Irish College of General Practitioners

Promoting the Physical Health of Patients with Enduring Mental Illness

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Undertaken by the Irish College of General Practitioners

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Executive Summary

People with enduring mental illness (EMI) have a mortality rate two to three times higher than the general population. They also have a higher prevalence of diabetes mellitus, metabolic syndrome, cardiovascular disease, respiratory disease and infectious disease. Modifiable risk factors such as smoking, alcohol consumption, physical inactivity and poor diet are more prevalent amongst those with EMI compared with the general population. This study sought to increase the provision of brief interventions for chronic disease risk factors in patients with EMI. Brief interventions entail primary care staff giving short advice on lifestyle habits and signposting relevant services.

The overall aim of the study was to develop and assess a standard protocol to aid the health professional in the monitoring and treatment of the physical health of patients who have a severe mental health illness presenting in general practice. The project comprised of:

- semi-structured with GPs, practice nurses and members of community mental health teams (CMHTs) at the study outset to understand their experience of providing services in relation to physical health for patients with EMI
- the development of an audit tool for practices and the ability to upload anonymous retrospective patient data
- the piloting of a patient held shared care card
- the creation of a structured proforma for recording physical health data in the main practice management software
- semi-structured interviews with GPs and practice nurses to evaluate the above aspects

Thirty-five GPs in 11 practices based in Dublin, Cork, and Galway participated in the study.

In the semi-structured interviews at the start of the project, service providers were knowledgeable that people with EMI had an increased risk of physical health illnesses and agreed that physical health measures should be monitored. While some patient level difficulties were identified, the key barriers noted were at a system level - difficulties communicating and resources. Furthermore, it was unclear to respondents whose responsibility it was to monitor, detect and manage the physical health of patients with EMI.

The review of the three main GP PMS systems (Socrates, HPM and HealthOne) in terms of their ability to record and extract data, as well as their reporting functionality, revealed significant limitations. The main challenges occurred due to systems recording risk factors through multiple variables and formats and a lack of clarification regarding where and how relevant interventions could be recorded. Furthermore, while the reporting functions may be

sufficient for brief clinical reference, they were found to be insufficient for research and audit purposes.

Rates of physical health monitoring in primary care are significantly lower for people with EMI despite consultations rates being much higher according to the literature. There are several issues in the main practice management software systems which make it difficult to systematically record chronic disease risk factors and brief interventions accurately. Therefore, a structured proforma - the physical health monitoring (PHM) tab - was developed to facilitate the systematic and structured recording of key physical health variables and brief interventions. Feedback from GPs on the PHM tab was largely positive with the majority of service providers expressing approval of the tab with suggestions for changes to the layout and content.

Interviews post intervention revealed that the feasibility of introducing a shared care card into Irish general practice for patients with EMI is low. A potential alternative to the shared care card might be the Patient Held Active Record of Medication Status (PHARMS) which has been developed in University College Cork. This intervention would serve many of the same functions as the shared care card while also addressing some of the issues raised by GPs. This includes problems with a paper based card and time taken to fill out the card. The PHARMS may act as an interim solution while a shared electronic health record is awaiting approval from the Irish government.

Given the rates of EMI found, and the increase in coding after GPs were asked to use the *finder* tool, was 4% for RDD, 11% for schizophrenia and 28% for bipolar disorder, it seems likely that there are many patients with EMI who have not been coded with EMI. However, there are several limitations which undermine the validity of the prevalence figures reported.

An understanding of the lifetime prevalence of EMIs in Ireland can help inform the resourcing of general practice. Further research conducting face-to-face interviews of general practice patients in Ireland could provide a more accurate figure for the prevalence of EMIs in Ireland. Improving the validity of diagnostic coding should be a priority in Ireland in order to provide more accurate prevalence and impact data.

Introduction

Physical health of patients with EMI

Enduring mental illnesses (EMI) account for 54.9% of disability-adjusted life years (DALYs) caused by mental and substance use disorders[1]. EMI comprise schizophrenia, bipolar disorder and (recurrent) depressive disorder. Much of these DALYs are accounted for by physical illness. People with EMI have a mortality rate two to three times higher than the general population[2]. This translates into a reduced life expectancy of between 13 and 30 years[2]. This gap in mortality has widened recently, including in developed health systems such as Sweden[3], Finland[4], and Denmark[4]. Hert and colleagues[2] estimated that 60% of this increase in mortality is caused by physical illness. Among people with EMI there is a higher prevalence of diabetes mellitus[5], metabolic syndrome[6], cardiovascular disease[7], respiratory disease[8] and infectious disease[9]. Cancer morbidity rates are the same for people with EMIs and the general population. However, there is evidence of increased cancer mortality rates for this group[10]. Chronic disease not only reduces life expectancy for patients with EMI, but also exacerbates their EMI[11], negatively affects quality of life and leads to increased stigma. There is a clear disparity between the physical health of people with EMI and the general population, and it is not solely arising directly from the EMI.

Causes of increased physical illness

There are five primary reasons for the disparities in physical health outcomes between the general population and those with EMI: side-effects of some psychiatric medications, increased rates of chronic disease risk factors, different healthcare utilisation patterns, lack of integration between primary and secondary services, and inequitable provision of healthcare.

Antipsychotic drugs

Antipsychotic drugs are found to increase the likelihood of weight gain[12]. Weight gain is even greater for novel antipsychotics[12], which are the primary treatment for psychotic disorders. Obesity is a major risk factor for several chronic diseases[13, 14]. Two-literature reviews[12, 15] concluded that for 40-80% of those taking antipsychotic drugs, their weight increases by more than 20% of what is deemed ideal body weight. Moreover, Alvaraz-Jiminez and colleagues[16] suggest that the studies which these reviews are based on underestimate weight gain. Antipsychotics can also increase one's cholesterol and blood sugar levels[17], which increases the probability of developing diabetes.

Modifiable chronic disease risk factors

Modifiable risk factors such as smoking, alcohol consumption, physical inactivity and poor diet are more prevalent amongst those with EMI compared with the general population. Smoking accounts for approximately 5.5% of the global burden of disease[18]. A meta-analysis[19] of worldwide studies of smoking prevalence in people with schizophrenia found that over 60% of people with schizophrenia are smokers. Therefore, their odds of being a current smoker are 5.3 times higher than the general population. Similar rates of smoking are found internationally in people with bipolar disorder[20].

Patients with EMI have been consistently found to have higher rates of alcohol consumption compared to the general population[21]. Alcohol consumption, even at low levels, is a risk factor for cancer[22] and cardiovascular disease[23].

Several studies[24, 25] have shown that patients with EMI are significantly less physically active. This may be partly caused by the lethargic effects of some medications. Physical inactivity is the cause of 6-10% of chronic diseases worldwide; these include cancer, CVD and diabetes mellitus[26].

In reviewing the literature on diet and EMI, Scott and Happell[21] found that people with EMI consume higher amounts of sucrose, sweetened drinks, and saturated fat. They also consume less fruit, vegetables, milk, potatoes and pulses compared to the general population. Generally, the diets of people with EMI are more likely to be high fat and low-fibre compared to the general population[21]. The risk of developing chronic disease is reduced by increasing one's fibre, pulse[27], fruit and vegetable[28] consumption. The risk is also reduced by decreasing one's fat[29], sugar and sweetened drink[30] intake. This is another example of how chronic disease risk factors are more prevalent amongst patients with EMI.

This study sought to increase the provision of brief interventions for chronic disease risk factors in patients with EMI. Brief interventions entail primary care staff giving short advice on lifestyle habits and signposting relevant services.

Utilisation of healthcare

Compounding the high prevalence of modifiable risk factors in people with EMI, the healthcare utilisation patterns of patients with an EMI differ from the general population. Lawrence and Kisely[10] point out in a review that schizophrenia patients with appendicitis present later for healthcare. This group also present with more complications and have worse outcomes after surgery[10]. Patients with EMI are less likely to report physical symptoms[11], potentially caused by the fact that antipsychotics act as analgesics[31].

However, Mai and colleagues[32] posit that high rates of physical illness in patients with EMI are primarily caused by inequitable provision of healthcare rather than different utilisation patterns.

Project Aim and Methodology

Aims and objectives

The overall aim of the study was to develop and assess a standard protocol to aid the health profession in the monitoring and treatment of the physical health of patients who have a severe mental health illness presenting in general practice/primary care.

The specific objectives were:

1. Investigate the current monitoring in general practice of the physical health care indicators among patients with EMI.
2. Obtain the views of service providers and users on needs, barriers and proposed intervention design.
3. Design, implement and evaluate strategies for GPs aimed at improving the physical health of people with EMI. These may include enhancements to practice management software (PMS) systems in use in GP practices to assist GPs to identify patients with EMI; the creation of a specific template (proforma) incorporated into the electronic PMS systems for recording risk factors and brief interventions and/or a patient held shared care card.
4. Implement and evaluate an audit for the physical health of patients with EMI in Irish general practice.

Methodology

Qualitative semi-structured telephone interviews were used to explore the experiences of GPs, practice nurses and members of community mental health teams (CMHTs) in accessing, utilising, and providing services in relation to physical health for patients with EMI.

In order to estimate the prevalence of EMI in Irish general practice, a data uploader, EMI search tool, and patient register was developed. An audit, which could be used by all practices, whether a participant in this project or not, was also designed and made available via the ICGP website.

A patient held shared care card was developed based on a review of the literature. The purpose of the shared care card was to encourage communication between primary care and secondary care, to increase focus on the physical health of patients with EMI, and to empower these patients.

A structured proforma was developed and implemented in two of the main practice management software systems in Ireland. This facilitated the systematic and structured recording of physical health variables, brief interventions and referrals. The structured proforma also included an advice section that would tailor advice for GPs depending on the data inputted on several chronic disease risk factors.

To evaluate the various aspects implemented, semi-structured interviews were conducted with GPs, practice nurses, and patients. The areas examined in these interviews covered practicality, acceptability, impact on workload and perceived impact on physical health.

The evaluation also involved the analysis of anonymous aggregated data provided by practices over an 18-month period.

Recruitment

Expressions of interest were sought from practices in Dublin, Cork, and Galway. An information session was conducted with GPs in each area, where information was provided on the finder tool, register tool, uploader, and shared care cards. GPs then signed a consent form outlining their agreement to take part in the study. Researchers sought to recruit practices using either the Socrates, Helix Practice Manager or HealthOne PMS systems.

Members of the relevant community mental health teams (CMHTs) were recruited via the local Health Services Executive (HSE) Executive Clinical Directors (ECDs).

Physical Health Monitoring Tab

The Physical Health Monitoring (PHM) tab created in PMS systems allowed users to systematically and accurately record chronic disease risk factors and brief interventions. While the PHM tab mirrors some data already collected in ‘baseline details’ or ‘vital signs’ areas (depending on the PMS system employed in the practice). It also provided for more comprehensive and structured information to be recorded. By selecting this tab, GPs were able to fill in fields including: Measurements, Smoking, Physical activity, Audit-C, Substance misuse, Vaccines, Tests, Brief intervention and Referral. If any of this information is already recorded in another part of the patient record, that information is transferred to the PHM tab section of the patient record, or vice-versa. As part of the PHM tab, an ability to conduct an audit on any of the chronic disease risk factors among the EMI practice population is also possible. This PHM tab was implemented in the three main software systems and is available for all patients, not just EMI patients, making it an ideal mechanism to implement the HSE Making Every Contact Count (MECC) Framework.

The content of the PHM tab fields

The ‘Measurements’ field contains a wide range of variables, including: Weight, Height, BMI, Waist/Abdominal circumference, Cholesterol, Systolic and Diastolic blood pressure, HBA1c, Random non-fasting glucose and FEV1.

The ‘Smoking status’ field allows a brief smoking screening by identifying patients as ‘Current’, ‘Ex-Smoker’, ‘Non-Smoker’ or ‘Passive’ smoker.

The ‘Audit-C’ tool contains four questions that enable GPs to accurately assess alcohol consumption and identify patients with active alcohol use disorders or a hazardous drinking status.

The ‘Physical activity’ field provides assessment in terms of frequency as well as the intensity of physical activity during a typical week for a patient.

The ‘Substance misuse’, ‘Vaccines’ and ‘Tests’ fields allow concise identification and recording of potential substance abuse, vaccines given (Flu Vaccine, Pneumococcal vaccine and Pertussis) and examinations undertaken (Smear test, Mammogram, Bowel cancer screening, PSA test, INR test and ECG).

The ‘Brief intervention’ field gives GPs the opportunity to record all relevant interventions in one place during consultations. GPs can select multiple interventions including: Weight, Smoking, Alcohol, Physical activity, Diet, Medication adherence, Substance misuse, Sexual health, Depression/anxiety, Other interventions and Patient declined. Recording all relevant interventions in one place provides GPs with a comprehensive overview of the type of advice offered to a particular patient.

The ‘Referral option’ field contains multi check-box options to select which service the patient was referred to. The options provided are community/voluntary programme, community service (e.g. PHN, dietician, OT), hospital/specialist service, Other referral and Patient declined.

Computerised clinical decision support

For this project, a basic computerised clinic decision support (CCDS) function was developed to assist healthcare staff in Irish primary care to delivery appropriate brief interventions to patients. This entails an advice section in which alerts appear when a chronic disease risk factor recording is not within recommended limits. For example if BMI is between 25-30 the advice section will have an alert in it in which it states ‘**INCREASED RISK**’, gives the patient brief intervention on the benefits of weight reduction, directs to resources, and provides a link to relevant NICE, HSE, or ICGP guidelines. Similar alerts are provided for alcohol, blood

pressure, smoking, and physical activity. As recommended by a synthesis of systematic reviews[33], this function is integrated with the PMS system to reduce workflow interruption.

Finder

Patients with diagnosed EMI illnesses are often not coded as such[34]. Therefore, a finder tool was developed. This tool was developed by the researchers in consultation with a consultant psychiatrist and a GP with expertise in mental health. The purpose of the finder tool was to aid GPs in identifying and coding patients who have an EMI but have not been coded with one. The finder provides a list of *active* adult patients who have not been coded with an EMI, and are currently being prescribed any of the medications in Table 1 or have any of the following terms typed in the patient's notes in the previous year: 'schizophrenia', 'schizophrenic', 'bipolar' 'schizoaffective disorder', 'affective psychosis' or 'psychosis'. Prescriptions have been found to be the best indicator of depression in a general practice setting[35]. All patients are by default classified as *active*. In order for their status to differ from this, they must be actively reclassified as *inactive*, *deceased* or *archived*. The list of patients provided by the finder is in descending order, from those that meet the highest number of inclusion criteria to those that meet the lowest number of inclusion criteria. The report provides the GP with the name, age, sex, GMS status, address, phone number, free text notes meeting inclusion criteria, medications prescribed and dosage of these medications of each included patient. The GP must then review this list and identify those patients who should be coded with the relevant conditions and therefore included in the register (described below).

