Common active comorbid medical conditions among mental health users treated by the Assertive Community Treatment Team at Valkenberg Psychiatric Hospital

By Dr Carmen Ilse Vlotman

Student number VLTCAR001

Email address: cvlotman@polka.co.za

University of Cape Town, Faculty of Health Sciences

Department of Psychiatry and Mental Health

Dissertation in partial fulfilment of the degree Master of Medicine (MMed) in Psychiatry

Supervisor: Professor Colleen Adnams

Co-supervisor: Dr Qhama Cossie

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Declaration

I, Carmen Ilse Vlotman hereby declare that the work on which this dissertation is based is my original work and that neither the whole work nor any part of it has been, is being, or is to be submitted for another degree to any other university. This work has not been published prior to the MMed (Psychiatry) degree.

Signature Signed by candidate

15/08/2018

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Abstract

Introduction

People with severe mental illness have co-morbid medical conditions which are often undiagnosed and untreated leading to morbidity and mortality.

Aims and Objectives

The aim of this study was to investigate the documented rate of comorbid medical conditions in the Valkenberg Hospital Assertive Community Treatment (ACT) service population. The objectives were to determine the rate and type of comorbid medical conditions documented at the community clinic and to compare these findings with data recorded in the ACT services files. Analysis was undertaken to determine whether there was an association between the clinical measures and socio-demographic findings.

Methods

A descriptive, analytical, retrospective folder review was conducted on the ACT population of Valkenberg hospital. All clients treated by the ACT team between the 1st of January 2015 and the 31st of December 2015 were included in the study. The data was collected using a questionnaire.

Results

The ACT team treated 104 patients during the time of the study period. The age range was 21 to 63 years old (median 46). Thirty six of the patients were female (34.6%), sixty-eight (65.4%) were male. Substance use was documented in ninety-one (n=91) (87.5%) of all cases. Smoking was documented in sixty five (62.5%) of patients. Of the entire study sample, fifty-three patients (50.9%) had at least one medical condition. The most common active medical conditions documented at the patients' combined treatment facilities were medication side-effects (22.3%), hypercholesterolemia (18.1%) and hypertension (10.6%). Significantly more medical conditions were recorded at Valkenberg hospital compared to the community clinics. There was an increase in metabolic illnesses in the middle age (44-53 years) group. Hypertension, diabetes mellitus and HIV appear to be slightly more common in females compared to males in this population.

Discussion

The study found comparatively low rates of medical conditions among the patients managed by the ACT team of Valkenberg hospital and the community clinics. These findings are not consistent with reviewed literature that found high rates of chronic medical conditions among people with severe mental illness. The rate of co-morbid medical conditions is likely to be underestimated as they were not routinely screened for at both Valkenberg hospital and the community health centres.

Conclusion

The study highlights a gap between the management of mental illness and medical conditions in the ACT population. This has implication for the service provision of these clients in future.

Acknowledgements and contributions

1. Professor Colleen Adnams (research supervisor)
2. Dr. Qhama Cossie (co-supervisor)
3. Anneli Hardy (statistician)

Abbreviations

SMI severe mental illness

HIV/AIDS human immunodeficiency virus/acquired immune deficiency syndrome

HDL high density lipoprotein

ACT Assertive Community Treatment

BMI Body Mass Index

MDT Multidisciplinary treatment team

CHC community health centre

Chapter 1: Introduction and literature review

Severe mental illness and its associations with chronic health conditions

People with severe mental illness (SMI) often have comorbid health problems which are undiagnosed and untreated, leading to morbidity and mortality (1). Severe mental illness is defined here as the presence of a major psychiatric disorder such as schizophrenia or bipolar disorder and that tends to be chronic. It causes significant social and occupational dysfunction (2, 3). People with SMI have increased rates of physical illness compared to the general population (4, 5). They also have a reduced life expectancy (6). According to Parks et al., people with SMI die an average of 25 years sooner than those in the general population (6). Most of the causes of mortality are due to physical illness (5, 6).

The physical health of people with schizophrenia has been a neglected area of psychiatry and general medicine (7). In keeping with other severe mental illnesses, people living with schizophrenia have more co-morbid physical illnesses than the general population (5). According to Salokangas, it is estimated that people with schizophrenia have at least one chronic co-morbid medical condition (7). These conditions include obesity, diabetes mellitus, hyperlipidaemia, cardiovascular disease, human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), hepatitis and malignancies. Casey documented a 1.6-fold increase in mortality in people with schizophrenia, leading to a 20% lower life expectancy compared to the general population (5, 8). Other investigators estimated that mortality in this group is 2-3 times higher than in the general population (8, 9). Similar findings have been reported for other SMIs, including bipolar disorder (8).

Chronic medical conditions and metabolic syndrome in people with severe mental illness

Increased morbidity and mortality in people with SMI is mostly due to treatable medical conditions caused by preventable and modifiable risk factors such as smoking, substance use, obesity and inadequate access to medical care (6). Sixty percent of premature deaths in people with schizophrenia are due to medical conditions that include cardiovascular disease, pulmonary disease and infectious diseases(6). Also amongst the causes of early death in people with SMI is metabolic syndrome, which is exacerbated by the increased use of second generation antipsychotics (6).

Metabolic syndrome was defined by the International Diabetic Federation in 2005 as an increased waist circumference with at least two other health abnormalities, which could be hypertension, low

high density lipoprotein (HDL), or raised fasting blood glucose or triglycerides (10, 11). It is known that the presence of metabolic syndrome increases morbidity and mortality due to cardiovascular disease (12, 13). People with schizophrenia are often overweight or obese, defined as a Body Mass Index (BMI) equal to, or greater than 30. A BMI of 25 – 29.9 is considered overweight. According to Castillo et al., it is recognized that patients on a community outreach Assertive Community Treatment (ACT) programme have high rates of potentially unrecognized cardio-metabolic illnesses (14). In addition, Sub Saharan Africa has the largest increase in prevalence of Type 2 diabetes mellitus and cardiovascular disease globally (15).

People with SMI are also at significant risk of HIV infection. According to Joska et al., the prevalence of HIV infection continues to rise in Sub Saharan Africa. It may therefore be assumed that the increase in prevalence in HIV in the general South African population would be is associated with an increase in the rate of in HIV in patients with SMI (2).

Risk factors for increased morbidity and mortality in people with severe mental illness.

Factors for increased morbidity and mortality in people with severe mental illness are numerous, complex and multifactorial. According to Robson et al., the reasons for poor physical health in this population are divided into service-related factors, illness-related factors, treatment related factors and health behaviours (4).

Service related factors include difficulty accessing outpatient primary care services, lack of preventative health care and a lack of clarity about whose role it is to manage physical illnesses in patients with severe mental illness.

Illness related factors include decreased help seeking behaviour, cognitive deficits, and negative symptoms which forms part of the symptom profile of schizophrenia. Severe mental illness affects education, employment status, social and family support and is often associated with stigma. People with severe mental illness are often unemployed and living in poverty (4). This in turn plays a role in accessing primary health care services.

High risk behaviours like smoking and substance use, physical inactivity and poor diet are some of the patient related factors contributing to poor physical health in people with SMI. Studies have shown that the rate of tobacco smoking in people with SMI is up to three times higher than the

general population (4). Of all SMI, smoking prevalence is highest in patients with schizophrenia (16). The literature describes numerous reasons for this which includes smoking being used to attenuate the side effects related to dopamine blockade of antipsychotic drugs and self-medication of negative symptoms of schizophrenia(4).

Treatment related factors include the metabolic side effects of certain psychotropic medication contributing to ill physical health (4, 17).

Physical health care needs of patients with SMI often go unmet for the aforementioned reasons (17, 18).

Screening and monitoring for medical illness in people with severe mental illness.

A review of the association between SMI, metabolic syndrome, diabetes mellitus and antipsychotic drugs concludes that there is a need for routine physical health screening in patients with severe mental illness taking antipsychotics (10). There are multiple guidelines that describe the rationale and protocols for screening as mentioned below.

According to The Maudsley Prescribing Guidelines in Psychiatry (19), people taking antipsychotic drugs should have their weight, blood lipids plasma glucose monitored at baseline then at three to six months then every six months to detect antipsychotic induced changes. The Maudsley guidelines also recommend the monitoring of the patient's blood pressure at baseline and during dose titration to detect antipsychotic induced changes and doing an echocardiogram at baseline prior to starting the antipsychotic medication.

