | 18 (35.3%) |
| Ausreichende Absprachefähigkeit (Selbst-/Fremdgefährdung) | 7 (16.7%) | 3 (33.3%) | 10 (19.6%) |
| Angststörung | 9 (21.4%) | 1 (11.1%) | 10 (19.6%) |
| Konfliktbehaftetes Umfeld | 6 (14.3%) | – | 6 (11.8%) |
| Hospitalismustendenzen | 2 (4.8%) | 3 (33.3%) | 5 (9.8%) |
| Kontraindikationen für HT | n=42[a] | n=9[a] | n=51[a] |
| Fehlende Absprachefähigkeit (Selbst-/Fremdgefährdung) | 23 (54.8%) | 6 (66.7%) | 29 (56.9%) |
| Abhängigkeitserkrankungen | 17 (40.5%) | 4 (44.4%) | 21 (41.2%) |
| Unklare Wohnsituation, Verwahrlosung | 9 (21.4%) | 4 (44.4%) | 13 (25.5%) |
| Akutes manisches Syndrom | 13 (31%) | – | 13 (25.5%) |
| Konfliktbehaftetes Umfeld | 13 (31%) | – | 13 (25.5%) |
| Akutes psychotisches Syndrom | 13 (31%) | – | 13 (25.5%) |
| Keine Medikamentencompliance | 4 (9.5%) | 2 (22.2%) | 6 (11.8%) |

[a]Anzahl Personen aus der jeweiligen Mitarbeiterkategorie, welche diese Frage beantwortet haben.
Anmerkung: Mehrfachantworten pro Frage und Person möglich. Die Angaben in Prozent bezeichnen den prozentuellen Anteil von Personen innerhalb der jeweiligen Mitarbeiterkategorie.

Abb. 1. Darstellung der vier zentralen Themen.



## 7.3 Study 3: Is Home Treatment for Everyone? Characteristics of Patients Receiving Intensive Mental Health Care at Home

Lea Wyder[a,b], Urs Hepp[c,*], Martin grosse Holtforth[b,d], Niklaus Stulz[a,b]

[a]Psychiatric Services Aargau AG, [b]University of Berne, Department of Psychology, [c]Integrated Psychiatric Services Winterthur – Zurcher Unterland, [d]Inselspital, Psychosomatic Competence Center, Haus C.L. Lory, CH-3010 Berne, Switzerland

*Acknowledgements*

This work was supported by a philanthropic research project grant from the Hugo and Elsa Isler Foundation, which had no role in the design, conduct or publication of this study.

**Abstract**

*Purpose:* Home treatment (HT) provides an alternative to inpatient care for patients in mental health crises. Little is known about patient suitability for acute care in the home environment. This study aimed at determining differential characteristics of patients treated by a HT team in comparison to patients treated in hospital wards.

*Methods:* A six-month cohort of psychiatric inpatients with optionally available HT was examined. Patients with HT were compared to patients without HT based on routine sociodemographic and clinical characteristics.

*Results:* Of 198 consecutively admitted patients, 98 (49.5%) were at least partially treated at home, whereas 100 (50.5%) received inpatient treatment solely during an episode of acute illness. HT patients significantly differed from hospital patients regarding age ($p$=0.010), marital status ($p$=0.031), employment status ($p$=0.016), and primary diagnosis ($p$=0.002). A multivariate logistic regression model identified a primary diagnosis of anxiety or stress-related disorder to decrease (OR=0.17; 95% CI=0.06-0.46, $p$<0.001) and current employment to increase (OR=2.53; 95% CI=1.32-4.84, $p$=0.005) the odds of being treated at home.

*Conclusions:* In the current study, HT was a feasible treatment option for around half of all patients. The severity of mental illness as well as employment status seemed to affect the treatment setting most strongly, but overall it remained difficult to clearly specify suitability for HT by patient characteristics.

## Introduction

For patients in mental health crises, Home Treatment (HT) provides an easily accessible and less stigmatizing alternative to inpatient treatment [1, 2]. Essential service components of HT include daily visits, 24-hour availability of clinical staff, and a psychiatrist working within the team [3]. Multidisciplinary HT teams cover both, psychiatric and social needs of patients. They administer medication and psychological interventions and frequently involve relatives in treatment sessions. HT is commonly provided by mobile Crisis Resolution Teams (CRT) [4]. Apart from HT, these CRTs also provide other forms of mobile crisis resolution such as on-site assessments of a patient's needs for admission to inpatient treatment.

The key rationale underlying the HT concept is to decrease the number of days spent in psychiatric hospitals. Two primary approaches have been described: First, CRT/HT services are able to reduce hospital admissions through *gate-keeping* referrals to inpatient treatment [4]. Second, HT teams provide *facilitated discharge* from inpatient wards, thereby shortening the total length of a hospital stay [5]. Evidence shows that HT can indeed reduce (re-)admissions to inpatient facilities and is further associated with increased treatment satisfaction as well as lower family burden compared to hospital treatment [6].