Register

The register provides a list of patients in the GP's practice who have been coded as having an EMI. The codes used to include patients in this register can be found in Table 2. The list of relevant medications and ICPC-2 and ICD-10 codes were decided upon by an expert group that included two consultant psychiatrists and a general practitioner.

Uploader/Data Extraction

The data extraction tool sends anonymised information on patients coded with an EMI to a central database, when the GP accepts the terms and conditions and activates the data extraction. This included their year of birth as well as all coded EMI diagnoses ever, medicines prescribed, sex, GMS status, number of consultations, all information from the PHM tab, and all information from sections related to the PHM tab (for example vital signs in HPM and Baseline details in Socrates), for three years prior to upload.

Patients coded with any of the codes in Table 3 were excluded from the finder, register and uploader.

Clinical audit

Finally, to encourage GPs to improve the care of the physical health of patients with an EMI a clinical audit tool was developed. The Medical Practitioners Act 2007[36] introduced annual clinical audit as a legal requirement for GPs to maintain their professional competence. NICE[37] defines clinical audit as 'a quality improvement process that seeks to improve the patient care and outcomes through systematic review of care against explicit criteria and the implementation of change' (p. 1). A Cochrane review[38] of clinical audits concluded that audit, along with feedback, brings about small but sometimes important changes to clinical practice. The review[38] concluded that audit leads to improved compliance with guidelines. The review[38] also found results that suggest comparing the clinician's activity to peers leads to improved practice. As part of this project, an audit report was automatically generated when the GP activated a data uploader which provides the GP with information on the physical health of the respective practice's patients with EMI.

When a practice uses the uploader, they are immediately sent an Excel file with aggregated information on their practice's EMI patients and a comparison to all practices that have uploaded data. The Excel file contains several sheets, each of which analyses a different aspect of EMI patients' health indicators. The first sheet comprises information/graphs about demographics, prescriptions, diagnostic coding, consultations and referrals. All other sheets contain information about an individual chronic disease risk factor, the breakdown of patients' status and whether the doctor made an intervention or referral. This information is for smoking, BMI, alcohol, substance misuse, physical activity, blood pressure and cholesterol.

Data Analysis

Quantitative Data from Practices

The anonymous, aggregated data was extracted at practice level and uploaded to a central database via a secure connection. The data from the participating practices was analysed using Microsoft Excel and SPSS Statistics 25.

Qualitative Data

The qualitative data was collected through semi-structured interviews, which were audio recorded and transcribed verbatim. The interviews were undertaken with service users and service providers. The data was transcribed and analysed using thematic analysis by the research team through the NVIVO data management software. Codes were identified and grouped into key emerging themes.

Semi-structured telephone interviews were considered the most effective method for qualitative data collection. Interviews were conducted over the phone. Telephone interviewing is considered appropriate for interviewing a sample over a wide geographical spread[39] as well as a population with time constraints, such as health professionals[40]. It is also considered a medium which provides valid information[41].

Table 1: Medication inclusion criteria for finder

Antipsychotic Medicines		Cholinesterase Inhibitors		Other anti-dementia drugs	
ATC	Generic name	ATC	Generic name	ATC	Generic name
N05AH04	Quetiapine	N05B	Anxiolytics – Any Anxiolytic with ATC CODE starting with "N05B"	N06DX01	Memantine
N05AD01	Haloperidol				
N05AB06	Trifluoperazine				
N05AX08	Risperidone	N05C	Hypnotics and sedatives – Any Hypnotics and sedative with ATC CODE starting with "N05C"		
N05AH03	Olanzapine				
N05AB02	Fluphenazine				
N05AX13	Paliperidone				
N05AH02	Clozapine	N06B	Psychostimulants, Agents used for ADHD and Nootropics – Any Psychostimulants, Agents used for ADHD and Nootropics with ATC CODE starting with "N06B"		
N05AA01	Chlorpromazine				
N05ALO5	Amisulpride				
N05AX12	Aripiprazole				
N05ALO1	Sulpiride				
N05AF05	Zuclopenthixol				
N05AD07	Benperidol	N06C	Any Psycholeptics & Psychoanaleptics in combination with ATC CODE starting with "N06C"		
N05AF01	Flupentixol				
N05AA03	Promazine				
N05AC04	Pipothiazine				
N05AE03	Sertindole				
N05AE04	Ziprasidone				
N05AE05	Lurasidone				
N05AG02	Pimozide				
N05AH05	Asenapine				
N05AX13	Paliperidone				
N05AN01	Lithium 24				

Table 2: Disease code inclusion criteria for register and uploader

ICPC2	Clinical diagnosis	ICD-10	Clinical diagnosis
P71	Organic psychosis other	F09	Unspecified organic or symptomatic mental disorder
P72	Schizophrenia	F20	Schizophrenia
P73	Affective psychosis	F25	Schizoaffective disorder
P76	Depressive disorder	F29	Unspecified nonorganic psychosis
P98	Psychosis NOS/other	F30	Manic episode
		F31	Bipolar affective disorder
		F33	Recurrent depressive disorder
		F39	Unspecified mood [affective] disorder

Table 3: Disease code exclusion criteria for register and uploader

ICD-10	Clinical diagnosis
F22	Delusional disorders
F23	Brief psychotic disorder
F24	Shared psychotic disorder
F28	Other nonorganic psychotic disorders
F32	Major depressive disorder, single episode
F34	Persistent mood [affective] disorders
F38	Other mood [affective] disorders

Qualitative interviews with healthcare staff prior to project commencement

As outlined in the introduction, people with EMI have higher morbidity and mortality from chronic diseases than the general population. This results in a significantly reduced life expectancy. The vast majority of the gap in life expectancy is accounted for by physical illness. People with mental illness are further disadvantaged as they are less likely than the general population to be offered, or to access, regular health screening.

In order to establish service providers' opinions regarding the care of the physical health of people with EMI, we undertook qualitative semi-structured interviews with the service providers who expressed an interest in participating in the project - general practitioners, psychiatrists and members of the CMHT.

Sampling, for the GP component of the study, was purposeful and aimed to include GPs with varied experience in managing patients with EMI. The sampling frame was responders to an invite to participate in the study, with practices based in Cork, Galway West, North Dublin City and South Dublin.

Clinician members, i.e. Consultant Psychiatrists, Mental Health Nurses, and Occupational Therapists, of the CMHTs in the corresponding geo-locations to the participating GP practices were invited to participate in the study via the ECDs of the four identified HSE areas. Recruitment followed an identical approach to the GP cohort.

A semi-structured interview topic guide relevant to GPs and the CMHT was developed consisting of 20 questions and prompts in five sections, including the physical health of patients with EMI, presentation and detection, support and management of patients with EMI, communication with patients with EMI, and collaboration between service providers.

34 interviews were conducted; 20 with GPs and 14 with CMHT members. The CMHT cohort consisted of six psychiatrists, seven community mental health nurses, and one occupational therapist.

Results

Physical health of patients with EMI

Both GPs and members of the CMHT addressed that patients experiencing EMI are prone to many different types and varying levels of physical health problems. The relatively poor physical health of people with experience of EMI was repeatedly addressed throughout the course of all of the interviews. All participants reported that patients living with EMI were at

greater risk of being diagnosed with a range of chronic conditions and diseases including metabolic syndrome, diabetes, cardiovascular disease, respiratory disease and cancer. They also indicated that EMI patients experience higher rates of obesity, may struggle with drug and alcohol dependency and have a shorter life expectancy than the general patient population. In addition, poor nutrition, low rates of physical activity and extremely high rates of smoking were recognised in their EMI patient population. All of those interviewed considered that many of the risk factors encountered by patients with EMI were a consequence of the social, economic, environmental, psychological and physical impact of EMI.

> *(Physical health issues are) very, very common. Especially people who have diagnosis of schizophrenia or bipolar disorder who are prescribed medications for long periods of time and attend us over long period of time often will develop obesity, hypertension, thyroid illness, cardiac and respiratory illness. It's really quite common for us to see people with morbid physical problems.* (CMHT04)

Special emphasis was placed on the economic barrier, where the majority of GPs identified that due to limited resources, patients with an EMI are disadvantaged in terms of practicing a healthy lifestyle.

Presentation and detection

The majority of participants considered that recognition of a physical health problem by patients with EMI worked on a case-by-case basis, based on the severity of their illness. Some participants noted that patients with EMI were similar to patients without a diagnosis of an EMI in regards to their interest in their physical health. It also recognised some conditions are often symptomless and are detected through routine blood screening, while other mild symptoms may be disregarded by those with EMI as symptoms related to their mental health rather than a physical health issue.

> *A lot of conditions are found on routine blood screening so a lot of the time they wouldn't be telling us that they are feeling unwell. They might be tired but attribute it to their mental illness. So it's up to us to maybe see the difference and send them for routine bloods.* (CMHT07)

A number of GPs and mental health professionals considered that their EMI patient's awareness of physical health was in the main extremely poor, as was presentation to the GP for treatment.

> *We find that these patients tend to have more physical health complaints that they don't actually go to the doctor about. They generally don't have a lot of awareness*

about the impact it has on them or that it's even present and they generally tend to be poor presenters. (GP02)

One Community Mental Health Nurse offered insight into the impact that working in an area of socio-deprivation has on EMI patient's awareness of their health issues.

> *No (awareness) – now I have to say because of the area I'm working in is a very high deprivation index so there's a lot of other factors as to why people have co-morbid physical health issues alongside their mental health problems… lifestyle, low education attainment, no real interest in self-care, plus they'd be doing lots of things to impact on their care including drug and alcohol abuse. So that's a problem you'd see in this area instead of more middle class areas.* (CMHT03)

A GP pointed out the socioeconomic status also has an effect on access to tests for EMI patients:

> *A lot of these patients would be GMS medical card [public patients], so sometimes it can be very difficult to get access [to tests]… That's the way the system is.* (GP15)

Patients with a diagnosis of bipolar disorder were perceived to be more capable of engaging in relation to their physical wellbeing. Patients whose conditions were being effectively managed by medication and therapy, and who had good support structures in place, were regarded as aware of some physical health issues and were able to address them during visits and appointments.

> *When I think of it, the patients with bipolar are probably better at attending and being aware of their physical health as well. I suppose the schizophrenic patients who are maybe more severe or have less support I think are not so good about coming for anything physical.* (GP09)

Patients, for example who were experiencing periods of psychosis or severe depression, were often not aware of some of the physical health issues they were developing. If a patient had a family member or carer in their life, they would act to address issues they noted with the patient's GP or CMHT supports. One GP identified that many of her patients had no carer to advocate on their behalf.

> *Sometimes (they have a carer)... not all the time. See it depends on the age of the patient, and it depends on if they have a spouse, a partner in life. They may, but I think the majority of the patients coming into me they don't really.* (GP11)

Annual physical health monitoring

Annual physical health check-ups for patients with EMI were perceived by GPs and CMHT members to be an ideal practice. While they were perceived positively, some GPs considered that completing a comprehensive physical health check annually was not always possible due to severe time constraints and lack of funding in general practice. Instead, they were conscious of monitoring many of the criteria and parameters of a physical health check when possible during ad-hoc appointments with patients who were already in the system.

> *I suppose not as an organised formal thing no. A lot of the patients who are functioning better do look after their own health… I think probably if they have been diagnosed with a condition such as diabetes or blood pressure they are easier because we would be looking after them anyway. So they are in the system, and if they are coming in for a three or six-month prescription they would be coming in once or twice a year to get their health checked.* (GP09)

> *There isn't (an annual health check) because the medical card contract kind of penalises you for doing that so you know you don't… you kind of get reimbursed on average to supply two or three visits a year but when you're seeing them ten to twelve times a year for other stuff there is absolutely nothing left. You've already overshot what it is you're supposed to be doing which is looking after the acute illness. There is no chronic disease management factored in yet for any mental health, so there's no structure around that.* (GP07)

> *No, not as such. It is really ad-hoc and it shouldn't be but because of resource issues it wouldn't be feasible to do physical health checks on everyone. What tends to happen is we try to ensure that most people with enduring mental illness get basic bloods once a year and ideally have their blood pressure and weight checked as well.* (CMHT04)

However, one GP highlighted that their practice attempts to provide health monitoring or additional testing for EMI patients on an annual basis.

> *We try to do an annual check, but they [patients with an EMI] are often not very good in keeping track of appointments. I would do blood tests at least once a year, check their blood pressure, weight, talk with them about smoking, and try to do an ECG every three years. We do our best to provide advice, and give them leaflets, and refer them for dieticians.* (GP19)

Two CMHT members in one of the four HSE catchment areas confirmed that a comprehensive annual physical health check, bearing in mind the most recent NICE guidelines, was in place for all of their attending patients with EMI.

> *Regularly. The consultant is very clued in with the NICE guidelines and from a nurse's point of view we do annual health screening for all of our clients.* (CMHT03)

Linked to the annual screening and physical health care they receive at their mental health service, one Consultant Psychiatrist explained that some of their patients never attend their GP for physical health complaints. Instead, it is common for them only to present to collect their repeat prescription scripts.

> *We do routine annual screening because some patients don't really go to their GPs ever other than to collect scripts because they get everything from our service. We really have to encourage them to go to their GP.* (CMHT07)

Management of the physical health of patients with EMI in general practice

GP participants considered that the physical health of patients with EMI should generally be managed where possible in the primary care setting. Exceptions are made for patients who require treatment in the secondary care setting. The majority of GPs stated that they felt comfortable managing the physical health of patients with EMI. However, many reported difficulties in managing their patients due to challenges related to adherence to advice and treatment, difficulties in communicating effectively, poor appointment attendance, access to appropriate supports and services, and an awareness that patients with EMI are less likely to seek care related to their physical health than patients who do not experience mental health issues. A lack of compliance amongst patients, with regard to treatment and possible lifestyle changes, is seen as one of the biggest challenges. From a community mental health nurse perspective, many of her patients:

> *…wouldn't be compliant with taking on advice. Compliance is a big issue. Even if it's not that they are taking it all, it's that they don't take it regularly or as prescribed.* (CMHT03)

Lack of compliance was associated with a lack of motivation which commonly arises among EMI patients as a result of illness. One GP suggested employing motivational techniques during consultations:

> *Some of them (EMI patents) are motivated, but mostly because of medication or illness they become demotivated, sluggish or fatigued, or falling asleep during the*

day... You need to adjust your expectations, and use motivational intervention techniques with them, and tell them how great they are doing. (GP20)

GPs reported that the focus of visits by those with EMI often veered away from physical health advice, education and risks. They often focused on the mental health issues the patients were experiencing, repeat prescriptions for medications prescribed in the secondary care setting, monitoring side effects of medications and tackling acute physical health issues. Time constraints in appointments were the most frequent issue for GPs when attempting to educate and encourage patients to focus on and monitor their physical health. GPs addressed the need for longer consultations for patients with EMI.