Saloojee, et al refers to the 2005 South African guideline for the management of metabolic abnormalities in people with schizophrenia which recommends plasma glucose and lipids and blood pressure monitoring prior to initiation of second generation antipsychotic medication, then at six weeks, four months and twelve months and annually thereafter (12).

Metabolic screening practices are also shown to be inadequate in high income countries (12). Barnes et al. did an audit of clinical records of patients under the care of eight Assertive Outreach teams across the United Kingdom (20). They examined the screening of metabolic side effects of

antipsychotic medications in community patients. They found that the rates of screening were well below what has been recommended.

Saloojee et al. conducted a study on 331 outpatients with severe mental illness on antipsychotic medication for six months in Durban, South Africa, and examined metabolic testing in these clients in the previous year (12). Only 2patients (0.6%) in this study were screened for all five components of metabolic syndrome (12).

In a further study, De Hert et al. noted that clinician screening practices in populations with mental health conditions have consistently been suboptimal (21).The authors reported a systematic review of clinical practice guidelines for screening and monitoring of cardio-metabolic risk in patients with schizophrenia and summarised recommendations from 10 of 18 reviewed guidelines. Their recommendation included a baseline assessment followed by re-assessment after 3-4 months of initiation of treatment with an antipsychotic drug. The assessment measurements recommended include fasting glucose, triglycerides, cholesterol, and body mass index, high density lipoprotein to low density protein ratio (HDL/LDL), blood pressure and symptoms of diabetes mellitus. The authors also advised that all individuals with schizophrenia should be under active medical care and have screening of metabolic conditions at least annually. These recommendations are in agreement with the National Institute for Health and Clinical Excellence guidelines (22).

The Assertive Community Treatment model

The Assertive Community Treatment (ACT) model of care was developed by Stein et al. in the United States of America (USA) in the 1970s (23) and it has been extensively researched. . (23). The original ACT model has been modified over time but the core features remain the same. According to Bond, ACT is an intensive, recovery orientated, multidisciplinary, evidence-based outpatient treatment program for people with severe mental illness. There is a small staff member to consumer ratio (10 patients per 1 staff member), 24 hour staff availability, shared caseloads and daily team meetings. The ACT service aims to assist people with severe mental illness to integrate in the community. It uses a team approach of various mental health professionals. ACT contacts occur in the community. The ACT team aims to assist clients with medication, housing, finance and other issues needed for successful community living. Evidence shows ACT is successful in keeping clients engaged in mental health services, reduces the need for admission to psychiatric hospitals and it

improves symptoms and subjective quality of life (23). There are assertive outreach teams in many countries including the United Kingdom, Australia and the USA.

The Assertive Community Treatment model in South Africa

In January 2007 the Government Department of Health in the Western Cape province appointed three community treatment teams at Stikland, Valkenberg and Lentegeur Hospitals (24). The Assertive Community Treatment model was introduced to these regional psychiatric hospitals in an attempt to reduce hospital readmissions amongst high frequency users sometimes called “revolving door patients” (25). The “revolving door patient” is the term used for individuals with frequent admissions to the psychiatric hospitals with short periods of remaining well outside of hospital (24). According to Botha et al., the international ACT model of care is not feasible or cost-effective in South Africa. Provision of community based care depends on community resources which are limited in South Africa. Thus, the international high income country ACT model was modified and introduced to the Western Cape Province to provide for higher caseloads and less frequent patient-service contacts than in higher resourced settings. The multidisciplinary team in the South African ACT model consists of a psychiatrist, social worker and psychiatric nurse. Caseloads are shared. The service model identified in 2007 was as follows: (15).

- Patients deemed suitable for the service were identified on admission to the psychiatric hospital using a modified version of Weiden’s criteria (24).
- The patient and his/her family were introduced to the service whilst the patient is still in hospital.
- Once patients are discharged from hospital they are actively followed up by the team.
- Contact between home visits is maintained by telephone calls with family members.
- Should patients relapse and require admission, they bypass community services and are admitted directly to the psychiatric facility.

The majority of the ‘revolving door’ patients live in adverse social circumstance (24). Most of them are unemployed and dependent on a government grant. Some of them live in informal settlements and have chaotic environments, food insufficiency, overcrowding and is faced with gang violence on a daily basis. All this impacts on their illness and their ability to be adherent to medication and attend community clinics (24). The clinics are often understaffed with long waiting times before seeing health care providers and long waiting times at the pharmacy. These factors also influence patients’ ability to adhere to clinic appointments (24). Botha et al. concluded that the ACT

intervention proved effective in reducing psychiatric hospital admissions and improving clinical outcomes.

Observations from the Assertive Community Treatment (ACT) service of Valkenberg Hospital

Valkenberg Hospital is one of four dedicated Psychiatry and Mental Health Hospitals in the Western Cape. It offers a general psychiatric and mental health service to the Cape Town Metro Region as well as a specialised forensic service. The Valkenberg Hospital catchment area includes the Metro Southern suburbs, South Peninsula, parts of the Cape flats, including Langa, Lotus River, Manenberg, Gugulethu, Lavender Hill, Heideveld, Grassy Park and Atlantis. The ACT team is based at Valkenberg Hospital and services clients living in community settings. The primary aim of the ACT service is to decrease recurrent readmissions to Valkenberg Hospital and to assist clients to live productive lives in their communities. This is achieved through regular assertive contacts with the patient and his or her carer in the community with emphasis on holistic care and recovery.

The essential features of the international ACT model remain the same in the Valkenberg Hospital service. The ACT team has a case load of approximately one hundred clients per month. The Multidisciplinary treatment team (MDT) consists of a psychiatrist, a medical officer, two professional nurses and two social workers. Each client has contact with all the members of the MDT as per need. The locus of contact is in the client's own community. The ACT team does daily home visits and sees between eight to ten clients per day. A mental state examination is done by a staff member and psychotropic medication including long acting injectable antipsychotics are provided to the client at his or her home. Clients are seen on average between two to four weekly intervals depending on their clinical condition and the frequency of the long acting injectable antipsychotics. Should a client be mentally unwell he/she is seen more frequently sometimes up to twice weekly. If a client requires admission to a psychiatric hospital the ACT team admits the client directly from the community to Valkenberg Hospital. If a client is an inpatient at Valkenberg Hospital, both the medical and psychiatric care is provided by the medical officer and the psychiatrist of the ACT team. When clients with a co-morbid illness are discharged from Valkenberg Hospital, they are referred to the community health centre in their area.

According to the currently practiced model of care, clients on the Valkenberg Hospital ACT program do not receive integrated health care and they are required to attend their local community health clinic for treatment and medication for any general medical conditions.

The above model of care differs from some of the international ACT models that may use a more integrated approach to caring for the physical and mental health care needs of their clients (8). Routine screening for cardiometabolic illnesses and other illnesses like HIV are therefore not undertaken in the local setting.

Aim of the study

To investigate the documented occurrence of comorbid medical conditions in the Valkenberg Hospital ACT service population.

Objectives

1. To determine the rate and type of co-morbid medical conditions documented in the folders of patients on the assertive community treatment program and at local community health centre

2. To determine if there is an association between the clinical variables and socio-demographic profile in the study population.

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Chapter 2: Publication ready manuscript

Cover letter

To The Editor 02 July 2018

The South African Medical Journal

I would like to submit the attached abstract and original article for consideration for publication in the South African Medical Journal. This article is Chapter 2 of my MMed in Psychiatry Mini-Thesis write up and has been submitted for examination to the University of Cape Town.

My article title is titled "Common active comorbid medical conditions among mental health users treated by the Assertive Community Treatment Team of Valkenberg Hospital".

Final Text word Count: 5037. This is over the recommended limit considering it is a minor dissertation for examination but would meet the recommended limit of approximately 4000 words for an actual journal submission.

Abstract word count: 388

Number of Tables: eight

Number of figures: nil

Author: Dr Carmen Ilse Vlotman, MBCHB, DMH, FCPsych, Registrar in Psychiatry, Department of Psychiatry and Mental Health, University of Cape Town

Co –authors: Professor Colleen Adnams, Department of Psychiatry and Mental Health University of Cape Town, was my main supervisor for my MMed (Psychiatry)

Dr. Qhama Cossie, MBCHB, FC Psych (SA), MPhil Public Mental Health (UCT), DMH (SA), PG Dip Health Sciences Education (UCT) Consultant Psychiatrist at Valkenberg Hospital and Senior Lecturer Department of Psychiatry and Mental Health, University of Cape Town, was my co-supervisor.

I can confirm that my article has not been sent to another journal for publication.