Over the past 30 years, HT has been implemented within various mental health care systems across the world. While in some countries (e.g. Norway and UK) HT is already part of the national mental health care policy [7–9], similar endeavors are currently underway elsewhere (e.g. Germany, Switzerland) [10, 11]. Despite these advancements, concerns have recently been raised whether the available scientific evidence justifies these policies: Various forms of the HT service model have been implemented differing in terms of applied service components [4], and the long-term practicability of existing conceptual guidelines beyond the scope of experimental studies has been questioned. Therefore, it remains unclear which components ensure sustainability of the HT model under conditions of routine care [12].

Ongoing efforts to optimize the evolving HT model include the gathering of international experiences and the development of an instrument measuring HT model fidelity [4, 13]. These improvements aim at designing a HT model that is feasible under routine care conditions and is applicable across different health care systems.

Thereby, refining the indication for HT (i.e., to identify those patients who are most suitable for intensive care at home) is a key aspect in designing an appropriate HT model.

Among all *referrals* to psychiatric emergency services, the proportion of patients actually admitted to subsequent inpatient treatment varies greatly across studies from 13-83% [14–18]. The decision to admit a patient to inpatient care is influenced not only by patient characteristics but also by the referring institution, the clinical decision maker (e.g. level of training), and contextual characteristics such as bed availability or hour of referral [19, 20]. *Admission* to a psychiatric hospital is often associated with threat to self or others, poor self-care, diagnoses of psychosis, depression or substance abuse, and with previous hospitalizations [15, 16, 21]. Given these reasons for admission, clarifying the indication for HT inherits an apparent contradiction: Although HT targets psychiatric patients who would otherwise be hospitalized, immediate HT does not seem to offer the sought-after safety function of a hospital stay. Clinical expertise is therefore required to filter out those cases where intensive care at home provides a reasonable and safe alternative to hospital treatment for everyone involved (patients, relatives, and staff). This implies rethinking conventional criteria for hospital admission and need for inpatient care. In order to make informed decisions, sufficient knowledge of potential benefits and limitations of HT is necessary. However, to date no recommendations concerning the indication of HT are available.

A limited number of studies have yet sought to characterize (counter-) indication for HT [22–26], and only the three most recent studies used a multivariate approach. In one study with 358 patients across three London Boroughs, 56% of referrals were treated at home as an alternative to a hospital stay [23]. In another UK study situated in Manchester, 52% of 195 patients received HT instead of hospital treatment [25]. Finally, in a more recent study from Germany 77% of a sample of 78 patients were treated at home [26]. Taken together, these studies suggest that suitability of HT is associated with female gender, referral during office hours, and higher age [23, 25, 26]. Apart from patient characteristics, contextual aspects (e.g. bed availability, study inclusion criteria), and other factors have been shown to influence whether or not someone is treated at home [24, 27].

A more detailed definition of the patient population that is most likely to be suitable for HT will aid gate-keeping HT teams and other mental health professionals

to make informed decisions in triage situations. The current study applies an explorative approach using routine clinical data and aims at providing further clarification of the indication for HT.

## Methods

*Setting*

The hospital of the Psychiatric Services Aargau (PDAG) is a teaching hospital of the University of Zurich, Switzerland, and is located near the geographical center of a 620 000 inhabitant catchment area. In total, the hospital provides 376 beds across 4 departments (child and adolescent psychiatry, general psychiatry, geriatric psychiatry, and forensic psychiatry). In 2015, the department of general psychiatry (151 beds) expanded its capacity with a new HT team serving 12 patients concurrently. The multidisciplinary HT team comprises a psychiatrist, psychologists, psychiatric nurses, a social worker and a team assistant. Home visits take place daily (more than once if needed) from 8.00 am to 7.00 pm, outside these hours the team is available by phone and ready to arrange an emergency home visit within 30 minutes.

In April 2015, a randomized controlled trial (RCT) was initiated in order to evaluate the new HT service [28]. During the first year of this RCT, all inpatient admissions to the hospital were screened for study inclusion. Inclusion criteria were as follows: (a) age 18-64 years, (b) primary diagnosis of ICD-10 F2-F6, F8, F9 [29], and (c) permanent residence ≤ 30 min by car from the hospital. Patients with organic psychiatric disorders, alcohol, cocaine or opioid dependence, mental retardation, insufficient German language skills, or patients living in care homes were excluded. Eligible patients (N = 707) were randomly assigned to the intervention group or the control group (treatment as usual, TAU). Patients in the intervention group received inpatient treatment and/or HT whenever feasible, whereas the control group received conventional inpatient treatment only. The study received approval by the local ethics committee (ID: 2015-014) and has been performed in accordance with the ethical standards of the Declaration of Helsinki.