…even the ones that have their mental health symptoms very much under control they tend to focus on the mental health symptoms and not so much the physical health symptoms. (GP02)

The challenges are that they don't present and that you are focusing so much on their mental health issues that you so sometimes forget their physical wellbeing. You know time constraints of course… but most of the time it's not presenting and not being motivated to present. (GP11)

Follow-up with patients who miss appointments in general practice or who have been called in to access treatment for results can be problematic. GPs explain that they work on the basis that if contacted it is at the patient's discretion whether they attend or not, although in some cases the patient's partner or carer may be contacted to promote attendance. It was also touched on that general practice does not have the resources in place to follow-up with every cancelled appointment.

We don't have the resources here to follow up on every single cancelled appointment. You just hope that they will reschedule themselves. (GP07)

You'd generally contact them and you'd hope that they would come back you'd hope you could have a conversation. Sometimes you could contact their spouse (if relevant). Sometimes there are some people you don't even go there, you mention it but you know it's not going to change things really. (GP11)

Generally I'd have to pick up the phone and make a phone call. If they don't answer repeated phone calls, we could write to them. A good opportunity to if they are still not responding is when they need repeat medication; there are ways of working around it to ensure compliance but that is very time consuming. But at the end of the day if it needs to be done it needs to be done. (GP02)

Management of the physical health of patients with EMI by the Community Mental Health team

There was consensus by CMHT participants that the management of the physical health of patients with EMI was better suited to the patient's GP.

> *If we identify a problem such as high cholesterol or a thyroid problem, we will often liaise directly with the GP by telephone or letter and ask the patient to go in to see their GP to see if they need medication. Sometimes, in general, Psychiatrists feel that when people need hypertension treated that a GP has more expertise in that area even though the psychiatric treatment may be contributing. We sometimes prescribe for people who won't see their GP but really at a basic level. That wouldn't be the ideal at all because these conditions can be quite complicated. People really do need to see their GP.* (CMHT04)

However, most CMHT participants expressed that they played a role in supporting their patients to access physical health checks, tests and treatments by either advising them or supporting them in person to visit their GP, or in the case of Consultant Psychiatrists interviewed, in referring patients to the necessary clinics in secondary care. One Consultant Psychiatrist considered that the information they shared with the GP was taken seriously concerning their patients, yet the patient's lack of motivation in attending appointments meant that they could fall between the cracks if they had no support in place. They offered an example:

> *Yes, very much (they feel that their information is taken seriously by GPs). It's just that GPs work in a certain way sometimes that makes it difficult. If you're concerned about somebody and they're not going into see their GP and they aren't actively engaged, there often isn't an obvious pathway for what happens because the GP will say tell them to come in. We'll sometimes get the nurse to bring the person or help them to come in.* (CMHT04)

Communication with patients with EMI

Some participants reported that the multifaceted and complex symptoms related to EMI resulted in some patients being less inclined to address physical health problems with their GP or CMHT, while these symptoms resulted in other patients being hyper aware, often anxious and prone to addressing multiple physical health symptoms during consultations. Communication issues were recognised as barriers to clinical assessment.

People often do neglect both their mental and physical health. There are people who see us with anxiety, some of whom are very focused on their physical health who will be in and out to their GP frequently and then there are others with anxiety who will actively avoid their GP and will be into us a lot. We see a whole variety. (CMHT04)

Comprehension and implementation of the physical health advice offered during consultations was recognised by participants as problematic for some of their patients. The following two quotes offer further insight:

I do think they mostly understand but I'm not sure if they have the capability or the where with all to implement diet or weight changes. It's hard enough for patients at the best of times who don't have enduring mental health issues. (GP09)

It's hit or miss. What you tend to do is try to bring it around. If they come in for lower back pain or not sleeping well, you are trying to link the physical symptoms they have with 'do you remember when we spoke about how your weight is too much for your height, and you are to try to lose weight and how you can do that'. So you try to use the opportunity to use whatever symptoms they are coming in with to give them lifestyle advice. (GP07)

One GP explained how factors related to EMI symptoms often resulted in affected patients having low motivation to put health advice into action.

Getting into the structure of a routine is difficult. Motivation is also something that is a problem. People may have an understanding that they need to lose weight but whether they have the motivation… (GP02)

Making positive changes to lifestyle, e.g. diet, exercise and smoking cessation was often perceived by participants to be a challenge for many patients with EMI. According to one Consultant Psychiatrist, there are difficulties in engaging patients in health related interventions. Supporting patients to take part was often time consuming, when time constraints were already noted to be a serious factor for many health care professionals. As a result, engagement was promoted through conversation in the hope that the patient would take it upon himself or herself to comply.

We do have a health activity programme in the service which we try to encourage people to do, but typically people aren't that enthusiastic. People smoking is another issue. We often talk to them about smoking and we have at intervals had smoking cessation interventions but it's often difficult as a Psychiatrist to devote times to these matters and often it is difficult to follow through with people so it

comes down to a reasonable conversation with people… but it's not necessarily effective or followed up in any real way. So it's not great really. (CMHT04)

Yet this particular Consultant Psychiatrist addressed the belief that positive change to physical health is possible for EMI patients. They sought to contradict the notion that antipsychotic medications are often to blame for patients' physical health issues:

The question of medication is way, way over played in terms of its contribution to the health problems that exist. People tend to say it's my medication but usually it's a huge myriad of factors that are contributing to it, and the illness is certainly part of it… There are many patients who are on these medications who don't have physical health problems... I think it's important that we challenge this idea that people tend to present to us that there's nothing they can do about their physical health problems because they're on medication and it's all down to the medication because it's not. (CMHT04)

People can very successfully give up smoking and lose weight and can improve their physical health while on medications. That's not withstanding that there is evidence that people can gain weight on these medications and we do need to be trying to make sure that people are on the minimal effective dose or that they stop the medications, that's where it's trying to aim for, and trying to educate people in advice at a point where people are well enough to talk about these things. (CMHT04)

Several GPs addressed that it may not be worth intervening due to complex lifestyle behaviours:

If you're seeing someone who has a lot of instability in their life due to their mental health then if you find a balance in that then it's hard to go digging at, picking on them to start watching what they eat and their smoking. (GP16)

Communication and collaboration between GPs and Community Mental Health Teams

The importance of relationship development between GPs and members of the CMHTs was evident throughout all of the interviews. More often than not GPs and CMHT members reported that when they experienced direct contact with one another, the experiences were positive. In cases where professional relationships had the opportunity to develop over time, or on a basic level where they were familiar with first names, communication was perceived to be more effective than if they were unfamiliar with each other. One GP explained how they felt confident with the level of access and engagement they had with their local CMHT.

We're pretty confident in conjunction with our local mental health services. We have two Consultant Psychiatrists who job share. We have brilliant mental health nurses who we can contact very readily if we have concerns. So it does tend to run very well. It's a difficult part of medical but it actually runs very well in comparison to other chronic illness. (GP11)

Frequency of engagement, as well as willingness to update 'the other side' about particular patients also contributed towards better quality of collaboration:

I have them all on my speed dial (psychiatric services). We engage with them a lot. I have phone numbers of psychiatric nurses, I use Healthmail, and almost every time when I see one of the EMI patients, I would send a copy of that consultation to the mental health service. I would be practicing what I was taught; 'share-care' with them. (GP19)

Direct contact by telephone was the most obvious choice for both GPs and CMHT team members to get in touch in relation to their shared patients.

I feel that we are very lucky in our area because we have a very good relationship with the Psychiatric Nurse and receptionist if the patients are already linked in. I would ring the psychiatric nurse if I have any concern about the patient and they would call me. We are quite well served in our area. Essentially I pick up the phone and I could send a letter and I would but it's much easier to pick up the phone. (GP09)

GPs offered insight on the difficulties faced in accessing appropriate secondary care and services for their patients and placed great emphasis on the importance of professional relationships and associations. However, accessing members of the CMHT was often time consuming, and frequently resulted in phone calls being missed and messages being left to call back. The participants from the CMHT also highlighted that they may have to call the surgery a number of times and leave messages to speak with a patient's GP. It was recognised that GPs always returned calls as soon as they had the opportunity. Both GPs and CMHT members were conscious of the severe time challenges they all faced in practice.

Overall collaboration between GPs and CMHTs was often perceived to be non-systematic and less than optimal. Many GPs reported a lack of cohesion in integrated care, offering examples of how they are frequently not informed about test results, medications prescribed and the development of their patient's treatment plans. Insufficient detail in medical notes and discharge letters from psychiatric services were problematic for GPs, and prevented them

addressing the treatment and support needs of their patients. One GP pointed out that legibility was a challenge:

> *Seventy percent of the time it's legible so it's very frustrating having to pick up the phone and spend ten minutes trying to chase down something because you can't read the prescription.* (GP14)

Both GP and CMHT participants addressed that poor communication sometimes resulted in tests, such as blood tests, being duplicated by the GP only weeks after the Consultant Psychiatrist had performed it, or vice versa. This was a source of frustration by the participants. They were conscious of the stress and confusion this duplication of tests may cause their patients.

Some GPs reported that they did not have a primary contact in the CMHT, and as a result faced challenges in promptly accessing support for their patients.

> *It's very random. I don't even have a list of who they are. I know there would be a CMH nurse and I have no idea how they work out the geography and I don't know how to find that out easily.* (GP07)

GPs indicated that if they had concerns in relation to a patient they would more often than not personally contact the CMH nurse if possible, and then the treating Consultant Psychiatrist. All GP participants felt that their concerns were taken seriously as the referring party. The importance of direct access to a member of the CMHT was emphasised by one GP. They described how the good working relationship they had with one CMH nurse resulted in having a direct mobile phone number to contact. This enabled them to swiftly access the necessary care for their patient, and to feel secure that the necessary message in relation to the issue was being shared with the appropriate Consultant Psychiatrist.

> *Usually (communicate) through the community psych nurse. I have mobile numbers, particularly for one of them. He works locally here. If they are new patients, they tend to be seen very quickly but if we have a concern he usually is our contact person and he will discuss it with the consultant then. He is very obliging and he will take it from there then. We do have the mobile of the consultant too. We don't use it often.* (GP11)

Most GPs reported that they offered their mobile number to members of the CMHT also when they had a direct contact.

Many participants considered that integrated communication is a promising approach to dealing with patients with EMI. Examples of real weaknesses to current communication

pathways were offered throughout participant interviews. Some GPs and CMHT members addressed how they did not receive information from either party directly, and that patients were used as messengers to deliver information. This was perceived to be extremely problematic due to issues the patient may have at retaining necessary information. In the example offered below, one GP highlighted that any form of prompt correspondence from the treating Consultant Psychiatrist would be optimal, rather than via the patient.

> *They usually don't contact us directly. They would usually tell their patient to talk to their GP about that; that seems to be the party line by most specialists across the country these days. The information comes through the patient, usually verbally. Usually the patient would come in one day and say that I was at psychiatry and they felt I was overweight and they wanted me to see you. Or they said I should do an ECG or blood test or something like that and they just tell the patient and so usually then we don't know where this is coming from or half the time the patient can't remember what they were told to get done. So, ideally if there could be more written correspondences regarding those types of thing that would be better, or a phone call would suffice and I could make a note on the computer in the patient's chart that I was contacted and we were asked to do x or y.* (GP02)

From a Consultant Psychiatrist perspective, they consider that the CMHT are efficient at sending letters to update GPs with necessary information, yet they may not hear from the treating GP if the patient attended for appointment or accessed the physical health support they required.

> *With the local GPs, we have fostered good relationships there and they are excellent. But in general terms, we are very good at sending letters out to the GPs about stuff but we might not hear anything back. I might not know if the person did attend… and it's not a medical emergency so we're not going to be ringing about it. We might send the results and write to the GP and we'd have to wait when the patient comes back three months later and they might have only gone into collect their script and they didn't see their GP.* (CMHT07)

Although they state that it would not be practical to share every piece of information related to shared patients' physical health, they describe their frustration at the lack of response they get from some GPs. They reinforce that if there is an acute situation related to the needs of patients, teamwork comes into play effectively.

> *It's not practical that everything they (GPs) do they send a letter. The GPs may know exactly what we are prescribing but we may not know what the GP is*

prescribing. It's a system thing and it's bitty. We would write to the GPs looking for an update of every medication that some patients are on because we wouldn't know. My two big things with GPs is that we would write and not always get a response, but to be fair a lot of the time it isn't anything major. And in fairness if it was anything acute… for that kind of stuff you get to work together on it. (CMHT07)

The level of work required to improve communication was expressed and the move to electronic format was widely suggested by all participants.

I think electronic records. We have volumes of notes on patients and they (GPs) have volumes of notes on patients and they are all separate. If we all have some system that we could share… because we spend time faxing and putting things in envelopes with cover letters, it's all very time consuming. All the screening has created more work for psychiatry. The files are getting very fat but it's all communicated in an old fashioned way. (CMHT07)

According to one Consultant Psychiatrist, the move to improved electronic communication also creates issues around time and engagement.

Sometimes you hear reports of it being difficult to reach us (CMHT) but it shouldn't be. Everyone is busy. I often phone to talk to GPs, they often phone to talk to me, and people write. It would be nicer if there was electronic communication but then again everyone is swamped and it's very hard to find the time to pay attention to everything you need to pay attention to. Electronic modes swallow time to input everything into and every intervention in enhancing communication is an extra draw on time even though in theory it shouldn't be. We find ourselves increasingly in front of keyboards. (CMHT04)

Primary suggestions to improve a sense of collaboration between GPs and CMHTs were based around communication pathways and insights to treatment plans. Some GPs suggested that it would be valuable to have calls with their EMI patients' Consultant Psychiatrist(s) to hear about and discuss treatment plans, and other possibilities. They also reinforced the need to receive regular information and earlier receipt of important information on the patient's status during treatment. Team meetings were a frequent suggestion:

If you did have primary care team meetings and so on where you could discuss patients and discuss their management, a multi-disciplinary approach, it would probably be useful. (GP11)

> *There are good examples of where CMHTs and primary care teams have regular meetings and discuss mutual patients and that's clearly a valuable thing.* (CMHT04)

One GP suggested that meetings with new members of the CMHT would be useful for developing relationships:

> *So I think if there was just an occasional meeting with members of the community psychiatric team so that we could get to know these people that would be helpful.* (GP17)

However, others relayed that team meetings improving communication is a fallacious idea:

> *I think the notion of team meetings around certain cases have been shown to be a bit of a cod because we don't share enough patients. So we need to be more imaginative I suppose, maybe use Healthmail.* (GP13)

Others reiterated that Healthmail may be the most secure means of communication:

> *Useful thing? Probably a secure email policy. That might be useful if we had one central place. We have one for cardiology and radiology where we can send it in via Healthmail email and it's secure, and it goes to one person who contacts whoever they need to contact to get the information we are looking for. It might be an urgent query or a query about if we need to send this person to outpatients, or if you needed to check results. But it saves you a lot of grief in trying to make phone calls and having no reply and then ringing the wrong person or she's on coffee break… you could save an awful lot of time and energy if there was maybe one email source where you could send in a query about any psychiatry patient and somebody in secretary land could contact the team involved and get an update and email us back.* (GP07)

> *Open communication – what the GPs want to know and what they need to know. I think regular contact and it's a two-way process.* (CMHT03)

Conclusions

Service providers were knowledgeable that people with EMI have increased risk of physical health illnesses and agreed that physical health measures should be monitored. While some patient level difficulties were identified, the key barriers noted were at a system level - difficulties communicating and resources.