I have checked and made sure that the article formatting and reference style meets your journal's guidelines. I have read and am satisfied with your journal's open access publishing policy. I can be contacted on cvlotman@polka.co.za

My co-authors' contact details are

Yours sincerely

Dr. CI Vlotman

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Abstract

Introduction

People with severe mental illness have co-morbid medical conditions which are often undiagnosed and untreated leading to morbidity and mortality.

Aims and Objectives

The aim of this study was to investigate the documented rate of comorbid medical conditions in the Valkenberg Hospital Assertive Community Treatment (ACT) service population. The objectives were to determine the rate and type of comorbid medical conditions documented at the community clinic and to compare these findings with data recorded in the ACT services files. Analysis was undertaken to determine whether there was an association between the clinical measures and socio-demographic findings

Methods

A descriptive, analytical, retrospective folder review was conducted on the ACT population of Valkenberg hospital. All clients treated by the ACT team between the 1st of January 2015 and the 31st of December 2015 were included in the study. The data was collected using a questionnaire.

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The ACT team treated 104 patients during the time of the study period. The age range was 21 to 63 years old (median 46). Thirty six of the patients were female (34.6%), sixty-eight (65.4%) were male. Substance use was documented in ninety-one (n=91) (87.5%) of all cases. Smoking was documented in sixty five (62.5%) of patients. Of the entire study sample, fifty-three patients (50.9%) had at least one medical condition. The most common active medical conditions documented at the patients' combined treatment facilities were medication side-effects (22.3%), hypercholesterolaemia (18.1%) and hypertension (10.6%). Significantly more medical conditions were recorded at Valkenberg hospital compared to the community clinics. There was an increase in metabolic illnesses in the middle age (44-53 years) group. Hypertension, diabetes mellitus and HIV appear to be slightly more common in females compared to males in this population.

Discussion

The study found comparatively low rates of medical conditions among the patients managed by the ACT team of Valkenberg hospital and the community clinics. These findings are not consistent with reviewed literature that found high rates of chronic medical conditions among people with severe mental illness. The rate of co-morbid medical conditions is likely to be underestimated as they were not routinely screened for at both Valkenberg hospital and the community health centres.

Conclusion

The study highlights a gap between the management of mental illness and medical conditions in the ACT population. This has implication for the service provision of these clients in future.

BACKGROUND

People with severe mental illness (SMI) often have comorbid health problems which are undiagnosed and untreated, leading to morbidity and mortality(1). Severe mental illness is defined here as the presence of a major psychiatric disorder such as schizophrenia or bipolar disorder and that tends to be chronic. It causes significant social and occupational dysfunction (2, 3). People with SMI have increased rates of physical illness compared to the general population (4, 5). They also have a reduced life expectancy(6). According to Parks et al., people with SMI die an average of 25 years sooner than those in the general population (6). Most of the causes of mortality are due to physical illness (5, 6).

The physical health of people living with schizophrenia has been a neglected area of psychiatry and general medicine(7). In keeping with other severe mental illnesses, people with schizophrenia have more co-morbid physical illnesses than the general population (5). According to Salokangas, it is estimated that people with schizophrenia have at least one chronic co-morbid medical condition (7). These conditions include obesity, diabetes mellitus, hyperlipidaemia, cardiovascular disease, human immunodeficiency virus/acquired immune deficiency syndrome (HIV/AIDS), hepatitis and malignancies. Casey documented a 1.6-fold increase in mortality in people with schizophrenia, leading to a 20% lower life expectancy compared to the general population (5, 8). Other investigators estimated that mortality in this group is 2-3 times higher than in the general population(8, 9). Similar findings have been reported for other SMIs, including bipolar disorder(8).

Increased morbidity and mortality in people with SMI is mostly due to treatable medical conditions caused by preventable and modifiable risk factors such as smoking, substance use, obesity and inadequate access to medical care(6). Sixty percent of premature deaths in people with schizophrenia are due to medical conditions that include cardiovascular disease, pulmonary disease and infectious diseases(6). Also amongst the causes of early death in people with SMI is metabolic syndrome, which is exacerbated by the increased use of second generation antipsychotic medications (6).

Metabolic syndrome was defined by the International Diabetic Federation in 2005 as an increased waist circumference with at least two other health abnormalities, which could be hypertension, low high density lipoprotein (HDL), or raised fasting blood glucose or triglycerides (10, 11). It is known that the presence of metabolic syndrome increases morbidity and mortality due to cardiovascular

disease (12, 13). People with schizophrenia are often overweight or obese, defined as a Body Mass Index (BMI) equal to, or greater than 30 (26). A BMI of 25 – 29.9 is considered overweight. Castillo et al., recognized that patients on a community outreach ACT programme have high rates of potentially unrecognized cardio-metabolic illnesses (14). In addition, Sub Saharan Africa has the largest increase in prevalence of Type 2 diabetes mellitus and cardiovascular disease globally (15).

People with SMI are also at significant risk of HIV infection. According to Joska et al., the prevalence of HIV infection continues to rise in Sub Saharan Africa. It may therefore be assumed that the increase in prevalence in HIV in the general South African population would be is associated with an increase in HIV in patients with SMI (2).

Risk factors for increased morbidity and mortality in people with severe mental illness are numerous, complex and multifactorial. According to Robson et al., the reasons for poor physical health in this population are divided into service-related factors, illness-related factors, treatment related factors and health behaviours (4).

Service related factors include difficulty accessing outpatient primary care services, lack of preventative health care and a lack of clarity about whose role it is to manage physical illnesses in patients with severe mental illness (4). Illness related factors include decreased help seeking behaviour, cognitive deficits, and negative symptoms which forms part of the symptom profile of schizophrenia. Severe mental illness affects education, employment status, social and family support and is often associated with stigma. People with severe mental illness are often unemployed and living in poverty (4). This in turn plays a role in accessing health care services. High risk behaviours such as smoking and substance use, physical inactivity and poor diet are some of the patient related factors contributing to poor physical health in people with SMI (26). Studies have shown that the rate of smoking in people with SMI is up to three times higher than the general population (4, 27). Of all SMI, smoking prevalence is highest in patients with schizophrenia (16). The literature describes numerous reasons for this which include smoking being used to attenuate the side effects related to dopamine blockade of antipsychotic drugs and self-medication of negative symptoms of schizophrenia(4). Treatment related factors include the metabolic side effects of certain psychotropic medication contributing to ill physical health (4, 17). Physical health care needs of patients with SMI often go unmet for the aforementioned reasons (17, 18).

A review of the association between SMI, metabolic syndrome, diabetes mellitus and antipsychotic drugs concludes that there is a need for routine physical health screening in patients with SMI who are prescribed antipsychotic medication (10). There are multiple guidelines that describe the rationale and protocols for screening as outlined below.

According to The Maudsley Prescribing Guidelines in Psychiatry, (19), people taking antipsychotic drugs should have their weight, blood lipids plasma glucose monitored at baseline then at three to six months then every six months to detect antipsychotic drug induced changes. The Maudsley guidelines also recommend the monitoring of the patient's blood pressure at baseline and "frequently" during dose titration to detect antipsychotic induced changes and doing an echocardiogram at baseline prior to starting the antipsychotic medication.

Saloojee, et al refers to the 2005 South African guideline for the management of metabolic abnormalities in people with schizophrenia which recommends plasma glucose and lipids and blood pressure monitoring prior to initiation of second generation antipsychotic medication, then at six weeks, four months and twelve months and annually thereafter (12).

Metabolic screening practices in patients with severe mental illness are documented to be inadequate in high income countries (12). Barnes et al. undertook an audit of clinical records of patients under the care of eight Assertive Outreach teams across the United Kingdom (20). They examined screening of metabolic side effects of antipsychotic medications in community based patients and found that rates of screening were well below what has been recommended.

Saloojee et al. conducted a study on 331 outpatients with severe mental illness on antipsychotic medication for six months in Durban, South Africa, and documented metabolic testing in these clients in the previous year (12). They reported that in spite of Sub Saharan Africa having the largest increase in prevalence of Type 2 diabetes mellitus and cardiovascular disease globally, only 2 patients in this study (0.6% of the sample) were screened for all five components of metabolic syndrome.

In a further study, De Hert et al. noted that clinician screening practices in populations with mental health conditions have consistently been suboptimal (21). The authors reported a systematic review of clinical practice guidelines for screening and monitoring of cardiometabolic risk in patients with schizophrenia and summarised recommendations from 10 of 18 reviewed guidelines. Their

recommendation included a baseline assessment followed by re-assessment after 3-4 months of initiation of treatment with an antipsychotic drug. The assessment measurements recommended include fasting glucose, triglycerides, cholesterol, body mass index, high density lipoprotein to low density protein ratio (HDL/LDL), blood pressure and symptoms of diabetes mellitus. The authors also advised that all individuals with schizophrenia should be under active medical care and have screening of metabolic conditions at least annually. These recommendations are in agreement with the National Institute for Health and Clinical Excellence guidelines (22).