*Participants*

This study included all patients who were randomized to the intervention group of the RCT during the second 6 months of the enrollment period (October 2015 – April 2016) [28]. Within this intervention group, patients received HT instead of inpatient treatment whenever this was deemed reasonable from a clinical point of view and if patients and their relatives agreed. Thus, the intervention group of the

RCT includes two types of patients: patients actually participating in HT (HT) and patients who received hospital treatment only (no-HT) despite the availability of HT. The patients not receiving HT either explicitly decided against being treated at home or HT was not feasible for other reasons (e.g. very brief hospital stay, or risk of self-harm).

For the current study, we compared characteristics of these two groups (HT vs. no-HT). If there were multiple admissions per patient, only the index treatment episode was analyzed. We restricted our analyses to the second half of the RCT enrollment period in order to maximize the sample's representativity of HT patients, for the new HT team had acquired substantial experience with the HT model by this time.

*Instruments and data collection*

Patients' medical records were used to receive demographic and clinical information. Technical data of treatment episodes were extracted from the hospital's administration database. Further, the German version of the Health of the Nation Outcome Scales (HoNOS) [30, 31] was completed by clinicians at admission to assess the severity of social and clinical problems. The HoNOS is a clinician-rated instrument comprising 12 items. All items are rated on a 5-point Likert scale ranging from 0 (no problems) to 4 (severe to very severe problems). Psychometric properties of the HoNOS have been deemed adequate for use in routine mental health care [32]. Subjective symptom distress was assessed by the German version of the Brief Symptom Inventory (BSI); a short version of the SCL-90-R [33, 34]. The BSI is a self-report instrument and measures the intensity of a variety of psychological symptoms. Fifty-three items are rated on a 5-point Likert scale from 0 (not-at-all) to 4 (extremely). We calculated the General Severity Index (GSI) as a global index of subjective distress [33].

To determine the impact of possible predictors on whether or not a patient was treated at home, various clinical and demographic variables were selected based on previous research [22–25, 35, 36].

*Data analysis*

Normal distribution of variables was tested using Kolmogorov-Smirnov tests. Associations of patient characteristics with the binary outcome HT vs. no-HT were tested using univariate and multivariate analyses. First, group comparisons were carried out for all potential predictor variables using $X^2$-tests, Mann-Whitney-U-tests, or t-tests as appropriate. Indicators that significantly differed between the two groups and possible covariates were then entered into a multivariate logistic regression model to predict membership in one of the HT groups. A stepwise forward method and a *p*-value <.05 were used for variable entry. The model was evaluated using the proportion of correctly classified cases (groups were coded as 0 for hospital and 1 for HT) and the proportion of variance explained.

Additional univariate analyses within the no-HT group compared patients who explicitly decided against being treated at home to patients for whom HT was not feasible due to other reasons (e.g. due to a very brief hospital stay, or ongoing risk of self-harm).

## Results

During the six-month recruiting period, *N*=199 patients were randomly allocated to the intervention group (with optional HT) of the original RCT [28]. Of these, one patient (0.5%) was excluded from the analyses because demographic data were missing. The final sample of this study comprised *n*=198 participants, of which 98 (49.5%) were treated at home (Table 1). In 3 (3.1%) cases HT was initiated immediately after the first consultation at the hospital. After one week, 57 (58.2%) patients had been transferred from the hospital to HT. For the total of 98 HT patients, transfer to HT occurred after an average of *M*=9.10 days of inpatient treatment (*SD*=9.15, Range 0-47 days). Four (4.1%) patients had to be transferred back from HT to the hospital.

In univariate analyses, patients treated at home (HT) differed significantly from patients treated at the hospital (no-HT) with regard to age ($p$=.010), marital status ($p$=.031), employment status ($p$=.016), and primary diagnosis ($p$=.002) (Table 1). Primary diagnoses within the HT and the no-HT group respectively were distributed as follows: unipolar depressive disorders (HT: 55.1% vs. no-HT: 34.0%), psychotic disorders (23.5% vs. 24.0%), bipolar affective disorders (8.2% vs. 4.0%), anxiety or stress related disorders (7.1% vs. 23.0%), personality disorders (2.0% vs. 7.0%), and other diagnoses (4.1% vs. 8.0%).

The two groups did not differ regarding any of the mean scores for clinical or functional problems (HoNOS) (Table 1). Though, histograms of HoNOS total scores for the two groups revealed different distributions (Figure 1): within the HT group, the severity of problems indicated a normal distribution ($D(88)=0.074$, $p$=.200), whereas in the no-HT group the distribution was positively skewed ($D(89)=0.172$, $p<.001$).