While communication difficulties were raised between primary and secondary care, it was also clear that these were not limited to the care of EMI patients but were systemic.

Since 2004, England and Wales have incentivised their GPs to provide annual physical health checks to their patients with EMI[42]. In 2005, it was found that four out of five GPs surveyed in the UK conducted annual physical health checks on patients with EMI[43]. Annual physical health checks are also identified by some authors[44] as a good opportunity to carry out brief interventions on patients with EMI.

Facilitators and solutions, however, were also mentioned by participants - namely, a mechanism to record physical health parameters and improved integration of carers through shared information, email communication and meetings. Primarily, the communication/liaison needs to be more defined between services.

A lack of integration of primary and secondary services is seen as one of the causes of the discrepancy in physical health outcomes between people with EMI and the general population[45]. Improvement, therefore, as recommended by participants, could contribute to an improvement in the physical health of patients with EMI.

In Ireland currently, it is unclear as to whose responsibility it is to monitor, detect and manage the physical health of patients with EMI. In England, NICE[46] advise that at any one time either the primary or secondary care services should have overall responsibility for the physical health of patients with bipolar disorder. For schizophrenia, it is recommended that psychiatric services monitor physical health for twelve months after diagnosis and then a shared care arrangement is set up[47]. NICE also advise primary health care professionals to conduct annual physical health checks on this group[46, 47]. Healthcare practitioners should record patients with EMI's weight/BMI, cardiovascular status, metabolic status, liver function, and renal and thyroid function[46, 47]. A key issue identified by participants was the need to identify which service providers are responsible for the physical health of people with EMI – is it the CMHT, the GP or both? It has been propounded that one of the greatest risks to patient safety occurs when the patient passes across the boundaries of care, in part due to lack of clarity about where responsibility and accountability of care lies in such situations[48, 49].

Chapter 4: Evaluation of the practice management software systems in Irish General Practice

In order to understand the provision of physical healthcare for patients with EMI, it is necessary to understand the ability of primary care to monitor physical health using practice management software (PMS) systems. A detailed evaluation of the three main PMS systems was undertaken to investigate the feasibility to record, extract and produce reports by PMS systems on the data associated with chronic disease risk factors (alcohol consumption, smoking status, physical activity and BMI) and the provision of brief interventions. To assess the quality of data, which could be extracted from GP practices, a number of steps were taken within each of the systems. These included the creation of a patient database, identification of which data related to risk factors and interventions could be recorded, an identification of the data location and the extraction of the data, and engagement with representatives of the software providers in the report production. The evaluation of each system is briefly outlined below.

Socrates

The Socrates software system is the newest GP management system, designed to allow easier management of patients' care and the finances of the practice. It gives an impression of being the most user-friendly system available. Socrates provides GPs with a clear overview of the data during patient consultation, and it allows a simple reporting facility, ideal for everyday practice needs.

During consultation with patients, Socrates users have an option to record basic patient information in the section 'Baseline details'. This particular tab allows a GP to enter data in relation to physical measurements (e.g. weight, height, BMI), social history (e.g. smoking and drinking history) and numerous vital signs (e.g. SBP, DBP, cholesterol, pulse, temperature, physical exercise, etc.). All data related to risk factors can be found here, recorded in one place/page, which essentially allows GPs to have a clear overview of the basic data of a patient's health status.

After a thorough examination of the data related to risk factors, it became clear that certain areas were absent. Social history, which is entirely based on the risk factors of alcohol and smoking, allows recording of current status (smoking status/drinking status/ex-smoker years), frequency of usage (smoke per day/weekly alcohol) and start dates (smoking start date/alcohol start day). However, Socrates software does not provide an option to record the Audit C test. This particular test represents an effective screening tool for alcohol consumption

and is commonly utilised to identify patients who are hazardous drinkers or have active alcohol use disorders[50]. The unavailability of the Audit C test potentially prevents GPs from accurately detecting and assessing a drinking problem, and providing the appropriate alcohol-based brief intervention. Furthermore, although the 'Baseline details' tab allows the recording of physical exercise undertaken, the options provided in relation to this risk factor are rather ambiguous. When recording information about a patient's physical activity level, GPs can choose between four options such as: 'not recorded', '2.5-5 hrs moderately vigorous physical activity per week or 30-60mins most days', 'less than 2.5-5 hrs moderately vigorous physical activity per week or 30-60mins most days' and 'more than 2.5-5 hrs moderately vigorous physical activity per week or 30-60mins most days'. As physical activity is measured in hours per week and minutes per day, this creates a lack of clarity and produces a risk of uncertainty in selecting the right option. Additionally, this leads to inaccuracy in the data recorded. Furthermore, the Socrates system does not provide fields dedicated to brief interventions which might have been provided to a patient. The only possibility to document this information is through the 'social and past medical history tab', where GPs could type free text into a data field. Free text notes additionally lead to a lack of structure, as well as difficulties in extraction and analysis when intending to examine brief interventions provided on a practice population level. As the free text data is not captured in a standardised manner, spelling errors or acronyms may occur, and lead to further negative impacts on the usefulness of the data for re-use.

Multiple issues arise during the extraction of data. Presently, Socrates offers 29 types of standard reports that could be run by its users. However, none of them allows GPs to produce a report on individual risk factors. When running a report that is based on a baseline summary of the individual patient, GPs have an option to extract and run the report on all baseline data for a particular patient. There is no option to select a particular baseline factor (e.g. alcohol status, smoking status, BMI, or physical activity) which might be of interest for the GP. Additionally, there is also the lack of an option to enable a user to anonymise data produced in the reports, which leads to the display of a name, address and phone number of the patient(s). Therefore, the report might be sufficient for the GP in terms of the individual care of the patient but not for research purposes.

HealthOne

HealthOne is the most comprehensive of the three systems and allows GPs to record a wide range of administrative and medical transaction data. This contributes to the successful storage of detailed information, which is valuable during patients' examinations and further data analysis and report production.

During patient consultation, a GP first encounters a ‘medical transaction’ section. The initial medical transaction data includes tabs such as medical and surgical history, alcohol and tobacco consumption and blood group. However, medical transaction data could be expanded by clicking on the toolbar tabs: ‘insert item’, ‘insert sequence’ or ‘insert aggregate selector’, which in return adds a specific variable of interest to the user. Although, ‘insert’ tabs are very useful while recording more detailed information, they have a potential drawback; each ‘insert’ tab contains a wide spectrum of data, therefore less familiar users could have difficulty in identifying the location of items within specific tabs.

When focusing only on the risk factors, baseline information contains ‘alcohol consumption’ and ‘tobacco’. When selecting these particular fields, a GP will have a choice to select an appropriate field (alcohol consumption: nil/active/ex/social/rarely/alcoholism; and tobacco: yes/no/ex). If one of the options does not satisfy the GP in terms of a particular patient, all chronic disease risk factors could also be recorded by clicking on the ‘insert the form’ and/or ‘screening’ icon, which are located on the toolbar in the ‘medical transaction’ section. These two icons allow recording of a wide range of variables related to smoking, physical activity, alcohol, BMI and eating habits. Furthermore, the ‘insert item’ tab could be selected as well, and therefore more options become available. The alcohol item has 12 entry options (e.g. consumption, level, advice, abuse per year, etc.), diet item has 14 options (dietary habits, current diet, dietetics, etc.), physical activity has 10 options (activity, examination, exercise, etc.), weight has 22 options (weight excess, weight changes, increase, overweight, etc.) and smoking has 3 options (habits, advice and smoking in household). In addition, smoking habits could also be assessed through the ‘smoking status’ icon on the main menu (the icon depicting a cigarette), which allows the user to record 12 variables in relation to cigarette use (e.g. do you still smoke, how many do you smoke per day, advice given, etc.).

An extensive variety of variables located in different parts of the HealthOne system creates confusion and lead to the risk that the same variable could be recorded in different places, containing different variable names with different results. This creates issues while recording and when trying to produce a report. For instance, in a practice of five GPs, two GPs could have been recording the risk factor of smoking through the baseline option, and three could be using the cigarette icon. Therefore, in running a report based on practice population, the data would appear as inconsistent and inaccurate - especially considering that the user could employ a wide variety of terms to record the data.

The advantage of this system is that it contains an Audit C test tab, which provides a correct evaluation of the potential drinking problem of a patient. The system also allows the recording of brief interventions; however, they are dispersed throughout the system, recorded under

different names (intervention/advice/recommendation) and therefore become almost impossible to overview and analyse accurately. Similar to Socrates, HealthOne also gives an option for typing free text descriptions, which could be recorded for any variable throughout the system. Although free text notes contain more detailed information than the coded terms or options provided, there is a danger of ambiguity and misinterpretation during analysis, which creates inconsistency and lack of accuracy.

The extraction of data for report generation is the most advanced of the three systems. If desired, a GP could analyse the whole population of the practice. The section 'analysis population criteria' allows the input of a patient's criteria (e.g. age, gender and status), transaction criteria (e.g. date range) as well as desirable variables in the sections 'inclusion criteria' and 'exclusion criteria'. A wide selection of options such as this allows the generation of an anonymised report, based on a particular part of the practice population which is of interest to a GP, or a report based on a particular disease or risk factor. The only disadvantage in terms of the report generation is that the section 'inclusion criteria' has a limited option, where only four items at one time could be entered. Therefore, if a GP intends to investigate/run a report on more than four variables (e.g. alcohol frequency, consumption, diet, BMI, exercise, etc.) the analysis has to be run multiple times. The vendor recommends that as few as possible items are entered in order to prevent the system freezing.

Helix Practice Manager

Helix Practice Manager (HPM) is the most recently designed software system for GPs in Ireland. It contains less available options for data entry than HealthOne, but it provides a clear display of the majority of patient information, like Socrates.

HPM offers an overview of the patient data through six main fields including 'Documents', 'Medication', 'Consultation Notes', 'Tests', 'Medical History' and 'Recall Opportunities'. Data entered in these fields provide a clear overview of patient history, medication prescribed and any tests undertaken by the patient. Specific alerts about the patient or any potential allergies are at immediate disposal upon opening the patient file. The exam module offers an overview on a patient's vital signs, which are essential in monitoring risk factors. Each time a vital sign is amended, there is a date attached to that new information (e.g. completed 27.7.2017).

Potential monitoring of risk factors takes place in the 'Exams' section under the 'Vital signs' category. In this section, variables connected with alcohol status ('Drinks alcohol', 'Date stopped alcohol' and 'Alcohol units a week') smoking status ('Smoking', 'Date stopped smoking', 'Cigarettes per day' and 'Years smoking') and BMI can be recorded.

While entering the information for risk factors, very limited options are provided, such as merely confirming that a patient drinks alcohol or smokes. All the data, including units consumed per week and the number of cigarettes consumed per week, is entered manually. The option for any additional comment is provided as well. In the 'Exams' section under the 'Social habits' category, a GP has the opportunity to record a wide spectrum of data connected with risk factors (type of beverage consumed, frequency of drinking, type of cigarettes consumed, exercise duration, etc.). All information is also entered manually. In terms of alcohol, the data entry is particularly confusing as alcohol consumption can be entered under 'result' and 'unit'. Therefore, one GP could view the consumption of two glasses of wine per week as a 'result', and another GP could view it as a 'unit'. Thus, a problem arises when trying to analyse these results based on practice population. Overall, the recording of risk factors is very limited in HPM, including inadequately developed options to record each factor, the absence of the Audit C tool and inability to record brief interventions except through free text notes in the 'Consultation notes' section. As already discussed, free text notes are not an adequate solution when aiming to run and analyse reports based on the practice population.

Furthermore, during the report production, HPM does not allow one to focus on both age group (e.g. patients older than 18) and a specific date range. Therefore, the extraction of data based on multiple variables is not accommodated. In order to produce a report based on risk factors, two reports need to be produced: a report based on 'vital signs' (which contains blood pressure, BMI, years of smoking, temperature) and a report based on 'social habits' (alcohol and smoking habits). A number of features could not be tested adequately within the test environment. In addition, during the report production, all variables are categorised vertically, instead of horizontally, and therefore each patient appears multiple times in the final report, which creates substantial difficulty during analysis.

Conclusion

The review of the three main GP PMS systems (Socrates, HPM and HealthOne) in terms of their ability to record and extract data, as well as their reporting functionality, revealed significant limitations. Although the same vendor now owns all three systems, their design, options for data entry, and report production differ significantly. Furthermore, they each have their own development team. The PMS systems in Irish general practice do offer a variety of patient data entry options and they are an important factor in practice organisation and GP support. However, they were found not to be adequate to permit the accurate recording and data extraction of chronic disease risk factors and brief interventions (and this is not limited to patients with EMI). The main challenges occurred due to systems recording risk factors through multiple variables and formats and a lack of clarification regarding where and how relevant interventions could be recorded.

These issues created a risk of data misplacement and inconsistency. An absence of the option to record all risk factors within the systems created a lack of data essential for appropriate monitoring of chronic diseases. Furthermore, the reporting functions allowed a limited number of data items to be extracted in one upload and some were inflexible in terms of selecting specific data ranges. The reports generated may be sufficient for brief clinical reference; however, the reports were found to be insufficient for a more meaningful analysis required for research and audit.

Physical Health Monitoring Tab Development

A thorough investigation of the PMS systems revealed that the quality of data collection and reporting structures available in general practice in Ireland were not adequate to permit accurate recording and data extraction of chronic disease risk factors and brief interventions. Hence, the ICGP via the Irish Primary Care Research Network (IPCRN) created the Physical Health Monitoring tab (PHM tab), which was incorporated in all three PMS systems including Socrates, HealthOne and Helix Practice Manger. The PHM tab was described in detail in the chapter 'Project Aim and Methodology' above.

The purpose of the PHM tab was to assist GPs in monitoring chronic disease risk factors by facilitating systematic and accurate recording and by providing adequate guidelines and reminders when a patient is identified as being at risk. It aimed to help Irish GPs to simplify their work, save time, and ultimately improve patient care.

Software Development Issues

In order to create the Physical Health Monitoring (PHM) tab, the ICGP research department collaborated with the software developer – Clanwilliam Group. Clanwilliam Group own the three main practice software systems in Ireland: Socrates, Helix Practice Manager, and HealthOne. During the creation of the tab, the ICGP research team encountered a number of issues with the software developer, which considerably delayed the project. The main issues occurred in four areas:

- Development and incorporation of the PHM tab into the PMS systems
- Visual appearance of the PHM tab
- Recording and uploading of the data
- Uploader/finder failures

Developing and incorporating the PHM tab into the PMS systems

The PHEMI project officially started in October 2016. The initial period of the project included in-depth research and agreement of the PHM tab specifications. The software developer stated that the PHM tab would be developed and available for all three PMS systems by July 2017. The PHM tab first appeared in the Socrates system in October 2017, containing a number of issues. After much liaison (emails, calls, and in-person meetings) between the ICGP research team and representatives of the Clanwilliam group, the PHM tab became available for Helix system users in February 2018, and finally for the HealthOne users in July 2018. As a consequence, the participation of the practices which use the Helix Practice Manager or HealthOne system was postponed, as they could not either record or upload their

data. It became evident that due to the significant delays in the participation, the data from the practices which use these two systems would not be available by the deadline of the PHEMI project, December 2018.