The Assertive Community Treatment (ACT) model of care was developed by Stein et al. in the United States of America (USA) in the 1970s (23) and it has been extensively researched. . The original ACT model has been modified over time but the core features remain the same. According to Bond, ACT is an intensive, recovery orientated, multidisciplinary, evidence-based outpatient treatment programme for people with SMI. There is a small staff member to consumer ratio (10 patients per 1 staff member), 24 hour staff availability, shared caseloads and daily team meetings. The ACT service aims to assist people with SMI to integrate into their living community. It uses a team approach of various mental health professionals. ACT contacts occur in community based settings. The ACT team aims to assist clients with medication, housing, finance and other issues needed for successful community living. Evidence shows ACT is successful in keeping clients engaged in mental health services, reduces the need for admission to psychiatric hospitals and it improves symptoms and subjective quality of life (23). There are assertive outreach teams in many countries including the United Kingdom, Australia and the USA.

In January 2007 the Western Cape Province Government Department of Health appointed three community treatment teams at Stikland, Valkenberg and Lentegeur Hospitals (24). The Assertive Community Treatment model was introduced to these regional psychiatric hospitals in an attempt to reduce hospital readmissions amongst high frequency users sometimes called “revolving door patients” (25). The “revolving door patient” is the term used for individuals with frequent admissions to the psychiatric hospitals with short periods of remaining well outside of hospital (24). According to Botha et al., the international ACT model of care is not feasible or cost-effective in South Africa. Provision of community based care depends on community resources which are limited in South Africa. Thus, the international high income country ACT model was modified and introduced to the Western Cape Province to provide for higher caseloads and less frequent patient-service contacts than in higher resourced settings. The multidisciplinary team in the South African ACT model consists

of a psychiatrist, social worker and psychiatric nurse. Caseloads are shared. The service model identified in 2007 was as follows: (15).

- Patients deemed suitable for the service are identified on admission to the psychiatric hospital using a modified version of Weiden's criteria (24).
- The patient and his/her family are introduced to the service whilst the patient is still in hospital.
- Once patients are discharged from hospital they are actively followed up by the team.
- Contact between home visits is maintained by telephone calls with family members.
- Should patients relapse and require admission, they bypass community services and are admitted directly to the psychiatric facility.

The majority of the 'revolving door' patients live in adverse social circumstances (24). Most of them are unemployed and dependent on a government social grant. Some of them live in informal settlements and have chaotic environments, food insufficiency, overcrowding and are faced with gang and other community violence on a daily basis. All this impacts on their illness and their ability to be adherent to medication and attend community clinics (24). The clinics are often understaffed with long waiting times before seeing health care providers and long waiting times at the pharmacy. These factors also influence patients' ability to adhere to clinic appointments (24). Botha et al. concluded that the ACT intervention proved effective in reducing psychiatric hospital admissions and improving clinical outcomes.

Valkenberg Hospital is one of four dedicated Psychiatry and Mental Health Hospitals in the Western Cape. It offers a general psychiatric and mental health service to the Cape Town Metro Region as well as a specialised forensic service. The Valkenberg Hospital catchment area includes the Metro Southern suburbs, South Peninsula, parts of the Cape flats, including Langa, Lotus River, Manenberg, Gugulethu, Lavender Hill, Heideveld, Grassy Park and Atlantis. The ACT team is based at Valkenberg Hospital and services clients living in community settings. The primary aim of the ACT service is to decrease recurrent readmissions to Valkenberg Hospital and to assist clients to live productive lives in their communities. This is achieved through regular assertive contacts with the client and his or her carer in the community with emphasis on holistic care and recovery.

The essential features of the international ACT model remain the same in the Valkenberg Hospital service. The ACT team has a case load of approximately one hundred clients with SMI per month.

The multidisciplinary treatment team (MDT) consists of a psychiatrist, a medical officer, two professional nurses and two social workers. Each client has contact with all the members of the MDT as per need. The locus of contact is in the client's own community. The ACT team does daily home visits and sees between eight to ten clients per day. A mental state examination is done by a staff member and psychotropic medication including long acting injectable antipsychotics are provided to the client at his or her home. Clients are seen on average between two to four weekly intervals depending on their clinical condition and the frequency of the long acting injectable antipsychotics. Should a client be mentally unwell he/she is seen more frequently sometimes up to twice weekly. If a client requires admission to a psychiatric hospital the ACT team admits the client directly from the community to Valkenberg Hospital. If a client is an inpatient at Valkenberg Hospital, both the medical and psychiatric care is provided by the medical officer and the psychiatrist of the ACT team. When clients with a co-morbid illness are discharged from Valkenberg Hospital, they are referred to the community health centre in their area.

As determined by the currently practiced provincial model of care, clients on the specialist Valkenberg Hospital ACT program do not receive integrated health care and they are required to attend their local community primary health clinic for treatment and medication for any general medical conditions. Routine screening for cardiometabolic illnesses and other illnesses such as HIV are therefore not undertaken in the community setting. This model of care differs from some of the international ACT models that may use a more integrated approach to caring for the physical and mental health care needs of their clients (8).

Aim of the study

To investigate the documented occurrence of comorbid medical conditions in the Valkenberg Hospital ACT clients.

Objectives

1. To determine the rate and type of co-morbid medical conditions documented in the folders of clients on the assertive community treatment program and at their local community health centre.

2. To determine if there is an association between the clinical variables and socio-demographic profile in the study population.

Methods

Study setting and procedures

The study conducted was a descriptive, analytical, retrospective folder review. The main study site was Valkenberg Hospital and included the community clinics in its designated catchment area where the ACT clients are expected to receive medical care.

Community health centres (CHCs) and clinics included in the study were Hanover Park CHC, Retreat CHC, Grassy Park CHC, Vanguard CHC, Lotus River CHC Dr Abdurahman Clinic, Green Point Clinic and Lady Michaelis Clinics. Clinics in two health districts, Atlantis and Fish Hoek, were not included in the study as they are situated further from the study site than other participating clinic sites and were not easily accessible within the scope of this study. The following health facilities were excluded from the study as the researcher was not granted approval by the facility to access client folders: Heideveld CHC, Robbie Nurock Clinic, Woodstock CHC and Albouw Gardens Clinic.

All clients who met the ACT service criteria and were treated by the ACT team between the 1st of January 2015 and the 31st of December 2015 were included in the study. The sample size was 104 clients. Data were collected by the primary investigator.

Data source

The study data were obtained from clients' current inpatient Valkenberg Hospital folder, the Valkenberg ACT service folders, Clinicom which is the hospital electronic discharge record, and the clients' community health facility folder.

Measures

Only data recorded in the year of the study (2015) was included.

The data collected comprised clinical and socio-demographic data. A questionnaire (see Appendix) was used to collect the data. The socio-demographic data included age, gender, marital status, highest level of education, current employment status (full-time, part time, unemployed) and whether a client receives a state disability grant. The local community clinic that the patient should attend for general health care was recorded as well as the date that the patient joined the ACT service.

Clinical data included the primary psychiatric diagnosis, comorbid substance use disorder (cannabis, methaqualone, methamphetamine, other) and details of psychotropic medication prescribed, including first and second generation antipsychotics, mood stabilisers and antidepressants.

The primary clinical outcome measure of interest for the study was the documented prevalence of co-occurring medical conditions which were categorised according to non-communicable diseases such as diabetes mellitus, hypertension, chronic obstructive pulmonary disease,

hypercholesterolaemia and communicable diseases such as HIV. Records of community clinic attendance and treatment of medical conditions that were documented in the community clinic and the ACT folders were noted for comparison. Tobacco smoking status and body mass index (BMI) were recorded as they are risks for cardiometabolic illness. Formal screening or testing of clients for co-occurring risk conditions was recorded.

Ethical considerations

Approval for the study was granted by the University of Cape Town Faculty of Health Sciences Human Research Ethics Committee (see Appendix, page 41). Approval to conduct the research at Valkenberg Hospital and Community Health Centres and Clinics was obtained from the Western Cape Government Department of Health, Valkenberg Hospital and the Cape Town Metro District Health Authority (see Appendix, page 42 to 46).