For the logistic regression analysis, categorical predictors were coded as dummy variables with the most frequent category serving as reference category (Table 2). The final model included diagnosis and employment status ($X^2(6)=27.751$, $p<0.001$) (Table 2). The proportion of cases correctly predicted by the model was 66.1%. According to the pseudo-$R^2$ statistic, the model explained 14.5% (Cox & Snell) to 19.3% (Nagelkerke) of variance in the outcome variable (HT vs. no-HT). The relative importance of predictors was interpreted using odds ratios. Only two predictors significantly affected the probability for being treated at home: patients with

a primary diagnosis of anxiety or stress-related disorders were less likely to be treated at home compared to patients with depression (OR=0.17; 95% CI=0.06-0.46, $p<0.001$), and patients who were currently employed (vs. being unemployed) were more likely to receive HT (OR=2.53; 95% CI=1.32-4.84, $p=0.005$).

Additional univariate analyses within the no-HT group examined 35 patients who explicitly decided against being treated at home and compared them to the 65 patients for whom HT was not feasible for other reasons. Only the variable *involuntary admission* significantly differentiated these two groups ($p=0.006$); patients who had been admitted involuntarily were less likely to refuse the HT option (Table 3).

## Discussion

This study showed that if a HT service is available, a substantial part (49.5%) of patients in need for inpatient treatment could (at least partially) be treated at home. This finding is comparable to previous reports where 51-56% of eligible patients received HT [23, 25, 37]. In our study, a transfer from HT back to inpatient care became necessary for very few cases (4.1%), suggesting that the indication for HT had been assessed correctly for the majority of patients. This percentage differs considerably from previous studies where 20-22% of patients under the care of CRTs were admitted to inpatient wards [25, 38–40]. It is important to note that due to the organizational structure of our mental health service, *gate-keeping* referrals to our hospital was not in the hands of the HT team but under the responsibility of the hospital's unit for clinical decision making (UCDM) [17]. Hence, our HT service usually assessed the indication for HT after the UCDM had already admitted patients to one of the inpatient wards. In comparison, a key feature of CRTs in the UK is the comprehensive initial assessment of patients considered for inpatient admission [4]. Therefore, the assessment procedures of our HT service differ from common CRT practice regarding time of the assessment, locality, and identity of assessors, which may have allowed our HT team to undertake a more detailed evaluation of the suitability for HT.

In the multivariate analyses, two factors significantly affected the probability of whether or not HT was initiated: a primary diagnosis of anxiety or stress related disorders (ICD-10 F4) and employment status. Only 7% of HT patients had a primary diagnosis of an F4 disorder compared to 23% in the no-HT group. A low prevalence of patients with F4 disorders among HT patients is congruent with the conceptualization of HT as a care option for more severe mental disorders [1] and is in line with previous findings [22, 25, 26, 38]. Indeed, in our sample 87% of patients treated at home suffered from mental illnesses often taking on a chronic course like psychotic or affective disorders, whereas in the no-HT group this was true for only 62% of patients.

Besides type of the disorder, currently employed patients were significantly more likely to receive HT. This finding is difficult to interpret, as previous studies hereto yielded ambiguous results: Hasselberg [39] found that HT patients were more likely

employed at present than patients admitted to hospital. Yet, in the study by Munz [26] currently unemployed patients were more likely to receive HT. One further study reported no difference regarding employment between patients in HT vs. hospital treatment [23]. Nevertheless, this finding validates our clinical experience insofar, that a minimal capability to structure one's own daily routines is desirable for patients to benefit from HT. Ongoing employment before the onset of crisis may be an indicator of such functionality and has previously been shown to be a decisive factor associated with the choice for outpatient treatment [41].

Along this line of reasoning, the following interpretation of our univariate differences in marital status comes into place: in our sample, HT patients were more likely to be divorced or widowed, while patients treated at the hospital were more likely to be single. Having ever been married may imply a certain degree of social integration and may indicate increased availability of relatives or friends, providing a patient with support while being treated at home [5].

Several negative findings of the current study are also worth mentioning: First, contrary to earlier studies [23, 38, 39], we did not find any differences regarding the risk of deliberate self-harm and/or risk to others between the two groups at intake (HoNOS items 1 and 2). As noted above, our patients were transferred to HT following an average hospital stay of nine days. It is plausible to assume that, by then, the most acute phase of crisis had passed and the imminent risk of harm to self and/or others was markedly attenuated. Hence, in our case HT appears to have predominantly served as *a facilitated way of discharge* from hospital [5]. This procedure may result in a slightly different group of patients treated at home than those treated by CRTs in the UK where patients presenting in crisis are assessed by a CRT at first hand [23]. Following Tulloch's [5] definition of the *facilitated discharge* function of HT teams: "beginning to be treated by a HT team during a period of admission to hospital or at its conclusion", our findings most likely represent patients using this specific pathway of care.

Values for the *HoNOS symptoms subscale* were entered into the logistic regression analysis as a covariate for symptom severity but did not have a significant effect on the outcome and were therefore not included in the final model. However, when looking at the HoNOS total scores, the mean values seemed identical for the two groups, but the distribution of HoNOS total scores within groups indicated clustering

towards the lower end of the scale in the no-HT group, representing less severe problems and there were also a few cases with very severe problems in the no-HT group. On the other hand, the HT group more homogenously comprised patients with moderate levels of overall impairment. This finding may indicate a change in the composition of patient populations on hospital wards brought-about by the implementation of HT services, an important factor which should be considered for service planning and workload calculations [23].