The visual appearance of the PHM tab

Considering the large workload in general practice, the PHM tab aimed to allow accurate recording without taking adding additional time during consultations. In discussion with the software developers, the initial idea was that all the variables recorded in the PHM tab be located on one page. Therefore, when opening the PHM tab, GPs would have a clear overview of all information that could be entered. The PHM tab that was developed for the Socrates and Helix Practice Manger systems contained six pages. The first page was identical to the main page of their respective software system ('baseline details'/'vital signs' page). As a result, the participating GPs felt that opening page after page was time-consuming (an issue discussed in the interviews) and they preferred to record their data on the first page, which significantly affected the levels of recording.

Furthermore, although various specifications for the PHM tab were agreed with the software developer at the initial stages of the project (which is discussed in the next paragraph), when the PHM tab was incorporated into the systems it contained a number of errors, including spelling mistakes, incorrectly formatted fields, incorrect variable names, etc. The correction of these mistakes made by the software developer, even if spotted instantly after implementation of the tab into the PMS systems, required on average more than two months. These mistakes also created uncertainty and confusion among the participating GPs.

Recording and uploading data

At the beginning of the study, the ICGP research team and the internal software development advisor created the requirement document (RD) for the PHM tab. The RD contained detailed specifications on technical and functional requirements regarding the 'uploader' which represents a data upload component of the PHM tab. To simplify, the RD outlined what type of information and how that information should be uploaded from the GP PMS systems. The RD was used to communicate with the Clanwilliam software development team. Although the specifications of the uploader were highlighted and agreed upon in the RD, a number of issues regarding recording and uploading of the data occurred.

The RD highlighted that entries made in 'baseline details' and 'vital signs' areas in each of the PMS systems should auto-populate into their corresponding fields in the PHM tab, and vice-versa. This was not the case however. Some data recorded in the main areas of the systems was not auto-populating in the PHM tab, which firstly caused confusion among GPs, and

secondly created the impression that the same information should be recorded twice (e.g. in baseline details and in the PHM tab). This issue was corrected eventually, but the software developer took a considerable amount of time to do so.

In order to investigate if all data in a test upload corresponded to the RD; the ICGP research department ran a number of tests, prior to asking the participating GPs to upload their data. During these tests, a large number of issues regarding recorded data were identified (for example, recorded data was not being uploaded, e.g. smoking status, frequency of alcohol consumption, prescriptions, patient status, etc.). Although the software developer corrected these issues, the corrections were time consuming, and since the practices could not be asked to upload their data until the uploader was working properly, this caused a substantial delay in data upload.

Experience of using the PHM tab & Finder tool: Mixed methods analysis

Provision of healthcare

Provision of physical healthcare for people with EMI is unequal despite their greater need. For example, people with comorbid diabetes and EMI presenting in an emergency department were less likely to be admitted than those without an EMI[51]. Patients with an EMI are also less likely than the general population to receive cancer screenings[52]. Similarly, women with EMI receive less breast and cervical cancer screening despite visiting both emergency departments and primary healthcare more frequently[53]. Farasatpour and colleagues[54] found that patients with schizophrenia were more likely than the general population to have a delayed diagnosis of breast cancer. Patients with EMI are less likely to receive cardiac surgery despite having higher rates of CVD[10].

Monitoring physical health

Rates of physical health monitoring in primary care are significantly lower for people with EMI despite consultations rates being much higher. Burns and Cohen[55] found, as reported by Robson and Gray[56], that for people with EMI in primary care their blood pressure is recorded in 38% of annual physical health checks, their cholesterol levels in 2% of annual physical health checks and their weight in 27% of annual physical health checks. Greening[57] examined the physical health records of 63 patients with schizophrenia and found that number of cigarettes smoked per day was not recorded for any patients, weight was recorded for 16% of patients, and blood pressure was taken for 24% of patients. Another review[58] of 606 in-patients treated with antipsychotic drugs found that 3.5% of them had their lipids monitored and 18.6% of them had their weight recorded. In a primary care population, a control group of asthma patients were found to be twice as likely to have their cholesterol and blood pressure recorded compared to a group of patients with schizophrenia[59].

As the review in the 'Evaluation of the Practice Management Software Systems' chapter outlined, there are several issues in the main practice management software systems which make it difficult to systematically record chronic disease risk factors and brief interventions accurately. Therefore, a structured proforma - the physical health monitoring (PHM) tab - was developed to facilitate the systematic and structured recording of key physical health variables and brief interventions. Lee & colleagues[60] developed a structured proforma to monitor the mental health, substance use and alcohol use of gay and bisexual men. This led to significantly improved documentation in the above areas; the recording of substance use increased from 57% of patients to 82%[60]. Concerns about mental health and alcohol were

also recorded significantly more often; increasing from 14% of patients to 47% of patients. The authors concluded that this improvement in recording would assist clinicians in identifying opportunities to deliver brief interventions.

Computerised clinical decision support

To support the structured proforma, a computerised clinical decision support (CCDS) feature was developed. CCDS systems are used to assist clinicians in decision making for a wide range of issues including prescribing, screening and diagnosing. However, there appear to be no studies on CCDS for brief interventions on chronic disease risk factors[61]. Nonetheless, a systematic review[61] and a synthesis of systematic reviews[33] both concluded that CCDS systems improve healthcare staff's performance.

This part of the study therefore sought to evaluate the PHM tab from the perspective of the GPs as well as through the analysis of practice data.

Method

GP recruitment

GPs were sent a detailed description of the PHM tab, as well as the finder tool. At the outset and when GPs were instructed to upload data, they were informed that they would be sent an audit report which they could use for their professional competence scheme.

Interviews

A topic guide was developed by the researchers in conjunction with a GP with expertise in mental health and a consultant psychiatrist. An iterative process was used to adapt and develop the topic guide throughout the interviews.

Results

Qualitative interviews

The majority of participating GPs were positive about the PHM tab; one said 'the PHM tab we're thrilled with' (GP6). Another GP said:

> *When I do use it, it is very good, we should be using it on everyone, there's no question about it, yeah* (GP2).

One GP had overall negative feedback about the tab, stating 'Now I hated the way this [the PHM tab] is set up' (GP3).

Other GPs were not using the tab very often and they cited habit as the main reason:

> *I'm a creature of habit and I've been using baseline details so I kind of forgot about it* (GP9).

This was reiterated by other GPs; 'to be honest with you it's probably habit. You know if I had it stuck up in front of me saying use physical health monitoring I would probably use it more' (GP2). And another suggested that one would 'need to train me into it' (GP3) to get them using the tab more.

Acts as a prompt

One of the main areas that GPs were positive about was that the tab acted as a prompt for them to carry out certain actions with their patients:

> *It's a great one for when you're not trying to scrabble round your brain trying to think of what to do… the more of that the better really* (GP9).

Another GP made the same point saying that 'they are useful prompts' (GP1). Some GPs considered using it for physical health review of their methadone patients: 'This is a really good way of doing a physical health review … and doing it in a nice concise way' (GP9). The same GP gave an example of it prompting them: 'In the second page it has PSA, and that prompted me to go back and check 'what's this guy's PSA' and he hadn't had one done' (GP9). Another GP mentioned that 'it prompts you to give an intervention.'

However, other GPs took issue with the fact that the features were prompting them to do tests with patients when they didn't need to:

> *I wouldn't routinely assess FEV1s or ECGs in this group. Having it there suggests I should be doing a PSA or a mammogram or whatever else it is* (GP3).

A GP wanted the tab to adjust based on the demographics of the patient: 'A cleverly designed system would prompt according to the type of patient you have' (GP1).

Transferring data

Many GPs felt that the tab 'should self-populate' (GP3) with information recorded in other parts of their system:

> *A cleverly designed system would just populate the two sections automatically, the lab section as it comes in and also the other part as well, that you wouldn't have to manually go in and redo the form* (GP1).

Specific issues that consistently arose were around lab results:

It doesn't seem to autofill blood results (GP9).

There seems to be quite a bit of flitting back and forward into the chart just to extrapolate some of the data things like lipids and PSA (GP5).

The fact that you'd physically put in things like cholesterol, LDL, HDL, like if it grabbed that off the system it would be great (GP2).

Some were frustrated that having to manually input data 'takes a little bit of time' (GP7) while other felt that having to do this is 'not overly onerous' (GP5).

Time

GPs' feedback on the amount of extra time needed for the new tab was mixed. One GP relayed that 'It wasn't the worst in the world for time' (GP9) while another said that 'if you're very busy you just won't have the chance to do it' (GP2). Despite the extra time, GPs felt that this 'wasn't a prohibitive thing' (GP6).

Tab layout and format

One GP felt that 'the format's good' (GP7) but they thought that 'if it was cut down to one page I think it would be more likely to be used during the consultation' (GP7). Another GP stated that they would not like there to be any more information in the tab:

I wouldn't like to be adding in too much more because the more you go through the more you're inclined to say 'oh I've enough now' because time is always a challenge, because generally as you know they'll come in with something else (GP9).

Another GP suggested that there should be a box to tick if a patient declined tests such as bowel cancer screening, smear test or mammogram:

'The trouble with it is that I can't record if I've brought up cervical smear and mammogram for example with patients but they've declined' (GP3).

Several GPs praised the interventions section:

It gives us an option of where we record our interventions and that's our big thing (GP6).

And then the interventions, I like them because they are tick box in all of them which is very good (GP9).

Similarly, many GPs liked the advice section:

> *I like that. Because not having to google to find the information or look up a document we might have. But that's really good to have ones that are evidence based, I like that* (GP9).

> *And I think the good thing about the system is it prompts you give an intervention. You tend to get into a habit with patients when you've seen them for a long time, of saying 'oh well they're a smoker and I'm never going to do anything about that' but if you're actually using the module (PHM tab) it makes you ask the question again* (GP1).

Some GPs found giving brief intervention awkward and difficult:

> *If I ask you about your alcohol or your cigarette smoking or your physical activity, it's private stuff and there's an element of people feeling judged. So the response can be quite severe, in some cases I've had people crying* (GP3).

Another GP acknowledged that 'they're [patients] not always very motivated but it's good to do it, good to ask the question' (GP1).

However, there were issues with the physical activity questions - GPs found 'the wording a little bit confusing' (GP1). Another GP summed up the issue:

> *There's another one: 'if four days or less in a typical week have you been physically active for either 150 minutes moderate' – I don't think anyone could answer that, like I don't think I could* (GP9).

Finder Tool

Many GPs had not used the finder or register tools at the time of interview. Amongst those who did, there was a view that they were very useful: "I thought the finder was very good. Because again you do miss people" (GP1).

Specifically, there were issues with criteria used for the finder providing a very long list of patients, some of whom were not relevant:

> *I think they (the criteria) were very broad though … I was surprised at the number of drugs included* (GP1).

One GP reiterated this problem and suggested a potential solution:

> *Some of the drugs on the finder didn't correlate with chronic psychiatric patients… maybe certain drugs like lithium and antipsychotics should have more weight* (GP5).

Retrospective data-analysis

Significant increases in recording occurred in EMI patients for several variables: cholesterol, HbA1c, physical activity, substance misuse, and drinking status (Table 6). There were also significant increases for some brief interventions. However, brief intervention recording was not available for most of the period that the first upload covered. Physical activity, weight, and alcohol were the interventions which were used the most.

Table 4. Percentage of EMI patients who visited in the last six months who have variable recorded at least once in the last six months

	Upload one	Upload Two	χ^2	p
Smoking Status	44.0% (n=588)	42.5% (n=610)	.61	.435
Number of Cigarettes	15.6% (n=208)	15.3% (n=219)	.05	.829
Weight	29.8% (n=398)	27.4% (n=393)	1.93	.165
BMI	26.0% (n=347)	25.0% (n=359)	.32	.572
Cholesterol	0.8% (n=11)	2.8% (n=40)	14.794*	<.001
Blood pressure	44.2% (n=591)	43.5% (n=624)	.145	.703
HbA1c	0.4% (n=6)	1.4% (n=20)	6.652*	.010
Physical activity	0.7% (n=9)	4.0% (n=58)	33.300*	<.001
Substance misuse	1.4% (n=19)	4.5% (n=64)	22.005*	<.001
Audit C	1.6% (n=21)	2.0% (n=29)	.792	.373
Drinking status	0.1% (n=1)	0.9% (n=13)	9.515*	.002
Weight Intervention	0.7% (n=9)	1.3% (n=19)	2.933	.087

Smoking Intervention	0.7% (n=9)	1.0% (n=15)	1.117	.291
Alcohol Intervention	0.00% (n=0)	0.14% (n=2)	N.A.	N.A.
Physical Activity Intervention	0.7% (n=10)	1.9% (n=27)	6.754*	.009
Diet Intervention	0.3% (n=4)	0.6% (n=8)	1.071	.301
Medication Adherence Intervention	0.3% (n=4)	0.1% (n=2)	N.A.	N.A.
Substance Misuse Intervention	0.1% (n=1)	0.1% (n=1)	N.A.	N.A.
Other Intervention	0.0% (n=0)	0.1% (n=1)	N.A.	N.A.
Patient Declined Intervention	0.1% (n=2)	0.8% (n=11)	5.644*	.018

*Statistically significant at an alpha level of .05

Discussion

Feedback on the PHM tab was largely positive with the majority of service providers expressing approval of the tab. Some did not like the setup of the tab however. In particular, GPs took issue with the fact that some data did not transfer from other parts of their system, such as cholesterol. Several GPs also mentioned that they would like a single page rather than multiple pages. Another issue highlighted was that the tab asked irrelevant questions about patients such as mammogram for male patients; one GP highlighted this saying ‘A cleverly designed system would prompt according to the type of patient you have’. Another issue relayed by several GPs was the confusing nature of the physical activity questions. For the finder tool, many GPs had not used it but among those that had, there was a positive view of it, though it was relayed that the criteria were too broad and, as a result, the list was too long.

Recording was consistently very low with the exception of two factors: smoking status and blood pressure. No variable, except these two, was recorded at least once in the last six months for more than 30% of EMI patients either before or after the introduction of the PHM tab. These figures were particularly low for brief interventions; only weight, smoking and physical activity interventions were recorded at least once for more than 1% of EMI patients in the previous six months. The PHM tab did significantly increase

the recording of several variables such as physical activity, substance misuse, and cholesterol. However, it is unclear what proportion of this increase can be attributed to the Hawthorne effect.