Data analysis

The clinical and socio-demographic data collected for each client were categorised and coded for analysis. Descriptive statistics were derived following analysis using IBM Statistical Package for Social Sciences (SPSS) version 22. Data comprising categorical variables were summarised as frequencies or percentages. The co-occurrence of documented medical conditions was expressed as a rate for the study population. Numerical data was described in terms of means for normally distributed data and medians for non-parametric data. Means and medians were compared using student t and Pearson Chi-Square tests as appropriate. The 95% confidence interval was the *p*-value and statistical significance was defined as a *p*-value of less than 0.05. Associations of clinical and demographic measures were calculated using Pearson's Chi-Square tests of association.

Results

The ACT team treated 104 clients during the study period. The ages were divided into three age bands. The age range was 21 to 63 years old (median 46); (Table 1). Thirty six of the clients were female (34.6%) and sixty-eight (65.4%) were male (Table 1).

Table 1: Summary of age groups and sex of clients in study (n=104)

	Age 18-29yrs.	Age 30-49yrs	Age 50-63 yrs.	Missing data	Total	Median	Age range (yrs.)
Males	13	36	18	1	68	42	23-62
Females	2	14	18	2	36	50	21-63
Total	15	50	36	3	104		

Information on marital status was not available for eleven (10.6%) clients. Of the cases (n=93) for which the marital status was known, eighty-five (91.4%) of the clients were single, three (3.2%) were married and five (5.4%) were separated/divorced.

In forty cases (38.5%) the highest level of education was not documented. Of those 64 cases documented, 57.7% had either primary or secondary school education. (see table 2).

Table 2: Highest level of education within the ACT population (n=64)

Highest educational level	Count	Percent %
Primary school (less than grade 7)	23	35.9%
Secondary school (grade 8-12)	37	57.8%
Tertiary (higher than grade12)	4	6.3%
Total	64	100%

Of the ninety cases (86.5%) for which a psychiatric diagnosis was recorded in the ACT service folder, fifty (55.6%) patients had schizophrenia, twenty-eight (31.1%) had schizoaffective disorder and twelve (13.3%) had any form of bipolar disorder (see table 3). The remaining fourteen cases had a psychiatric diagnosis of SMI which was not recorded in the inpatient hospital folder, Clinicom records or the ACT folder for the study period and data collection. The rates of occurrence of the three psychiatric conditions in females and males were significantly different in all three psychiatric conditions (Chi-square=13.821, df=2, p=0.001). A significantly larger proportion of males compared to females had a diagnosis of schizophrenia (66.7% versus 33.3%) whilst a larger proportion of females compared to males had a diagnosis of bipolar disorder (30% versus 5%) and schizoaffective disorder (37.7% versus 28.3%), (see Table 3).

Table 3: Gender of patients and psychiatric diagnosis of severe mental illness (SMI) (n=90)

			Schizophrenia	Schizoaffective disorder	Bipolar disorder	Total for all SMI conditions
Gender	F	Count	n=10	n=11	n=9	n=30
		Percentage within gender	33.3%	36.7%	30.0%	
	M	Count	n=40	n=17	n=3	n=60
		Percentage within gender	66.7%	28.3%	5.0%	
Total count		Count	n=50	n=28	n=12	n=90
		Percentage of total group(n=90)	55.6%	31.1%	13.3%	

Ninety-one (n=91) out of 104 cases have used substances. (see Table 4). Of the cases for which substance use is known, for males and females combined, forty (44%) of the patients used cannabis, thirty (33%) used methamphetamine and nine (10.5%) used other substances including methaqualone (mandrax) and glue. Of the 92 patients (88.5%) that were reported to use alcohol, 21 (22.8%) had an alcohol use disorder. Sixty-five cases smoked tobacco of which sixty patients (92.3%) smoked currently. Five of the sample (7.7%) were documented as never having smoked tobacco. When males were compared to females, there was significantly higher number of males who used substances compared to females with regards to cannabis (Chi-Square 23.96, df=1, p=0.000) and methamphetamine (Chi-Square=4.51, df=1, p=0.038).There was no significant gender difference in use of other substances, including alcohol and tobacco.

Table 4: Substance use within the ACT population categorised by gender.

Substance used	Females (F)		Males (M)		Chi-square p value
	Denominator = number of patients for whom data was available	Percentage within gender	Denominator = number of patients with data	Percentage within gender	

Cannabis	3/32	9.4%	37/59	62.7%	0.000
Methamphetamine	6/32	18.8%	24/59	40.7%	0.038
*other substances	1/31	3.2%	8/55	14.5%	0.147
Alcohol	5/32	15.6%	16/60	26.7%	0.301
Tobacco smoking	21/24	87.5%	39/41	95.1%	0.350

***other substances: methaqualone, glue**

Ninety-nine (95.2%) patients were prescribed psychotropic drugs which included typical and atypical antipsychotics, mood stabilisers and antidepressants. Seventy eight patients (78.8%) were prescribed typical antipsychotics, seventy eight patients (78.8%) were prescribed long acting injectable antipsychotics and fifty-nine patients (59.6%) were prescribed atypical antipsychotics. Of those prescribed typical antipsychotics, thirty (38.5%) had a metabolic screen recorded over the study period and twenty-eight patients (47.5%) prescribed atypical antipsychotics had a metabolic screen. Thus, in total 58 patients (36.5%) in the study had a metabolic screen recorded. The majority of patients (ninety-nine or 95.2%) were prescribed more than one type of antipsychotic medication, for example a long acting injectable antipsychotic and an oral agent. The combined number of patients screened for common medical conditions at the community clinics and Valkenberg Hospital was 39 (37.5%).

Table 5: Documentation of medical conditions at Valkenberg Hospital and Community Health Centres combined.

Medical condition	Responses by gender		Total number documented (males and females)	Percentage of total sample	Percentage of all cases with a medical condition
	male	female			
Medication side-effects	14	7	21	22.3%	39.6%
Hypercholesterolemia	9	8	17	18.1%	32.1%

Hypertension	2	8	10	10.6%	18.9%
HIV	3	5	8	8.5%	15.1%
Diabetes mellitus	2	3	5	5.3%	9.4%
Chronic obstructive pulmonary disease (COPD)	3	1	4	4.3%	7.5%
Gastro-oesophageal reflux disease (GORD)	4	0	4	4.3%	7.5%
Asthma	1	2	3	3.2%	5.7%
Eye conditions	2	1	3	3.2%	5.7%
Skin conditions	0	3	3	3.2%	5.7%
Dental caries	2	0	2	2.1%	3.8%
Arthritis	0	2	2	2.1%	3.8%
Thyroid conditions	0	2	2	2.1%	3.8%
Hepatitis	1	1	2	2.1%	3.8%
Obesity	0	2	2	2.1%	3.8%
Anaemia	0	2	2	2.1%	3.8%
Epilepsy	1	0	1	1.1%	1.9%
Renal conditions	1	0	1	1.1%	1.9%
Hearing problems	0	1	1	1.1%	1.9%
Total	45	49	94	100%	

Table 6: Medical conditions documented at Valkenberg Hospital and the Community Clinics

Medical condition	Responses at VBH		Responses at CHC	
	Count	Percentage of VBH responses	Count	Percentage of CHC responses
Hypertension	8	9.5%	5	17.2%
Diabetes mellitus	5	6.0%	3	10.3%
Hypercholesterolemia	15	17.9%	7	24.1%
HIV	8	9.5%	3	10.3%
Chronic obstructive pulmonary disease (COPD)	2	2.4%	3	10.3%

Epilepsy	1	1.2%	1	3.4%
Asthma	3	3.6%	2	6.9%
Medication side effects	21	25.0%	0	0%
Dental caries	2	2.4%	0	0%
Skin conditions	2	2.4%	1	3.4%
Arthritis	1	1.2%	1	3.4%
Thyroid conditions	2	2.4%	0	0%
Hepatitis	2	2.4%	0	0%
Eye conditions	3	3.6%	0	0%
Gastroesophageal reflux disease (GORD)	4	4.8%	1	3.4%
Obesity	2	2.4%	0	0%
Anaemia	2	2.4%	0	0%
Renal conditions	1	1.2%	0	0%
Cardiac conditions	0	0%	1	3.4%
Hearing problems	0	0%	1	3.4%

Of the data that was available in either the VBH ACT service or CHC folders, the following rates of medical conditions were observed (see Tables 5 and 6). For a majority of patients, as detailed below, no data was available in the folders to indicate whether specific medical conditions were screened for or excluded. Of the entire study sample fifty-three patients (51%) had at least one medical condition and fifty-one (49%) had no medical conditions recorded. The frequency of medical conditions per patient is presented in Table 7. The most common active medical conditions combined at the 2 facilities were medication side-effects which includes extrapyramidal side-effects, drooling, clozapine induced constipation (22.3%), hypercholesterolemia (18.1%) and hypertension (10.6%). A greater number of medical conditions were recorded at Valkenberg hospital compared to the community clinics (Table 6). At Valkenberg hospital the most common medical conditions were medication side-effects (25%), hypercholesterolemia (17.9%) and hypertension (9.5%) (see Table 6). At the CHCs the commonest conditions documented were hypercholesterolemia (24.1%), hypertension (17.2%) and HIV, diabetes mellitus and COPD at 10.3% (see Table 6).