Narrowing down the suitability for HT may also be approached from an opposing angle, namely, by identifying cases in which HT is counter indicated. It has been argued that besides any clinical or contextual variables, a person's willingness to cooperate represents the strongest predictor of whether or not HT is feasible [23, 42]. In our comparison of patients explicitly deciding against HT vs. patients for whom HT was not feasible due to other reasons, only the number of involuntary admissions differentiated significantly between those two groups. Only one patient (2.9%) who refused HT had been admitted against their will compared to 24.6% involuntary admissions in the group of patients without HT because of other reasons. It seems intuitively compelling that during an involuntary hospital stay patients may readily agree to any option getting them out of the hospital. Indeed, almost one fourth (23.5%) of our HT patients had originally been admitted against their will. On another note, it seems remarkable that even though treatment for these patients initially occurred without their consent, they agreed to let clinicians enter their private environments during the course of treatment.

Though only a preliminary finding, these results suggest that involuntary admission does not rule out feasibility of HT. In fact, research shows that the availability of community mental health services like HT is associated with a lower rate of involuntary admissions [43]. To date, only one study examined the direct association of HT with involuntary admissions using an RCT design [40]: six months after an index crisis, the percentage of involuntary admissions was lower for the intervention group (standard care and/or CRT) compared to the control group (standard care only) (18% vs. 26%), though the difference remained at trend level. Future research should investigate the role of HT as an alternative treatment option in cases where no shared agreement on the need for hospital admission can be achieved between patient and clinician.

Interpreting our results bears several limitations: First, our analyses are based on routine data. Consequently, acquisition of certain specific data (e.g. on the course of clinical symptoms) was not possible and should be pursued in future research. Second, although our multivariate analyses yielded significant results, the final model was only able to classify 66.1% of cases correctly. We may have been unaware of further important predictors, but it seems likely, that HT is indeed a care option for a very heterogeneous patient group that is difficult to specify further.

A variety of other variables not accounted for may influence whether or not a patient is treated at home. Referring institutions as well as the referrer's level of clinical experience have been shown to impact the outcome of whether or not HT is initiated [23, 25]. In the current study, the referring institutions were not reported. But since referrals to the HT team generally occurred via the UCDM or other hospital wards it can be assumed that external referrers did not affect the outcome (HT vs. no-HT) essentially.

Further, HT may be a particularly acceptable treatment option for patients with young children. One early study found that patients living with children under the age of 5 were more likely to receive HT [24]. Unfortunately, recording whether or not our patients were in charge of young children was not possible in our study but should be considered in future studies.

Overall, the current study suggests that HT is a suitable care option for patients with severe mental disorders who are able to maintain a basic level of functionality. Based on our results, it remains difficult to provide a more detailed definition of patient suitability for HT.

We provided additional validation of the CRT/HT model in so far that its implementation seems applicable even without the gate-keeping function. This specific variation of the HT model may be of particular interest for those service regions where despite the introduction of HT, gate-keeping remains in the hands of an established UCDM. However, our results should be followed up with data on length of hospital stay and cost-effectiveness.

Finally, users' choice is an essential requirement for the feasibility of HT [23, 42]. HT may offer a compelling possibility for shared treatment decisions between staff and patients with regard to involuntary hospital stays. Future studies should address if

and how HT may reduce the number of involuntary admissions or at least the timely revocation of such.

*Conflict of interest*

The authors declare that they have no conflict of interest.

**References**


1. Burns T, Knapp M, Catty J, Healey A, Henderson J, Watt H, Wright C (2001) Home treatment for mental health problems: a systematic review. NIHR Health Technology Assessment Programme
2. Smyth MG, Hoult J (2000) The home treatment enigma. BMJ (Clinical research ed) 320:305–308
3. Johnson S (2007) Crisis resolution and intensive home treatment teams. Psychiatry 6:339–342. doi: 10.1016/j.mppsy.2007.05.011
4. Johnson S (2013) Crisis resolution and home treatment teams: an evolving model. Adv Psychiatr Treat 19:115–123. doi: 10.1192/apt.bp.107.004192
5. Tulloch AD, Khondoker MR, Thornicroft G, David AS (2015) Home treatment teams and facilitated discharge from psychiatric hospital. Epidemiol Psychiatr Sci 24:402–414. doi: 10.1017/S2045796014000304
6. Murphy S, Irving CB, Adams CE, Driver R (2012) Crisis intervention for people with severe mental illnesses. Cochrane DB Syst Rev 5:CD001087. doi: 10.1002/14651858.CD001087.pub4
7. Hasselberg N, Gråwe RW, Johnson S, Ruud T (2011) An implementation study of the crisis resolution team model in Norway: are the crisis resolution teams fulfilling their role? BMC Health Serv Res 11:96. doi: 10.1186/1472-6963-11-96
8. Hubbeling D, Bertram R (2012) Crisis resolution teams in the UK and elsewhere. J Ment Health 21:285–295. doi: 10.3109/09638237.2011.637999
9. Wheeler C, Lloyd-Evans B, Churchard A, Fitzgerald C, Fullarton K, Mosse L, Paterson B, Zugaro CG, Johnson S (2015) Implementation of the Crisis Resolution Team model in adult mental health settings: a systematic review. BMC Psychiatry 15:74. doi: 10.1186/s12888-015-0441-x
10. Lambert M, Karow A, Gallinat J, Deister A (2017) [Evidence-Based Implementation of Crisis Resolution in Germany]. Psychiatr Prax 44:62–64. doi: 10.1055/s-0043-100494
11. Bundesamt für Gesundheit (2016) Die Zukunft der Psychiatrie in der Schweiz. Bern
12. Wright C, Catty J, Watt H, Burns T (2004) A systematic review of home treatment services. Soc Psychiatry Psychiatr Epidemiol 39:789–796. doi:

10.1007/s00127-004-0818-5

13. Lloyd-Evans B, Bond GR, Ruud T, Ivanecka A, Gray R, Osborn D, Nolan F, Henderson C, Mason O, Goater N, Kelly K, Ambler G, Morant N, Onyett S, Lamb D, Fahmy S, Brown E, Paterson B, Sweeney A, Hindle D, Fullarton K, Frerichs J, Johnson S (2016) Development of a measure of model fidelity for mental health Crisis Resolution Teams. BMC Psychiatry 16:427. doi: 10.1186/s12888-016-1139-4
14. Brooker C, Ricketts T, Bennett S, Lemme F (2007) Admission decisions following contact with an emergency mental health assessment and intervention service. J Clin Nurs 16:1313–1322. doi: 10.1111/j.1365-2702.2007.01302.x
15. George L, Durbin J, Sheldon T, Goering P (2002) Patient and Contextual Factors Related to the Decision to Hospitalize Patients From Emergency Psychiatric Services. Psychiatr Serv 53:1586–1591. doi: 10.1176/appi.ps.53.12.1586
16. Schnyder U, Klaghofer R, Leuthold A, Buddeberg C (1999) Characteristics of psychiatric emergencies and the choice of intervention strategies. Acta Psychiat Scand 99:179–187
17. Stulz N, Nevely A, Hilpert M, Bielinski D, Spisla C, Maeck L, Hepp U (2014) Referral to Inpatient Treatment Does not Necessarily Imply a Need for Inpatient Treatment. Adm Policy Ment Hlth 42:474–483. doi: 10.1007/s10488-014-0561-5
18. Ziegenbein M, Anreis C, Brüggen B, Ohlmeier M, Kropp S (2006) Possible criteria for inpatient psychiatric admissions: which patients are transferred from emergency services to inpatient psychiatric treatment? BMC Health Serv Res 6:150. doi: 10.1186/1472-6963-6-150
19. Fichtner CG, Flaherty JA (1993) Emergency Psychiatry Training and the Decision to Hospitalize. Acad Psychiatry 17:130–137. doi: 10.1007/BF03341515
20. Mulder CL, Koopmans GT, Lyons JS (2005) Special Section on the GAF: Determinants of Indicated Versus Actual Level of Care in Psychiatric Emergency Services. Psychiatr Serv 56:452–457. doi: 10.1176/appi.ps.56.4.452

21. Way BB, Banks S (2001) Clinical Factors Related to Admission and Release Decisions in Psychiatric Emergency Services. Psychiatr Serv 52:214–218. doi: 10.1176/appi.ps.52.2.214
22. Bracken P, Cohen B (1999) Home treatment in Bradford. Psychiatr Bull 23:349–352. doi: 10.1192/pb.23.6.349
23. Cotton M-A, Johnson S, Bindman J, Sandor A, White IR, Thornicroft G, Nolan F, Pilling S, Hoult J, McKenzie N, Bebbington PE (2007) An investigation of factors associated with psychiatric hospital admission despite the presence of crisis resolution teams. BMC Psychiatry 7:52. doi: 10.1186/1471-244X-7-52
24. Dean C, Gadd EM (1990) Home treatment for acute psychiatric illness. BMJ 301:1021–1023. doi: 10.1136/bmj.301.6759.1021
25. Harrison J, Alam N, Marshall J (2001) Home or away: which patients are suitable for a psychiatric home treatment service? Psychiatr Bull 25:310–313. doi: 10.1192/pb.25.8.310
26. Munz I, Ott M, Jahn H, Rauscher A, Jäger M, Kilian R, Frasch K (2011) [Comparison of home treatment with traditional inpatient treatment in a mental hospital in rural southern Germany]. Psychiatr Prax 38:123–128. doi: 10.1055/s-0030-1248591
27. Marx AJ, Test MA, Stein LI (1973) Extrohospital Management of Severe Mental Illness. Arch Gen Psychiatry 29:505–511. doi: 10.1001/archpsyc.1973.04200040051009
28. Stulz N, Wyder L, Maeck L, Hilpert M, Lerzer H, Zander E, Kawohl W, grosse Holtforth M, Schnyder U, Hepp U Home Treatment for Acute Mental Health Care: A Randomised Controlled Trial. Lancet Psychiatry
29. World Health Organization (1992) The ICD-10 classification of mental and behavioural disorders. Geneva
30. Andreas S, Harfst T, Rabung S, Mestel R, Schauenburg H, Hausberg M, Kawski S, Koch U, Schulz H (2010) The validity of the German version of the Health of the Nation Outcome Scales (HoNOS-D): a clinician-rating for the differential assessment of the severity of mental disorders. International journal of methods in psychiatric research 19:50–62 . doi: 10.1002/mpr.305
31. Wing JK, Beevor AS, Curtis RH, Park SB, Hadden S, Burns A (1998) Health of the Nation Outcome Scales (HoNOS). Research and development. The British