For the people who were positive about the tab, they found that it was a good prompt to carry out certain physical health checks, with one GP saying that 'this is a really good way of doing a physical health review … and doing it in a nice concise way'. This was highlighted by the significant increase of recording in lesser-recorded variables such as physical activity and substance misuse. However, many respondents discussed how habit played a large role in their use of the tab.

GPs highlighted the CCDS and the interventions section as positive additions. However, despite this, they were rarely used by GPs. Several potential reasons were discussed to explain this. These included habits and GPs' general reluctance to discuss issues like alcohol as they felt they were awkward issues, or they felt that patients would be unresponsive: "there's an element of people feeling judged". However, brief interventions for the items may need a process of normalisation within general practice where asking about drinking or physical activity becomes as normal as asking about medication adherence. The PHM tab may play a role in this normalisation process. Evidence has shown this phenomenon of awkwardness preventing brief interventions is declining over time[62].

The transferability of data from one section of the system into the PHM tab was a major issue encountered by GPs. This is reflected in the low recording levels for commonly documented items such as cholesterol and HbA1c. Currently this data is sent to practices by the relevant laboratory, and then automatically uploaded to the PMS system. Clanwilliam have relayed that it will not be possible for this information to automatically transfer to the PHM tab because the data format varies from lab to lab. The only way of getting this data into the PHM tab is to manually input it. GPs were not always happy to do this as it was said it 'takes a little bit of time'.

The lack of increase in recording of key variables such as smoking status, BMI and blood pressure implies that the tab and the study did not have an effect on GPs' recording behaviour for key variables. It may be that GPs only recorded results for patients they felt were in need of intervention and were already doing this prior to the intervention.

Adjustments to the tab might involve:

1. Having a tab that changes based on the type of patient present
2. Moving the tab to a more prominent location
3. Collating all questions onto a single page
4. Simplifying the physical activity questions
5. Introducing a 'patient declined' box for screening
6. Removing duplicate questions from the tab
7. Automatically transferring data from all parts of the system where it is feasible to transfer, such as the diabetes cycle of care

The finder tool would be improved by giving weight to criteria of most importance, including free notes entries of schizophrenia, bipolar disorder, and depression, or if drugs such as lithium or antipsychotics are prescribed. Also, truncating the free note search terms might find more patients of relevance, e.g. schizo*.

Improving recording behaviour may require several elements:

1. Financial incentives

Financial incentives within primary care exist in many European countries. They are adopted in order to ensure and improve the quality and continuity of patient care. Reimbursement for GPs to regularly and accurately maintain patients' electronic records would contribute to adequate monitoring of chronic conditions and better identification of at-risk groups. This would also help to provide accurate data for service evaluation and health system planning.

2. Training

The efficient use of information technology in health care is essential for high quality, continuity and coordination of care. Systematic training is necessary for the successful implementation of eHealth technology[63]. Currently in Ireland, there is no formal training for GPs or practice nurses in computer use or appropriate recording. Therefore, the proficiency in this area depends on the motivation of individual practices.

3. Streamlining lab entries

Currently lab data is uploaded to GP systems in inconsistent formats. Streamlining these entries from labs and allowing them to easily transfer between pages on PMS systems would improve data entry immediately.

A cross-sectional analysis of the lifetime prevalence, consultation frequency and pharmacological treatment of enduring mental illnesses in Irish general practice

Introduction

General practitioners are the gatekeepers of Irish healthcare as well as offering ongoing support and continuity of care to patients. Irish general practice is therefore considered ideal for preventing, diagnosing and managing most mental health problems[64]. In one survey[65], Irish GPs estimated that 95% of patients with mental health issues received their care in primary care. It therefore appears that GPs feel that most patients with mental health needs are seen in primary care. As well, *A Vision for Change*[66] – a Government commissioned report on Irish mental health policy - considers primary care as pivotal in the care of patients with mental illness. Similarly, one of the primary recommendations of the World Health Organisation's report *Mental Health: New Understanding, New Hope*[67] is that mental disorders should be treated in primary care.

In order for primary care to be able to treat patients with EMI adequately, it is important to understand the prevalence of EMI in primary care. *A Vision for Change*[66] recommends that research be carried out into the prevalence of mental health problems in primary care.

Coding systems in general practice offer a means of tracking the prevalence of illnesses amongst large populations of patients. In Britain, it has been found that patient codes are valid[68]. However, many studies have pointed out that doctors tend to under-code[35, 69, 70] – not all of those diagnosed with an illness are coded as having that illness. Irish GPs have stated in the past that they often do not have the time to code patients[35]. In a study by Gleeson and colleagues[34], it was found that for patients who had a mental disorder only 8% had been coded as having such.

Gleeson and colleagues[34] outline the need for large studies of mental illness prevalence in Ireland. Therefore, this study sought to use GP codes supplemented with an electronic finder tool to try to establish the prevalence and pharmacological treatment of EMIs in Irish general practice.

Method

This research had three electronic tools:

1) An electronic finder tool to assist GPs to find patients on their practice management software (PMS) system who have an EMI but have not been coded with one.
2) An electronic register tool to provide GPs with a list of patients coded with an EMI.
3) An uploader to facilitate practices in sending relevant data to a central database in order to receive a practice specific report allowing them to undertake an audit on this topic.

Data collection

Participating GPs were emailed and asked to first use the finder tool to assist them in coding all relevant patients with an EMI. GPs were also given information on the register tool to assist in the coding process. They were then asked to use the uploader on their PMS system to upload data to a central database. Detailed instructions on the locations of all three items were provided to GPs.

Data

The age figure was calculated based on year of birth, as the full date of birth was not accessible because this was considered as potentially patient identifiable information. For the variable age when first coded with EMI, patients coded after the GP was instructed to use the finder tool were excluded. This was done because it is likely that these patients had been diagnosed with EMI at an earlier point but had not been coded.

For patient status, there are three types: private patients, public patients and doctor visit card (DVC) patients. Public patients are those who are entitled to a medical card, which is a means tested scheme. The medical card provides free access to certain medical and surgical services in Ireland, including free GP care[71]. The DVC entitles the holder to visit the GP for free[71]. The income thresholds vary depending on your age, marital status and whether you have children[71]. Everyone over the age of 70 years or under the age of six years is entitled to a DVC[71]. All patients who do not have a medical card or DVC are classified as private patients and they pay for their visits. Private patients can attend any GP.

Patient status is used as a proxy for socioeconomic status (SES). Public patients represent the most deprived in society. DVC patients represent those on a higher income than public patients and private patients represent those on a higher income than both public patients and DVC patients.

The size of the practice population was established by the GP conducting an audit of their respective system to establish the number of active patients aged 18 or over registered in the system.

If a patient was found to have more than one consultation in a day, this was considered one single consultation on that day. This was done because many patients appeared to be having several consultations in a single day. This was most likely caused by an error or by having a consultation with the GP and with the nurse. Consultation figures from one of the PMS systems (Helix Practice Manager (HPM)) were excluded from the analysis, due to difficulties experienced by GPs in recording consultations. This led to data from this system being excluded from the prescriptions analysis because it was not possible to establish whether a patient had had a consultation in the last year.

The number of GPs is quantified by the method of Whole Time Equivalent (WTE) whereby a full-time GP is counted as one GP and a part-time GP is counted as half.

Results

Practice profiles

Eleven practices provided data for the study. The mean number of full-time GPs was 2.3 (range=1-4), and the mean number of part-time GPs was 1.3 (range=0-7). The total number of whole time equivalent (WTE) GPs across the 11 practices was 35, with an average of 3.2 WTE GPs per practice. Nine of the practices described themselves as mostly urban, one described itself as mostly rural and one described itself as mixed.

Table 5. Number of GPs, practice population and EMI prevalence broken down by practice

	WTE GPs in the practice n	Practice population N	Lifetime prevalence % (n)		
			RDD	**Schizophrenia**	**Bipolar Disorder**
Practice 1	3	10,059	0.44 (44)	0.08 (8)	0.07 (7)
Practice 2	2.5	13,470	0.36 (48)	0.07 (9)	0.23 (31)
Practice 3	2	1,341	4.30 (58)	0.82 (11)	2.98 (40)
Practice 4	3.5	9,667	0.47 (45)	0.16 (15)	0.71 (69)
Practice 5	3.5	10,416	8.72 (908)	0.46 (48)	0.09 (9)
Practice 6	3	4,741	2.66 (126)	0.67 (32)	0.19 (9)
Practice 7	2.5	6,141	0.67 (41)	0.90 (55)	0.16 (10)
Practice 8	5.5	6,523	5.72 (373)	0.38 (25)	0.15 (10)
Practice 9	1.5	2,759	0.94 (26)	0.29 (8)	0.33 (9)
Practice 10	5	10,794	2.43 (262)	0.14 (15)	0.03 (3)
Practice 11	3	4,632	0.76 (33)	0.15 (7)	0.26 (12)
Total	35	80,543	2.44 (1,964)	0.29 (233)	0.26 (209)

EMI Prevalence

2,337 patients were found to have an EMI; 2.9% of the practice populations. Overall, 2.4% (n=1,964) of the practice populations were coded with recurrent depressive disorder (RDD).

The aggregate practice population across all practices was 80,543. The mean age of EMI patients at the time of upload was 53.8 years (range 18-103 years) (Table 6).

Table 6. Lifetime prevalence, average age when first coded with the illness, and median number of consultations for each EMI

Disorder	Lifetime prevalence (95% CI)	Age at time of upload Mean (*SD*)	Age when first coded Mean (*SD*)	Number of consultations in last three years Median (*Interquartile range*)
P76/F33 (RDD)	2.44% (2.33% to 2.55%)	53.92 (18.15)	45.82 (*17.42*)	19.5 (*30*)
P72/F20/P98/P71/ F25.0/F29/F09 Schizophrenia	0.29% (0.25% to 0.33%)	53.48 (15.14)	45.25 (*14.50*)	24.5 (*34*)
F31/F25.0/F39/ F30/P73 Bipolar disorder	0.26% (0.23% to 0.30%)	53.29 (16.09)	46.71 (*16.22*)	22 (*37*)

Of those coded with RDD, 3.8% (n=74) were coded after the GP was instructed to use the *finder*. For schizophrenia, 11.2% (n=26) were coded after the GP was instructed to use the *finder*. For bipolar disorder, 28.2% (n=59) were coded after the GP was instructed to use the *finder*.

Amongst those coded with RDD, 49.9% (n=976) were private patients, whereas 77.1% (n=178) of those coded with schizophrenia were public patients (Table 7).

Table 7. Patients' status by EMI

Disorder	Private Patient (95% CI)	GMS/Doctor Visit Card Patient (95% CI)
P76/F33 RDD	49.9% (47.7% to 52.1%)	50.1% (47.9% to 52.3%)
P72/F20/P98/P71/F25.0/F29/F09 Schizophrenia	22.9% (18.0% to 28.8%)	77.1% (71.2% to 82.0%)
F31/F25.0/F39/F30/F73 Bipolar disorder	38.8% (32.4% to 45.5%)	61.2% (54.5% to 67.6%)

Of those coded with an EMI, 97.2% (n=2,272) were coded with one EMI only, 2.6% (n=61) were coded with 2 EMIs only and 0.2% (n=4) patients were coded with three EMIs. Of those who have a dual diagnosis, 37.7% (n=23) were coded with RDD and schizophrenia, 49.2% (n=30) were coded with bipolar disorder and depression and 13.1% (n=8) patients were coded

with schizophrenia and bipolar disorder. For those coded with an EMI, 64.8% (n=1,515) were female (Table 8).

Table 8. Gender of patients for each EMI

Disorder	Female (95% CI)	Male (95% CI)
P76/F33 RDD	68.0% (65.9% to 70.1%)	32.0% (29.9% to 34.1%)
P72/F20/P98/P71/F25.0/F29/F09 Schizophrenia	42.5% (36.2% to 48.8%)	57.5% (51.2% to 63.8%)
F31/F25.0/F39/F30/P73 Bipolar disorder	57.4% (50.6% to 63.9%)	42.6% (36.1% to 49.4%)

For RDD, 57.6% (n=660) of patients who had visited in the last year were prescribed at least one anti-depressant medication in the last year. For schizophrenia, 64.0% (n=103) were prescribed at least one anti-psychotic medication and for bipolar disorder 75.2% (n=94) were prescribed at least one anti-psychotic medication (Table 9).

Table 9. Patients with one EMI diagnosis only (who have visited in the last year) prescribed at least one medication in the previous year for each EMI

Disorder	Anti-psychotic (ATC Code: N05A)	Anti-depressant (ATC Code: N06A)	Anxiolytic (ATC Code: N05B)	Hypnotics & Sedatives (ATC Code: N05C)
P76/F33 RDD	12.9% (n=158)	57.9% (n=710)	18.2% (n=223)	20.5% (n=252)
P72/F20/P98/P71/ F25.0/F29/F09 Schizophrenia	65.7% (n=94)	18.2% (n=26)	18.2% (n=26)	20.3% (n=29)
F31/F25.0/F39/F30/P73 Bipolar disorder	75.2% (n=94)	29.6% (n=37)	33.2% (n=29)	34.0% (n=30)

Discussion

This aspect of our project found that there is a low lifetime prevalence of EMIs according to data from Irish general practice. This is seen particularly with bipolar disorder and schizophrenia, with only 0.26% and 0.3% respectively of practice populations coded with these EMIs, whereas the lifetime prevalence of RDD is much higher at 2.4%. These are far below the figures found in studies elsewhere[72, 73, 74]. The median number of consultations in the last three years for patients with RDD was 19.5, whereas for patients with schizophrenia it was 24. The average age when first coded was similar for all three EMIs; 45.8 years for RDD, 45.3 years for schizophrenia and 46.7 years for bipolar disorder. A substantial proportion of the disease codes were entered after GPs were instructed to use the *finder*; particularly for schizophrenia and bipolar disorder where 11% and 28% respectively were coded afterwards.

Hasin and colleagues[74], using self-reported survey, estimated the lifetime prevalence of major depressive disorder in the United States adult population at 13.23%, far greater than the 2.4% figure found for RDD in this study.

A systematic review[73] of bipolar disorder prevalence in primary care internationally estimated the prevalence at 0.5% to 4.3% of practice populations. Structured interviews with patients or screening questionnaires were used to establish prevalence. A study of prevalence of bipolar disorder in County Monaghan[75] estimated a lifetime prevalence of 0.4%, greater than the 0.26% found in this study.

A previous study[76] on schizophrenia prevalence in Ireland estimated it at 0.4%. A systematic review[77] of schizophrenia prevalence estimated lifetime prevalence at 0.4%. This is similar to the 0.3% found in this study.

Given the percentage of patients coded after GPs were asked to use the *finder* tool was 4% for RDD, 11% for schizophrenia and 28% for bipolar disorder, it seems likely that there are many patients with EMI who have not been coded with EMI. However, the rate of EMI coding in these practices is likely to be far higher than the 8% found in the study by Gleeson and colleagues[34].