Table 7: Frequency of medical conditions per patient at VBH and CHC combined (n=104)

Number of diseases	Frequency	Percentage

0	51	49.0%
1	29	27.9%
2	12	11.5%
3	8	7.7%
4	3	2.9%
5	1	1.0%
Total	104	100.0

The highest numbers of patients with metabolic illnesses such as hypertension, diabetes mellitus and hypercholesterolemia occurred in the age range of 44-53 years. Hypertension, diabetes mellitus and HIV were more common in females compared to males in this population (see Table 8). Of the medical conditions documented, only hypertension was significantly correlated with SMI (Chi-square Linear-by-Linear association=5.09, df=1, p=0.024). There were no other statistically significant correlations of any severe mental illness with any other medical condition documented.

There were also no significant differences between the rates of follow up at the clinic and the documented psychiatric conditions.

Discussion

This study set out to determine the rate and type of medical conditions among patients treated by the ACT team of Valkenberg hospital and to compare that to the medical conditions recorded at the community health centres.

The study found low rates of documented medical conditions among the patients with SMI managed by the Assertive community treatment team of Valkenberg hospital and the community clinics. These findings are not consistent with other studies that found high rates of chronic medical conditions and metabolic syndrome among people with severe mental illness (14, 18, 28, 29). The rate of other medical conditions is likely to be underestimated as patients were not routinely screened at both Valkenberg hospital and the community health centres. Similar findings have also been reported found in other studies (12, 14). Possible barriers to screening have been captured in a study by Wheeler et al and includes lack of practitioner knowledge and skills, lack of clarity about whose role it is to do the screening, poor liaison between primary care and ACT service, clients' poor socioeconomic status influencing their ability to access the clinics and lack of time and resources to do the screening (5).

The high rates of hypercholesterolemia and hypertension that were found among the patients at Valkenberg hospital could be related to multiple factors including the side-effect profile of the psychotropic drugs, high rates of smoking, poor diet and lack of exercise (4). This alerts to the high risk for these patients of cardiovascular disease. Ceiley et al conducted a study looking at active medical conditions on an ACT team and found that hypertension was the second most common condition after osteoarthritis but hyperlipidemia was less common in their study (18).

Several common health conditions, such as oral health and visual problems, are not consistently or routinely screened for or recorded in the general health services studied and this deficit was reflected in the study findings.

No deaths were recorded for this study period.

This study results also demonstrate a significant discrepancy between the number of patients recorded to have a medical condition at the hospital and community clinic health facilities, especially for the metabolic conditions and HIV. Of concern, it appears some medical conditions were recorded at Valkenberg hospital and not the community clinic where the clients are expected to receive treatment for these conditions. This was the case for hypertension, diabetes mellitus and HIV which are illnesses known to lead to significant morbidity and mortality if left untreated. This finding could indicate that medical conditions were diagnosed at Valkenberg hospital but that patients did not necessarily follow through with the referral to the clinic for further management.

Another key finding was that medication side-effects were recorded at Valkenberg hospital and none at the local clinics. This could imply that mental health care workers are more aware of medication induced side-effects and has implications for the community based care of patients on such medications.

This study highlights low levels of screening for metabolic conditions at both Valkenberg hospital and the community health clinics. This has been found in the literature both nationally and internationally (7, 12, 14). A study by Saloojee, et al found that less than one percent of patients with severe mental illness in that study population was screened for all five components of metabolic syndrome (12). Cardiometabolic monitoring of patients treated with antipsychotic medications are generally low despite the United States of America Federal Food and Drug Association class warning about the cardiometabolic side effects of second generation agents (30)

and the known increase in risks of cardiometabolic side effects with combinations of antipsychotics (19).

The median age for patients in the ACT team was 50 years for males and 42 years for males. There was a clustering of increased metabolic illnesses in the age range of 44-53 years. A study of metabolic syndrome in people with SMI showed that the prevalence of metabolic syndrome increased in the age groups from 30 to 59 years old (31). Based on this observation it is apparent that the Valkenberg Hospital ACT population is not only burdened with SMI but also at greater risk of having a medical condition based on age. The ACT team does not provide for the management of patients older than 60 years who are likely to have numerous comorbid medical conditions. Based on the evidence that mental health care users generally access and receive less optimal medical care than the general population, the health status of the patients over 60 years old who have been discharged from the ACT service is of concern.

Significantly high rate of smoking and substance use disorders were found in this study population. This is consistent with high rates of substance use in the Western Cape (32-34). Cannabis and methamphetamine use was higher in males compared to females. A previous South African study found that males were eight to nine times more likely than females to use any substance(35). This has implications for adherence to treatment as well as morbidity, mortality, recurrent relapses and hospital admissions, unemployment and poor psychosocial functioning in the population with SMI. One can argue that the ACT team should consider providing a substance use disorders clinical service or routinely provide motivational interviewing with the clients to assist them to manage their substance use. A significant number of patients admitted their substance use to the ACT staff which could be seen as a positive clinician-patient relationship and should be used to target substance use amongst the patients. Brief screening for substance use disorders should also be undertaken at primary health care level.

Based on the study findings, the following recommendations are made for the Valkenberg Hospital ACT service as well as primary health care service:

First, the responsibility for regular metabolic, HIV and other health related screening on the ACT clients need to be determined. Routine metabolic screening however is the responsibility of the prescribing clinician and in this instance it is recommended that the ACT team provide this service. The ACT team is best placed to screen for medical conditions as the staff have regular contact with clients and can liaise with treatment support partner and CHC. Ideally the ACT staff members need

to work closely with the patients and community health centre staff to ensure that this screening is done.

The ACT team needs to be clear on what needs to be screened for and how frequently screening should be done therefore they need to be up to date with the most recent screening protocols appropriate to their setting.

Screening should not only focus on metabolic illness but all illnesses common to this group including eye and dental health care.

Second, the ACT team should be more involved in health promotion and prevention of chronic illness. They should address physical health care needs in a preventive rather than reactive manner. This includes psychoeducation on regular testing for medical conditions especially HIV and metabolic syndrome, smoking cessation and the need for routine gynaecological screening and regular dental visits.

Third, a recommendation from the findings is that case management of ACT patients could be re-viewed to include integrated management of psychiatric disorders, substance use disorders and common primary medical conditions as well as health promotion.

Limitations of the study

There were several limitations to this study.

The data and interpretation of the data in the study were dependent on the extent to which clinical notes were recorded in the patient folders. Thus missing data in this study may have influenced the results of the study. Obtaining the clinic data for the ACT clients was challenging as some folders were lost. Further, consent was not granted by all the community clinics that the ACT clients attend resulting in incomplete data for approximately seventeen patients attending those clinics.
The data extraction was undertaken by the primary researcher.

The sampling strategy used in this study was convenience sampling which may have influenced outcomes of the study.

The study was located in one geographical area and findings will not be generalizable to other service settings.

The study sample was small and the study period was relatively short which may be a limitation for generalization of the study results.

The strength of the study is that it highlights that clients with SMI do not receive adequate care in the community. It highlights a service gap and service delivery need which has to be addressed in future.

Conclusion

The study highlights that the documentation and screening of medical conditions by the ACT team and CHC is suboptimal. . Medical conditions are poorly screened for and therefor may go untreated in this population.

Treating clinicians should be clear on what screening is required and whose role it is to undertake this screening.

The ACT service has proven itself to be successful in reducing recurrent hospital admissions in patients with severe mental illness but does not address their comorbid medical conditions which affect quality of life and life expectancy.

The ACT team is in the better position to provide the screening and management of common medical conditions.

In conclusion, further research is needed in physical health outcomes in patients with severe mental illness in resource limited settings. Future research could also focus on the management of comorbid medical conditions among patients with SMI and the specific roles of mental health and general health practitioners in the care of this vulnerable population.