Journal of Psychiatry 172:11–18 . doi: 10.1192/bjp.172.1.11

32. Pirkis JE, Burgess PM, Kirk PK, Dodson S, Coombs TJ, Williamson MK (2005) A review of the psychometric properties of the Health of the Nation Outcome Scales (HoNOS) family of measures. Health and quality of life outcomes 3:76 . doi: 10.1186/1477-7525-3-76
33. Derogatis LR, Melisaratos N (1983) Brief symptom inventory. Psychological Medicine 13:595–605
34. Franke G (2000) BSI: Brief Symptom Inventory von LR Derogatis: (Kurzform der SCL-90-R): deutsche Version. Beltz Test
35. Brimblecombe N, O'Sullivan GH (1999) Diagnosis, assessments and admissions from a community treatment team. Psychiatric Bulletin 23:72–74 . doi: 10.1192/pb.23.2.72
36. Hugo M, Smout M, Bannister J (2002) A comparison in hospitalization rates between a community-based mobile emergency service and a hospital-based emergency service. Australian and New Zealand Journal of Psychiatry 36:504–508 . doi: 10.1046/j.1440-1614.2002.01042.x
37. Johnson S, Nolan F, Hoult J, White IR, Bebbington PE, Sandor A, McKenzie N, Patel SN, Pilling S (2005) Outcomes of crises before and after introduction of a crisis resolution team. The British journal of psychiatry: the journal of mental science 187:68–75 . doi: 10.1192/bjp.187.1.68
38. Brimblecombe N, O'Sullivan G, Parkinson B (2003) Home treatment as an alternative to inpatient admission: characteristics of those treated and factors predicting hospitalization. Journal of Psychiatric and Mental Health Nursing 10:683–687 . doi: 10.1046/j.1365-2850.2003.00643.x
39. Hasselberg N, Gråwe RW, Johnson S, Šaltytė-Benth J, Ruud T (2013) Psychiatric admissions from crisis resolution teams in Norway: a prospective multicentre study. BMC psychiatry 13: . doi: 10.1186/1471-244X-13-117
40. Johnson S, Nolan F, Pilling S, Sandor A, Hoult J, McKenzie N, White IR, Thompson M, Bebbington PE (2005) Randomised controlled trial of acute mental health care by a crisis resolution team: the north Islington crisis study. BMJ (Clinical research ed) 331: . doi: 10.1136/bmj.38519.678148.8F
41. Krowatschek G, Krömer S, Stahl F, Rössler W, Kawohl W (2012) [Inpatient and outpatient treatment in a crisis service: who uses what?]. Psychiatrische Praxis

39:21–5 . doi: 10.1055/s-0031-1276899

42. Widmann F, Bachhuber G, Riedelsheimer A, Schiele A, Ullrich S, Kilian R, Becker T, Frasch K (2016) Home Treatment. Fortschr Neurol Psychiatr 84:42–49 . doi: 10.1055/s-0041-110887

43. Juckel G, Haussleiter I (2015) [Involuntary admissions in accordance to the Mental Health Act (PsychKG) - what are the strongest predictors?]. Psychiatrische Praxis 42:133–139 . doi: 10.1055/s-0034-1369866