The main medication patients with schizophrenia and bipolar disorder were prescribed was anti-psychotics with 64% and 75% of patients respectively being prescribed at least one anti-psychotic in the last year. A study of Irish primary care patients found that 77.8% of patients who had experienced psychosis were treated with antipsychotic medication[34]. For RDD, anti-depressants were the most prescribed medication; 57.6% of EMI patients had at least one anti-depressant prescription in the last year. In the previously mentioned study of Irish primary care patients, 73.8% of patients with depression were treated with anti-depressants[34]. It should

be noted however that the sample used in the study by Gleeson and colleagues[34] was much smaller. The prescription rates found in the present study appear to be low given that these are the main pharmacological treatments for the respective conditions[78, 79]. For patients with RDD, it may be the case that many are engaging in counselling or psychotherapy instead of medication. Another potential explanation is that the patients included here may have less severe illnesses. For patients with schizophrenia, it may be the case that they are getting their medication via injection from the mental health clinic or from the practice nurse and therefore it is not read as a prescription.

With regard to SES, as of April 2018, 30.2% (n=1,103,937) of the Irish adult population (aged 18 and over) were eligible to be public patients. Also, 5.0% (n=183,935) were GP visit card eligible[80]. The denominator used is the 2018 Census figure shows that there are 3,657,089 people aged 18 and over in Ireland[81]. Therefore, for all three diagnoses, a public patient was more likely than a private patient to have been coded with an EMI. This effect is clearest in patients with schizophrenia where 74.0% of patients coded with Schizophrenia are medical cardholders. This also appears in other studies that have found a negative correlation between socioeconomic status and the prevalence of mental illness[82]. This correlation may be confounded by attendance rates however as public patients or DVC patients are not charged for attending the GP, whereas private patients are charged and therefore have lower consultation rates than public patients[83]. This may mean that public/DVC patients are more likely to be identified and diagnosed as having an EMI. Patients with EMI also tend to be older patients, and older patients are more likely to have a medical card or DVC.

Disproportionate amounts of females have been coded with an EMI. Over two thirds (68%) of those coded with RDD were female. This is in line with previous research[84] that has found that almost twice as many women than men have been diagnosed with depression. There are several possible explanations for this disparity. Health seeking behaviour is different[85] between males and females. Gender based violence and SES may also contribute to the disparity[86]. There is not thought to be a difference in prevalence between males and females in terms of bipolar disorder[87]. In this study, the disparities between genders are less prominent for bipolar disorder. For schizophrenia, it is unclear whether gender differences exist[72, 88], with some studies suggesting a higher prevalence amongst men[88]. This study found that men were more likely to be coded with schizophrenia.

There are several limitations which undermine the validity of the prevalence figures reported. Firstly, upon viewing the *register* patient list, some GPs removed patients with EMI who were deceased or no longer in the practice. They were not however carrying out the same process for the overall practice population. It was also only suggested and not enforced that GPs use

the *finder* and *register* tools before uploading data, which has likely led to an underestimate of lifetime prevalence. Another reason is that a patient with an EMI may not appear in the *finder* tool; it is possible that not all patients with an EMI had been prescribed a relevant medication or had a relevant words/phrased entered in their notes.

Furthermore, doctors tend not to code for several reasons including lack of time[69] and concern that coding will negatively affect patient consultations[69]. Due to the stigma associated with mental illness[89], doctors may be disinclined to code patients with an EMI. It should be noted that these figures, at best, only reflect the number of patients who GPs identify as having an EMI and the accuracy of GPs' mental health diagnoses is questioned by some studies[90, 91].

The fact that there is no code for bipolar disorder in ICPC-2, which is the main coding system used by GPs in this study, means that it is possible that this disease is underrepresented by the estimates provided in this study. The diagnosis of RDD is also not clear from the available codes in ICPC-2. In ICPC-2 the only relevant options are P76 - *Depression* and P03 - *Feeling depressed*. This study included P76, which is not necessarily recurrent and may only include a single episode. This may lead to an overestimate of patients with RDD. P73 affective psychosis was included as a code for bipolar disorder as bipolar disorder is a sub-code of P73 affective psychosis, however, it might not be the case that all patients coded with P73 have bipolar disorder.

It is also worth noting that there is a selection bias; participating GPs self-selected and therefore it is likely that they have an interest in the topic and would therefore be more likely than the average GP to recognise, diagnose and code an EMI.

Finally, the figures for prescriptions and consultations are not as representative because practices using HPM systems had to be excluded from analysis.

Conclusion

An understanding of the lifetime prevalence of EMIs in Ireland can help inform the resourcing of general practice. Further research conducting face-to-face interviews of general practice patients in Ireland could provide a more accurate figure for the prevalence of EMIs in Ireland, and seek to validate the finder tool. Improving the validity of diagnostic coding should be a priority in Ireland in order to provide more accurate prevalence and impact data. The British quality and outcomes framework gave financial incentives for disease coding which led to a large increase in the coding of chronic disease[92, 93, 94]. Future interventions for patients with EMI should take into account the disproportionate number of female patients and public patients amongst those with an EMI. Future research might seek to further understand the causes of gender and SES differences in EMI prevalence in Ireland.

Evaluation of a patient held Shared Care Card for primary care and community mental health teams in Ireland

A governmental report states that one of the present challenges to Irish healthcare is a "lack of integration structures across the boundaries of care"[95]. As reported in the 'Qualitative Interviews with Healthcare Staff Prior to Project Commencement' chapter above, qualitative interviews with CMHTs and primary care teams found that there was a breakdown in communication between the two teams in terms of the care of patients with EMI. Members of the primary care team and members of the CMHT at times mentioned a lack of communication from the other. This led to services such as blood tests being repeated unnecessarily or not done at all. It also meant a lack of clarity amongst some teams around medications prescribed. This is unsurprising given that there appear to be no guidelines in Ireland on who should take responsibility for the monitoring and management of the physical health of patients with an EMI. Issues with communication between GPs and the psychiatric team are an international problem. A British study from 1997[7] described 'the failure of psychiatric teams to write to GPs, other forms of communication being hardly used'. In the Irish setting, many psychiatric services do not currently use electronic systems; therefore, to promote better communication between primary and secondary services, this study developed a patient held shared care card, as was suggested in early discussions about the study with health care professionals.

As discussed in the introduction, there is a large disparity in mortality and morbidity rates between patients with an EMI and the general population. A literature review suggests that fragmented care may account for some of the disparity in health outcomes for patients with an EMI[45]. A policy paper examining integrated care in Ireland suggested mental health patients should be targeted for integrated care interventions[96].

Brunero and colleagues[97] introduced a patient held health record called the *blue card* for patients with schizophrenia who had comorbid physical health problems. Many of the patients acknowledged that the card assisted the communication of medical information to healthcare providers[97], specifically between the general practitioner (GP) and psychiatrist[97]. Several patients described their satisfaction with the knowledge that their information was being recorded[97].

A shared care card also has the potential to empower patients to take greater ownership of their own care. As reported by Brunero and colleagues[97] a study of cancer patients[98] found that a patient held health record improved health outcomes, patient compliance, doctor-patient communication and patient empowerment. Similarly, Brunero and colleagues[97] found that the shared care card led to improvements in patients' knowledge of their health status. They also

found that patients who used the card generally had positive feedback and that there was a high rate of retention of the card[97]. The shared care card developed for this study is a means of integrating the care of a person with EMI and is based on the card developed by Brunero and colleagues[97]. The card aims to focus on EMI patients' physical health. It is a handheld record of care containing spaces for information related to medications, healthcare providers and notes from the patient's GP and psychiatrist. This chapter seeks to outline the development and evaluation of the card.

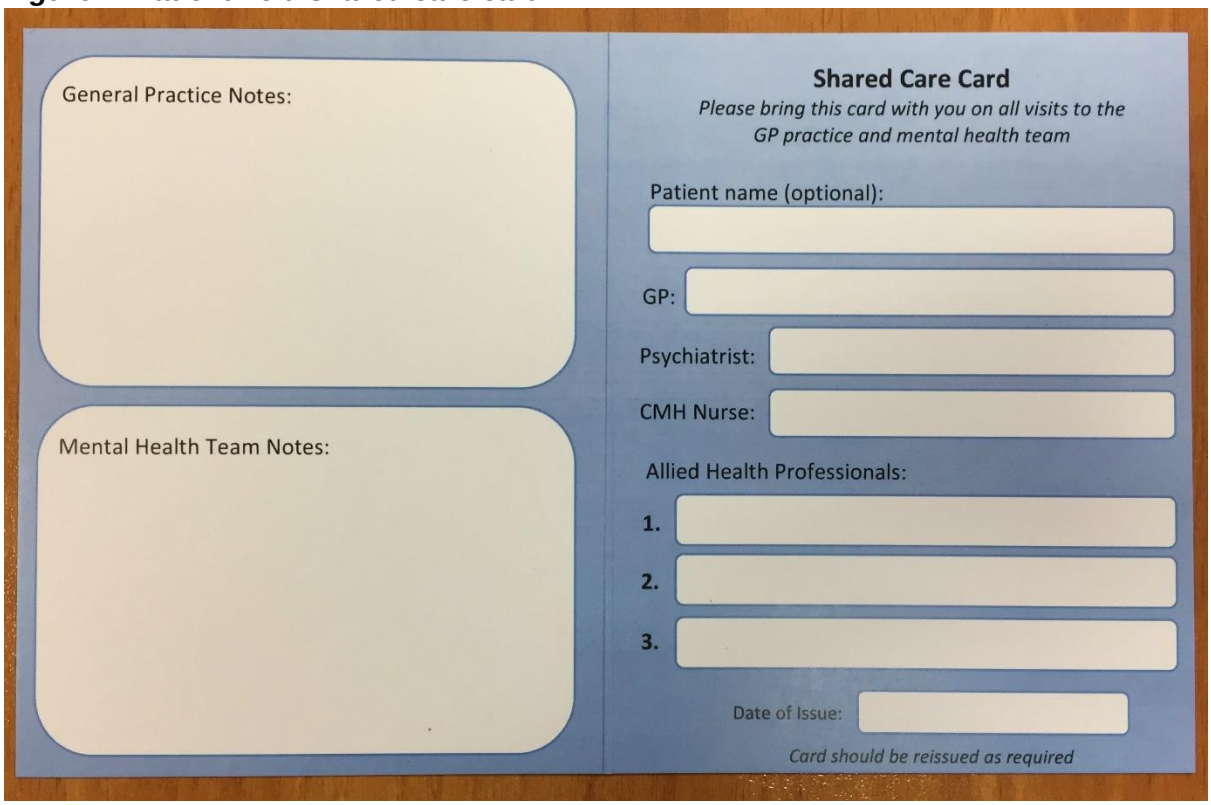
Method

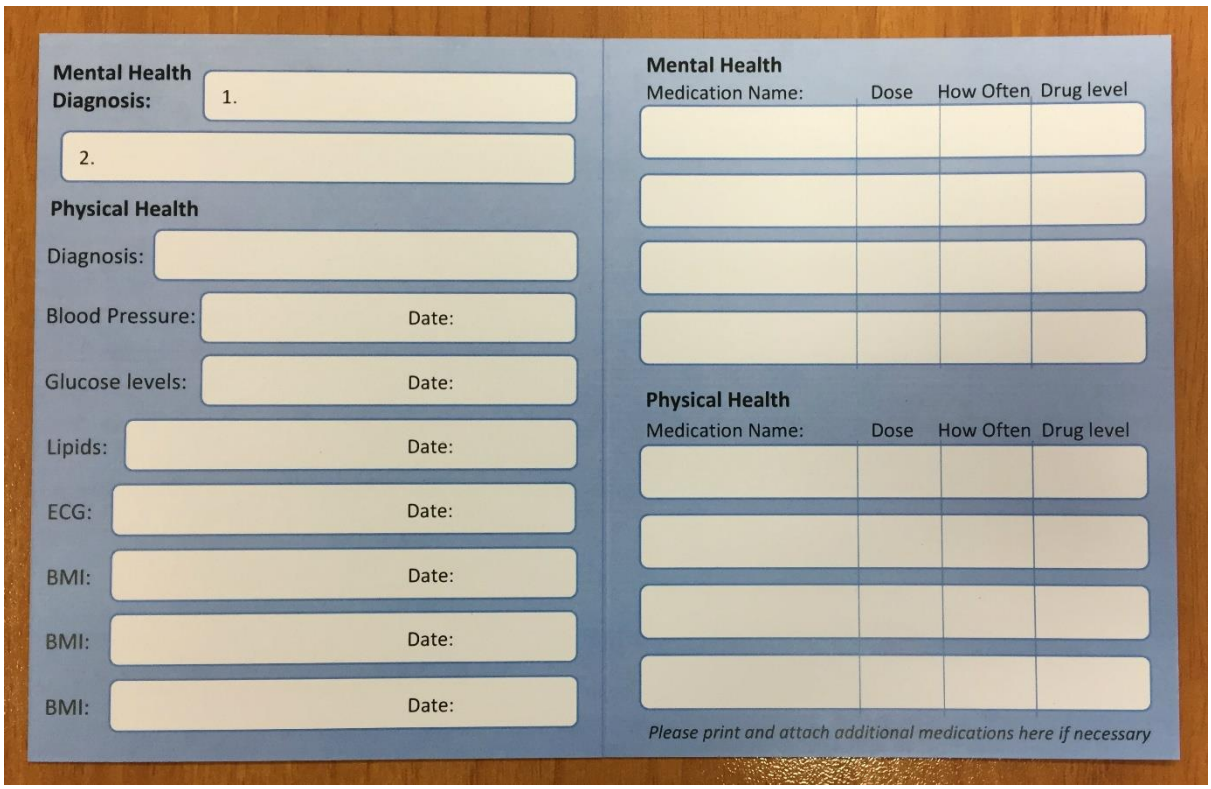
Shared Care Card Development

During qualitative interviews with healthcare providers regarding their experience of treating patients with EMI, it was suggested that a means to share information would be beneficial. It was recognised that, given the inability of the current electronic systems in use to accommodate this, a paper version would be most suitable. A draft card was developed based on the *blue card* developed by Brunero and colleagues[97]. The card was then adapted for patients with EMI to act as a patient held record to be used by GPs and the CMHT, focused on physical health. The draft card was firstly presented to a GP with expertise in mental health and a consultant psychiatrist. They suggested adjustments to make it more appropriate for patients and doctors.

As seen in Figure 1, the card is two sided and contains spaces for information about prescriptions, diagnoses, physical health information, notes and details of the person's mental health professionals, GP and allied health professionals.

Figure 1. Patient held shared care card





Interviews

Ten GPs, one practice nurse, and one patient were interviewed overall. There was only nurse interviewed because GPs were the main users/non-users of the card. There was only one patient interviewed because several GPs were reluctant for their patients to be interviewed and several GPs did not use the card. The researchers in conjunction with a GP with expertise in mental health and a consultant psychiatrist developed a topic guide. An iterative process was used to adapt and develop the topic guide throughout the interviews.