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Appendices

UNIVERSITY OF CAPE TOWN
Faculty of Health Sciences
Human Research Ethics Committee

Room E53-46 Old Main Building
Groote Schuur Hospital
Observatory 7925
Telephone [021] 406 6626
Email: shuretta.thomas@uct.ac.za
Website: www.health.uct.ac.za/fhs/research/humanethics/forms

16 November 2016

HREC REF: 803/2016

Prof C Adnams
Psychiatry & Mental Health
J-Block
GSH

Dear Prof Adnams

PROJECT TITLE: COMMON ACTIVE CO-MORBID MEDICAL CONDITIONS AMONG MENTAL HEALTH USERS TREATED BY THE ASSERTIVE COMMUNITY TREATMENT TEAM AT VALKENBERG (MMed candidate- Dr CI Viotman)

Thank you for submitting your study to the Faculty of Health Sciences Human Research Ethics Committee.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year until the 30th November 2017.

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period. (Forms can be found on our website: www.health.uct.ac.za/fhs/research/humanethics/forms)

Please quote the HREC REF in all your correspondence.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please note that for all studies approved by the HREC, the principal investigator **must** obtain appropriate institutional approval before the research may occur.

The HREC acknowledge that the student, Dr Carmen Ilse Viotman will also be involved in this study.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN RESEARCH ETHICS COMMITTEE
Federal Wide Assurance Number: FWA00001637.

HREC 803/2016

Western Cape Government
Health

STRATEGY & HEALTH SUPPORT
Health.Research@westerncape.gov.za
tel: +27 21 483 6857; fax: +27 21 483 9895
5th Floor, Norton Rose House., 8 Riebeek Street, Cape Town, 8001
www.capegateway.gov.za

REFERENCE: WC_2016RP8_754
ENQUIRIES: Ms Charlene Roderick

University of Cape Town

Anzio Road

Observatory

Cape Town

7925

For attention: Dr Carmen Vlotman, Prof Colleen Adnams

Re: **Common active comorbid medical conditions among mental health users treated by the Assertive Community Treatment Team at Valkenberg Psychiatric Hospital..**

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research.

Please contact following people to assist you with any further enquiries in accessing the following sites:

Valkenberg Hospital	**Estelle Malgas**	**021 826 5805**

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.

2. Researchers, in accessing provincial health facilities, are expressing consent to provide the department with an electronic copy of the final feedback (**annexure 9**) within six months of

completion of research. This can be submitted to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

3. In the event where the research project goes beyond the *estimated completion* date which was submitted, researchers are expected to complete and submit a progress report (**Annexure 8**) to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

4. The reference number above should be quoted in all future correspondence.

Yours sincerely

AJ HAWKRIDGE.

DR A HAWKRIDGE

DIRECTOR: HEALTH IMPACT ASSESSMENT

DATE: 1/12/2016.

Western Cape Government
Health

STRATEGY & HEALTH SUPPORT
Health.Research@westerncape.gov.za
tel: +27 21 483 9536 fax: +27 21 483 9851
8th Floor, Norton Rose House, 8 Riebeek Street, Cape Town, 8001
www.capegateway.gov.za

REFERENCE: WC_2016RP8_754
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University of Cape Town

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7925

For attention: Dr Carmen Visman, Prof Colleen Adnams

Re: **Common Active Comorbid Medical Conditions Among Mental Health Users Treated by the Assertive Community Treatment Team at Valkenberg Psychiatric Hospital.**

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research.

Please contact following people to assist you with any further enquiries in accessing the following sites:

Hanover Park CHC	**Loretta Abrahams**	**021 691 6648**

Kindly ensure that the following are adhered to:

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9th Floor, Norton Rose House, 8 Riebeek Street, Cape Town, 8001
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University of Cape Town

Anzio Road

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For attention: Dr Carmen Wolmarans, Prof Colleen Adnams

Re: **Common Active Comorbid Medical Conditions Among Mental Health Users Treated by the Assertive Community Treatment Team at Valkenberg Psychiatric Hospital.**

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research.

Please contact following people to assist you with any further enquiries in accessing the following sites:

Dr Abdurahman CDC	**Florence Burger**	**021 637 9071**
Mitchells Plain CHC	**Neal David**	**021 391 5899**

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.
2. Researchers, in accessing provincial health facilities, are expressing consent to provide the department with an electronic copy of the final feedback (**annexure 9**) within six months of completion of research. This can be submitted to the provincial Research Co-ordinator (Health.Research@westerncape.gov.za).

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University of Cape Town

Anzio Road

Observatory

Cape Town

7925

For attention: Dr Carmen Vlotman Prof Colleen Adrians

Re: **Common Active Comorbid Medical Conditions Among Mental Health Users Treated by the Assertive Community Treatment Team at Valkenberg Psychiatric Hospital.**

Thank you for submitting your proposal to undertake the above-mentioned study. We are pleased to inform you that the department has granted you approval for your research.

Please contact following people to assist you with any further enquiries in accessing the following sites:

Retreat CHC	**Henry Lemmetjies**	**021 713 9741**
Lady Michaelis CDC	**Evelina Weavers**	**021 797 8171**
Greenpoint CHC	**Faalqa Gamieldien**	**021 421 0288**
Grassy Park CHC	**Charmaine Levendal**	**021 705 3814**
Vanguard CHC	**Lunlu Mbanga**	**021 685 8242**
Lotus River CHC	**Goironessa Jones**	**021 703 3131**
Robbie Nurock CHC	**Esme van Wyk**	**021 461 1124**

Kindly ensure that the following are adhered to:

1. Arrangements can be made with managers, providing that normal activities at requested facilities are not interrupted.

RESEARCH QUESTIONNAIRE

Common active comorbid medical conditions among mental health users treated by the Assertive Community Treatment team at Valkenberg psychiatric hospital

DEMOGRAPHIC AND CLINICAL INFORMATION

DATE:

1. **IDENTIFYING DATA:**

PATIENT LABEL

2. **MARITAL STATUS:**

1=SINGLE, 2=MARRIED, 3=DIVORCED/SEPARATED, 3=WIDOW/WIDOWER

3. **HLOE:**
    A. PRIMARY SCHOOL (less than grade 7)
    B. SECONDARY SCHOOL (grade 8-12)
    C. TERTIARY EDUCATION (higher than grade 12)
    D. NOT RECORDED

4. **EMPLOYMENT IN LAST YEAR : YES/NO AND TYPE:_____**
    A. UNEMPLOYED
    B. PART TIME EMPLOYMENT
    C. FULL TIME EMPLOYMENT
    D. NOT RECORDED

5. **DISABLITY GRANT**:
    A. YES
    B. NO
    C. NOT RECORDED

6. **DATE WHEN ENROLLED IN ACT PROGRAM:**_____

7. **PRIMARY PSYCHIATRIC DIAGNOSIS**

    A. SCHIZOPHRENIA
    B. SCHIZOAFFECTIVE DISORDER
    C. BIPOLAR DISORDER
    D. OTHER – specify: _____

8. COMORMID SUBTANCE USE AND WHICH SUBSTANCE

A. ALCOHOL
B. CANNABIS
C. METHAMPHETAMINE (TIK)
D. OTHER – specify: _____
E. COMBINATION OF ABOVE
F. NONE OF ABOVE

9. SMOKER

A. CURRENT SMOKER: YES/NO
B. EX-SMOKER: YES/NO
C. NEVER SMOKED
D. NOT RECORDED

10. **PSYCHOTROPIC MEDICATION DURING 01/01/2015-31/12/201**5 :

	VALKENBERG HOSPITAL FOLDER	COMMUNITY HEALTH CLINIC FOLDER
TYPICAL ANTIPSYCHOTICS YES/NO SPECIFY WHICH ONES		
ATYPICAL ANTIPSYCHOTICS YES/NO SPECIFY WHICH ONES		
MOOD STABILISERS/ ANTIDEPRESSANTS YES/NO SPECIFY WHICH ONES		
ANTICHOLINERGICS YES/NO SPECIFY WHICH ONES		
OTHER PSYCHOTROPIC MEDICATION(stimulants, etc): YES/NO SPECIFY WHICH ONES		

11. Investigations during 2015

Facility: VBH / CHC

Investigations of interest at VBH	Ever done at VBH during the year?	Result
WEIGHT (KG)	No / Yes → # times: _____	_____.__ kg
HEIGHT (CM)	No / Yes → # times: _____	_____cm
BODY MASS INDEX	No / Yes → # times: _____	
BLOOD PRESSURE	No / Yes → # times: _____	
BLOOD GLUCOSE	No / Yes → # times: _____	
CHOLESTEROL	No / Yes → # times: _____	
TRIGLYCERIDES	No / Yes → # times: _____	
HIV	No / Yes → # times: _____	neg. / pos. →