Table 1
Patient characteristics and group comparison between patients treated at home (HT) vs. at the hospital (no-HT)

| | HT<br>*n*=98<br>(49.5%) | no-HT<br>*n*=100<br>(50.5%) | *p*-value |
|---|---|---|---|
| Age | 40.87 (±12.69) | 36.02 (±13.39) | 0.010 |
| Female | 61 (53.0%) | 54 (47.0%) | 0.240 |
| Nationality (swiss) | 82 (50.0%) | 82 (50.0%) | 0.755 |
| Marital status | | | 0.031 |
| Single | 48 (43.2%) | 63 (56.8%) | |
| Married | 23 (48.9.%) | 24 (51.1%) | |
| Other (divorced, widowed) | 27 (67.6%) | 13 (32.5%) | |
| Living situation | | | 0.201 |
| Alone | 37 (58.7%) | 26 (41.3%) | |
| With relatives | 59 (45.4%) | 71 (54.6%) | |
| Other | 2 (40.0%) | 3 (60.0%) | |
| Employment status | | | 0.016 |
| Employed (part or full time, studying, sheltered) | 57 (58.2%) | 41 (41.8%) | |
| Unemployed | 41 (41.0%) | 59 (59.0%) | |
| Primary diagnosis (ICD-10 codes) | | | 0.002 |
| Psychotic (F2) | 23 (48.9%) | 24 (51.1%) | |
| Bipolar (F31) | 8 (66.7%) | 4 (33.3%) | |
| Depression (F32-33) | 54 (61.4%) | 34 (38.6%) | |
| Anxiety or stress-related (F4) | 7 (23.3%) | 23 (76.7%) | |
| Personality (F6) | 2 (22.2%) | 7 (77.8%) | |
| Other (F1, F5, F9) | 4 (33.3%) | 8 (66.7%) | |
| Number of diagnoses | | | 0.637 |
| 1 | 65 (47.4%) | 72 (52.6%) | |
| 2 | 25 (56.8%) | 19 (43.2%) | |
| ≥3 | 8 (47.1%) | 9 (52.9%) | |
| Emergency admission | 76 (49.7%) | 77 (50.3%) | 0.926 |
| Involuntary admission | 23 (57.5%) | 17 (42.5%) | 0.257 |
| Admission outside office hours | 46 (51.1%) | 44 (48.9%) | 0.678 |
| Previous admission in past 12 months | 11 (55.0%) | 9 (45.0%) | 0.604 |

Table 1 continued

| | | | |
|---|---|---|---|
| HoNOS at admission[a] (total score) | 12.81 (±5.80) | 12.88 (±6.71) | 0.943 |
| Aggressive behavior | 0.84 (±1.03) | 0.74 (±1.01) | 0.517 |
| Deliberate self-harm | 0.67 (±1.05) | 0.54 (±0.98) | 0.415 |
| Drug abuse | 0.43 (±0.84) | 0.49 (±0.90) | 0.627 |
| Cognitive problems | 0.60 (±0.93) | 0.52 (±0.88) | 0.555 |
| Physical disability | 0.35 (±0.80) | 0.49 (±1.00) | 0.299 |
| Psychotic symptoms | 0.90 (±1.33) | 0.80 (±1.31) | 0.614 |
| Depressed mood | 2.43 (±1.00) | 2.51 (±1.01) | 0.570 |
| Other behavioral problems | 2.15 (±1.16) | 2.11 (±1.39) | 0.847 |
| Problems with relationships | 1.20 (±1.13) | 1.20 (±1.14) | 0.978 |
| Problems with daily living | 1.26 (±1.20) | 1.16 (±1.17) | 0.593 |
| Problems with living conditions | 0.61 (±0.91) | 0.82 (±1.18) | 0.199 |
| Problems with working conditions | 1.28 (±1.24) | 1.51 (±1.20) | 0.237 |
| BSI[a] (GSI) | 1.52 (±0.71) | 1.53 (±0.73) | 0.996 |

Note: percentages are reported within categories, adding up to 100% per row.
[a]lower case numbers due to missing values.

Table 3
Univariate comparison of patients refusing HT with patients for whom HT was not feasible due to other reasons

| | Refused HT *n*=35 (35.0%) | No HT for other reasons *n*=65 (65.0%) | *p*-value |
|---|---|---|---|
| Age | 38.37 (±14.00) | 34.75 (±13.00) | 0.199 |
| Primary diagnosis | | | 0.662 |
| Psychotic | 7 (29.2%) | 17 (70.8%) | |
| Bipolar | 1 (25.0%) | 3 (75.0%) | |
| Depression | 14 (41.2%) | 20 (58.8%) | |
| Anxiety or stress-related | 9 (39.1%) | 14 (60.9%) | |
| Personality | 3 (42.9%) | 4 (57.1%) | |
| Other | 1 (12.5%) | 7 (87.5%) | |
| Living situation | | | 0.662 |
| Alone | 11 (42.3%) | 15 (57.7%) | |
| With relatives | 23 (32.4%) | 48 (67.6%) | |
| Other | 1 (33.3%) | 2 (66.7%) | |
| Involuntary admission | 1 (5.9%) | 16 (94.1%) | 0.006 |
| Admission outside office hours | 11 (25.0%) | 33 (75.0%) | 0.063 |

Note: percentages are reported within categories, adding up to 100% per row.

Figure 1. HoNOS total score distributions for patients with (HT) and without HT (no-HT).