Investigations of interest at CHC	Ever done at CHC during the year?	Result
WEIGHT (KG)	No / Yes → # times: _____	_____._ _ kg
HEIGHT (CM)	No / Yes → # times: _____	_____cm
BODY MASS INDEX	No / Yes → # times: _____	
BLOOD PRESSURE	No / Yes → # times: _____	
BLOOD GLUCOSE	No / Yes → # times: _____	
CHOLESTEROL	No / Yes → # times: _____	
TRIGLYCERIDES	No / Yes → # times: _____	
HIV	No / Yes → # times: _____	neg. / pos. →

12. CO-MORBID MEDICAL CONDITIONS PRESENT AS DOCUMENTED IN 2015

DATE OF FOLDER REVIEW:_____---

PLEASE FILL IN THIS PAGE FOR BOTH VBH AND CHC

Facility: VBH / CHC

Co-morbidities of interest	Existing diagnosis, documented in notes	NEW Diagnosis made	Referral made
HYPERTENSION	No / Yes →	No / Yes →	No / Yes → CHC name: _____
DIABETES MELLITUS	No / Yes →	No / Yes →	No / Yes → CHC name: _____
HYPERCHOLESTEROLAEMIA	No / Yes →	No / Yes →	No / Yes → CHC name: _____
HIV	No / Yes →	No / Yes →	No / Yes → CHC name: _____
COPD	No / Yes →	No / Yes →	No / Yes → CHC name: _____
EPILEPSY	No / Yes →	No / Yes →	No / Yes → CHC name: _____
ASTHMA	No / Yes →	No / Yes →	No / Yes → CHC name: _____
OTHER (e.g. Epilepsy, dental problems, movement disorders, chronic headaches, eye problems) Specify: _____	No / Yes →	No / Yes →	No / Yes → CHC name: _____

13. CO-MORBID MEDICAL CONDITIONS PRESENT AS DOCUMENTED IN 2015

DATE OF FOLDER REVIEW:_____---

PLEASE FILL IN THIS PAGE FOR BOTH VBH AND CHC

Facility: VBH / CHC

Co-morbidities of interest	Existing diagnosis, documented in notes	NEW Diagnosis made	Referral made
HYPERTENSION	No / Yes →	No / Yes →	No / Yes → CHC name: _____
DIABETES MELLITUS	No / Yes →	No / Yes →	No / Yes → CHC name: _____
HYPERCHOLESTEROLAEMIA	No / Yes →	No / Yes →	No / Yes → CHC name: _____
HIV	No / Yes →	No / Yes →	No / Yes → CHC name: _____
COPD	No / Yes →	No / Yes →	No / Yes → CHC name: _____
EPILEPSY	No / Yes →	No / Yes →	No / Yes → CHC name: _____
ASTHMA	No / Yes →	No / Yes →	No / Yes → CHC name: _____
OTHER (e.g. Epilepsy, dental problems, movement disorders, chronic headaches, eye problems) Specify: _____	No / Yes →	No / Yes →	No / Yes → CHC name: _____

General article format/layout

Accepted manuscripts not in the correct format specified in these guidelines will be returned to the author(s) for correction, which will delay publication.

General:

- Manuscripts must be written in UK English.
- The manuscript must be in Microsoft Word or RTF document format. Text must be single-spaced, in 12-point Times New Roman font, and contain no unnecessary formatting (such as text in boxes).
- Please make your article concise, even if it is below the word limit.
- Qualifications, ***full*** affiliation (department, school/faculty, institution, city, country) and contact details of ALL authors must be provided in the manuscript, and in the online submission process.
- Abbreviations should be spelt out when first used and thereafter used consistently, e.g. 'intravenous (IV)' or 'Department of Health (DoH)'.
- Scientific measurements must be expressed in SI units except: blood pressure (mmHg) and haemoglobin (g/dL).
- Litres is denoted with an uppercase L e.g. 'mL' for millilitres).
- Units should be preceded by a space (except for % and ºC), e.g. '40 kg' and '20 cm' but '50%' and '19ºC'.
- Please be sure to insert proper symbols e.g. µ not u for micro, a not a for alpha, b not B for beta, etc.
- Numbers should be written as grouped per thousand-units, i.e. 4 000, 22 160.
- Quotes should be placed in single quotation marks: i.e. The respondent stated: '…'
- Round brackets (parentheses) should be used, as opposed to square brackets, which are reserved for denoting concentrations or insertions in direct quotes.
- If you wish material to be in a box, simply indicate this in the text. You may use the table format –this is the *only* exception Please DO NOT use fill, format lines and so on.

Research

Guideline word limit: 4 000 words

Research articles describe the background, methods, results and conclusions of an original research study. The article should contain the following sections: introduction, methods, results, discussion and conclusion, and should include a structured abstract (see below). The introduction should be concise – no more than three paragraphs – on the background to the research question, and must include references to other relevant published studies that clearly lay out the rationale for conducting the study. Some common reasons for conducting a study are: to fill a gap in the literature, a logical extension of previous work, or to answer an important clinical question. If other papers related to the same study have been published previously, please make sure to refer to them specifically. Describe the study methods in as much detail as possible so that others would be able to replicate the study should they need to. Results should describe the study sample as well as the findings from the study itself, but all interpretation of findings must be kept in the discussion section, which should consider primary outcomes first before any secondary or tertiary findings or post-hoc analyses. The conclusion should briefly summarise the main message of the paper and provide recommendations for further study.

Select figures and tables for your paper carefully and sparingly. Use only those figures that provided added value to the paper, over and above what is written in the text.

Do not replicate data in tables and in text

Structured abstract

- This should be 250-400 words, with the following recommended headings:
    - **Background:** why the study is being done and how it relates to other published work.
    - **Objectives:** what the study intends to establish
    - **Methods:** must include study design, number of participants, description of the intervention, primary and secondary outcomes, any specific analyses that were done on the data.
    - **Results:** first sentence must be brief population and sample description; outline the results according to the methods described. Primary outcomes must be described first, even if they are not the most significant findings of the study.
    - **Conclusion:** must be supported by the data, include recommendations for further study/actions.
- Please ensure that the structured abstract is complete, accurate and clear and has been approved by all authors.
- Do not include any references in the abstracts.

Main article

All articles are to include the following main sections: Introduction/Background, Methods, Results, Discussion, Conclusions.

The following are additional heading or section options that may appear within these:

- Objectives (within Introduction/Background): a clear statement of the main aim of the study and the major hypothesis tested or research question posed
- Design (within Methods): including factors such as prospective, randomisation, blinding, placebo control, case control, crossover, criterion standards for diagnostic tests, etc.
- Setting (within Methods): level of care, e.g. primary, secondary, number of participating centres.
- Participants (instead of patients or subjects; within Methods): numbers entering and completing the study, sex, age and any other biological, behavioural, social or cultural factors (e.g. smoking status, socioeconomic group, educational attainment, co-existing disease indicators, etc) that may have an impact on the study results. Clearly define how participants were enrolled, and describe selection and exclusion criteria.
- Interventions (within Methods): what, how, when and for how long? Typically for randomised controlled trials, crossover trials, and before and after studies.
- Main outcome measures (within Methods): those as planned in the protocol, and those ultimately measured. Explain differences, if any.

Results

- Start with description of the population and sample. Include key characteristics of comparison groups.
- Main results with (for quantitative studies) 95% confidence intervals and, where appropriate, the exact level of statistical significance and the number need to treat/harm. Whenever possible, state absolute rather than relative risks.
- Do not replicate data in tables and in text.
- If presenting mean and standard deviations, specify this clearly. Our house style is to present this as follows:
- g.: The mean (SD) birth weight was 2 500 (1 210) g. Do not use the ± symbol for mean (SD).
- Leave interpretation to the Discussion section. The Results section should just report the findings as per the Methods section.

Discussion

Please ensure that the discussion is concise and follows this overall structure – sub-headings are not needed:

- Statement of principal findings
- Strengths and weaknesses of the study
- Contribution to the body of knowledge
- Strengths and weaknesses in relation to other studies
- The meaning of the study – e.g. what this study means to clinicians and policymakers
- Unanswered questions and recommendations for future research

Conclusions

This may be the only section readers look at, therefore write it carefully. Include primary conclusions and their implications, suggesting areas for further research if appropriate. Do not go beyond the data in the article.

List of Tables