Results

Paper based versus ICT

Several respondents relayed that they would have preferred a digital format as opposed to a paper based card. One GP described it as 'a step backwards' (GP2) while another said that 'the shared care card is a very old technology' (GP3). Some GPs described an IT culture within general practice which would not be conducive to the introduction of a paper based card:

> *We're constantly on computers nowadays so we download everything onto a computer. This idea of shared care card or anything like that just doesn't happen here anymore so we just preferred to have something I think that would be easily transferrable, tick the box and then print it out.* (GP6)

Another GP described what they thought would be a better solution:

> *I think a better solution would be some cloud based shared record system that we could work on. In my opinion ICT offers the best solutions here rather than hand held cards.* (GP1)

This was reiterated by another GP who stated that 'if it was going electronically then that's a different thing.' (GP3)

Card format and layout

An aspect of the card that is adjustable, the layout, was criticised for several reasons. One area was in relation to omissions:

> *There were some fairly significant omissions from the card. There was no mention anywhere about smoking or alcohol and they're two important risk factors.* (GP1)

The GP also mentioned other omissions: 'The other thing you could look at is exercise, and there's no mention of that' (GP1). There were also issues raised about the medications section:

> *And the other one I had difficulty with was there are only four slots available for medication, that's usually not enough I've found. And then there was one column on the medication sheet for drug levels and there really aren't that many drugs nowadays that we would actually monitor drug levels for so again I think that column should be left out altogether.* (GP1)

Others were more positive about the layout:

> *I mean they're pretty small and compact and theoretically they should be user-friendly.* (GP5)

Some GPs worried that patients would not find it acceptable to have their mental health diagnosis on a card that they would be holding 'having a mental health diagnosis on a card is going to be something that some people will struggle with having in their jacket pocket or their hand bag.' (GP7)

Several GPs mentioned the general practice antenatal card as a possible model:

> *If it could be like that [the antenatal card] where you could have it in sequence of five or six visits between mental health and ourselves. We could be seeing if BMI's improving or blood pressure is dis-improving or whatever rather than individual cards per time.* (GP7)

Inappropriate cohort

Another area in which the GPs thought the card was flawed was that the cohort of patients with EMI would have particular difficulty with the cards, illustrated by this comment:

> *The group we are dealing with here, long-term psychiatric patients, they have chaotic lifestyles and really aren't the best people to remember to bring cards to visits or not to lose them.* (GP1)

Similarly, for another GP, the cards were not being brought back: 'Two or three have been back since they were given it and none of them have brought it with them.' (GP6)

Time

A common issue was that GPs found the card 'quite time consuming' (GP6). Some thought the time would be better spent actually caring for the patient's physical health:

> *Obviously, what we are trying to do is to encourage GPs to look after the general health of patients and I think this takes away from the time that the GP has rather than look at filling this out, although it's not a huge thing, it does take five minutes to fill it up. (GP1)*

Unused

Some GPs were not using the cards: 'I'll be honest I haven't used them' (GP2). Another felt that the card wasn't right for their practice: 'I didn't feel that the card would ever catch on so I didn't fill out any of those' (GP3). In addition, some didn't think the CMHT were using the cards:

> *I'm just not convinced that they're actually being taken with them to the outpatients, we're still getting you know requests written and verbally from patients you know, to send on a copy of their bloods when they're going to their psych follow up which is fine.* (GP5)

One GP felt that the cards would not address the problem 'What we need is better communication from the community psychiatric teams' (GP8). Another GP didn't use it as they 'already have good communication with the mental health team.' (GP10).

Several GPs felt that it wasn't appropriate given the circumstances of their practice. One GP stated that 'Most of the people who have enduring mental illness are not in shared care. Most of them are with us primarily' (GP7). Another GP found that their psychiatrist was communicating the necessary information to them:

> *Any abnormality automatically comes to me, if someone is doing 31 miles an hour in a 30-mile an hour zone as far as any particular laboratory parameter is concerned, it's sent to me.* (GP3)

Other

One GP was particularly positive about the concept of the card:

> *Gets me to think in that space about their physical health as part of their overall illness. To see if we can improve the interaction between us and secondary care but also to go through the physical health monitoring and all that. I could definitely see myself using the card.* (GP7)

A patient was also positive about the card, describing it as 'a good idea'. He also said that he had brought it to the CMHT and they were 'happy enough to use it.' (P1)

Discussion

It is clear that the acceptability of patient held shared care cards is low amongst GPs. The primary issue seemed to lie in the fact that the card was paper based. GPs also felt that the card could not take enough information and takes up too much time to fill out given their high workload.

A large majority of GPs felt that an ICT 'cloud based shared record system' would be best. However, if the issue of time is to be addressed, this may require integration with the GP practice management software system. This would overcome other problems mentioned by the GPs, including that this cohort of patients would not be suited to a shared care card, and that there was not enough space on the card for medications. There are cloud based shared care technologies available in the UK[99]. Another potential option is to download part of the patient record to a USB flash drive, which has been found to be acceptable for the shared care of maternity patients[100].

Other issues raised surrounded the inappropriateness of the card for their specific context; that their practice communicated well with the CMHT. Other practices who didn't use the card just felt that it was 'a step backwards'.

The fact that some GPs found the card useful and others did not based on the fact that their communication was already good enough suggests that there is a need for a more consistent system of communication in the Irish healthcare system.

Some positive feedback related to how the card would prompt GPs to think more about the physical health of their patients with an EMI. As well, it was mentioned that the card was concise.

Implications

All of the issues discussed above suggest that the feasibility of introducing a paper-based shared care card into Irish general practice for patients with EMI is low.

This card was primarily framed as an adjunct to communication between general practice and the CMHT. However, the primary purpose of the card developed by Brunero and colleagues[97] was for patients to have better knowledge of their health, with improved communication a secondary benefit.

Therefore, the card might be used best as a means of patient empowerment with a potential additional benefit of increased communication with the CMHT.

Overall, the feasibility and acceptability of the shared care card is low and may not represent an effective intervention for patients with an EMI. Further feedback from service-users is necessary to make definitive conclusions.

A potential alternative to the shared care card might be the Patient Held Active Record of Medication Status (PHARMS)[101] which has been developed in University College Cork. In its current form, this consists of a USB key held by the patient that links the user's computer to the patient's list of medications as it appears on the GP record. The patient's information can only be accessed if both the healthcare professional and the GP's computer have the relevant software installed. Healthcare professionals can document changes to the patient's medications here but are not able to alter the master-list of medications. Only the patient's GP can alter this. The GP can then see these documented changes. The software developer has included the capacity for this to extend to other parts of the patient record. For a small study, the USB were approximately €70 each. The developer has said that the future cost would be lower, especially if large orders are made. No information can be stored on the device. This will allay worries around viruses such as ransomware. This intervention would serve many of the same functions as the shared care card while also addressing some of the issues raised by GPs, including problems with a paper based card and time taken to fill out the card. The PHARMS may act as an interim solution while a shared electronic health record is awaiting approval from the Irish government[102]. However, it is not clear whether secondary services would have the ICT capacity to implement the PHARMS.

The outpatient services performance improvement programme (OSPIP) may offer some solutions in terms of integration, communication and referral[103].

Conclusions and Recommendations

People with enduring mental illness (EMI) are more likely to die prematurely, primarily due to a combination of lifestyle risk factors, higher rates of unnatural deaths and poorer physical healthcare[104]. The overall aim of the study was to develop and assess a standard protocol to aid the health professional in the monitoring and treatment of the physical health of patients with EMI presenting in general practice. The project comprised of:

- semi-structured interviews with GPs, practice nurses and members of community mental health teams (CMHTs) at the study outset to understand their experience of providing services in relation to physical health for patients with EMI
- the development of an audit tool for practices and the ability to upload anonymous retrospective patient data
- the piloting of a patient held shared care card
- the creation of a structured proforma for recording physical health data in the main practice management software
- semi-structured interviews with GPs and practice nurses to evaluate the above aspects.

Thirty-five GPs in 11 practices based in Dublin, Cork, and Galway participated in the study.

There are a number of limitations in this study including possible selection bias as participating GPs self-selected and therefore it is possible that they have a special interest in the topic and thus might be more likely than other GPs to recognise, diagnose and code an EMI. Additionally, not all of the practice management systems cooperated and hence data is from only two systems. It was originally intended to include a patient component but substantial difficulties were experienced trying to obtain interviews with patients in the practices and this aspect was later excluded due to the low numbers participating.

In the semi-structured interviews at the start of the project, service providers were knowledgeable that people with EMI had an increased risk of physical health illnesses and agreed that physical health measures should be monitored.

The review of the three main GP PMS systems (Socrates, HPM and HealthOne) in terms of their ability to record and extract data, as well as their reporting functionality, revealed significant limitations. To address the recording issues, a structured proforma - the physical health monitoring (PHM) tab - was developed to facilitate the systematic and structured

recording of key physical health variables and brief interventions. Feedback from GPs on the PHM tab was largely positive.

Interviews post intervention revealed that the feasibility of introducing a shared care card into Irish general practice for patients with EMI is low.

While some patient level difficulties were identified, the key barriers noted were at a system level - difficulties communicating and resources. In Ireland currently, it is unclear as to whose responsibility it is to monitor, detect and manage the physical health of patients with EMI. As a result, it may mean that this population's health care needs are not currently being identified or met within the current healthcare system. It has been propounded that one of the greatest risks to patient safety occurs when the patient passes across the boundaries of care. A key issue identified by participants was the need to identify which service providers are responsible for the physical health of people with EMI. Given the poor survival rates of people with EMI, and the high levels of morbidity, a focused integrated approach needs to be developed in order to develop and provide timely, accessible and high quality physical health services for people with EMI. This may be best developed in the context of the HSE's National Clinical Programmes (possibly in Mental Health or Chronic diseases), given the integration focus that these programmes currently emphasise. Efforts to increase integration and communication between primary and secondary services could contribute to an improvement in the physical health of patients with EMI and the OSPIP Strategy is welcomed in this regard[103].

The reporting functions in GP practice management software systems are insufficient for research and audit purposes – this needs to be considered when designing national IT infrastructure for the health system.

Given the rates of EMI found including the increase in coding when GPs were asked to use the *finder* tool, was 4% for RDD, 11% for schizophrenia and 28% for bipolar disorder, it seems likely that there are many patients with EMI who have not been coded with EMI. An understanding of the lifetime prevalence of EMIs in Ireland can help inform the resourcing of general practice. Improving the validity of diagnostic coding should be a priority in Ireland in order to provide more accurate prevalence and impact data. The fact that there is no code for bipolar disorder in ICPC-2, which is the main coding system used by GPs in this study, may contribute to the low levels of coding for bipolar disorder. The diagnosis of recurrent depressive disorder is also not clear from the available codes in ICPC-2.

Improving recording behaviour may require several elements, such as financial incentives, training and streamlining the integration of data from secondary services and laboratories into GP PMS systems. At the time of writing, a new GP contract is being negotiated in Ireland and it is anticipated that this will be agreed soon. Further to this, we understand that a 'Chronic

Disease Contract' is being negotiated and this has the potential to re-engineer the health system in terms of caring for those with chronic conditions at the primary care level.

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REFERENCES

1. Whiteford HA, Degenhardt L, Rehm J, Baxter AJ, Ferrari AJ, Erskine HE, et al. Global burden of disease attributable to mental and substance use disorders: Findings from the Global Burden of Disease Study 2010. Lancet. 382(9904):1575–86.

2. De Hert M, Correll CU, Bobes J, Cetkovich-Bakmas M, Cohen D, Asai I, et al. Physical illness in patients with severe mental disorders. I. Prevalence, impact of medications and disparities in health care. World Psychiatry [Internet]. 2011;10(1):52–77. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21379357%5Cnhttp://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=PMC3048500

3. Fors BM, Isacson D, Bingefors K, Widerlöv B. Mortality among persons with schizophrenia in Sweden: an epidemiological study. Nord J Psychiatry [Internet]. 2007;61(4):252–9. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17763118

4. Wahlbeck K, Westman J, Nordentoft M, Gissler M, Laursen TM. Outcomes of Nordic mental health systems: life expectancy of patients with mental disorders. Br J Psychiatry [Internet]. 2011;199(6):453–8. Available from: http://bjp.rcpsych.org/content/199/6/453.full

5. Bushe C, Holt R. Prevalence of diabetes and impaired glucose tolerance in patients with schizophrenia. Br J Psychiatry. 2004;184(SUPPL. 47).

6. McIntyre RS, Danilewitz M, Liauw SS, Kemp DE, Nguyen HTT, Kahn LS, et al. Bipolar disorder and metabolic syndrome: An international perspective. J Affect Disord. 2010;126(3):366–87.

7. Hennekens CH, Hennekens AR, Hollar D, Casey DE. Schizophrenia and increased risks of cardiovascular disease. Vol. 150, American Heart Journal. 2005. p. 1115–21.

8. Osby U, Brandt L, Correia N, Ekbom a, Sparén P. Excess mortality in bipolar and unipolar disorder in Sweden. Arch Gen Psychiatry. 2001;58(9):844–50.

9. Rosenberg SD, Goodman LA, Osher FC, Swartz MS, Essock SM, Butterfield MI, et al. Prevalence of HIV, hepatitis B, and hepatitis C in people with severe mental illness. Am J Public Heal [Internet]. 2001;91(1):31–7. Available from: http://dx.doi.org/10.1016/S2215-0366(15)00357-0

10. Lawrence D, Kisely S. Inequalities in healthcare provision for people with severe mental illness. J Psychopharmacol [Internet]. 2010;24(4 Suppl):61–8.

11. Jeste D V, Gladsjo JA, Lindamer LA, Lacro JP. Medical comorbidity in schizophrenia 396. SchizophrBull. 1996;22(0586–7614 (Print)):413–30.

12. Green AI, Patel JK, Goisman RM, Allison DB, Blackburn G. Weight gain from novel antipsychotic drugs: Need for action. Vol. 22, General Hospital Psychiatry. 2000. p. 224–35.

13. Hubert HB, Feinleib M, McNamara PM, Castelli WP. Obesity as an independent risk factor for cardiovascular disease: a 26- year follow-up of participants in the Framingham Heart Study. Circulation. 1983;67(5):968–77.

14. Mokdad AH, Ford ES, Bowman BA, Dietz WH, Vinicor F, Bales VS, et al. Prevalence of obesity, diabetes, and obesity-related health risk factors, 2001. JAMA. 2003;289(1):76–9.

15. Rummel-Kluge C, Komossa K, Schwarz S, Hunger H, Schmid F, Lobos CA, et al. Head-to-head comparisons of metabolic side effects of second generation antipsychotics in the treatment of schizophrenia: A systematic review and meta-analysis. Schizophr Res. 2010;123(2–3):225–33.

16. Alvarez-Jiménez M, Hetrick SE, González-Blanch C, Gleeson JF, McGorry PD. Non-pharmacological management of antipsychotic-induced weight gain: systematic review and meta-analysis of randomised controlled trials. Br J Psychiatry [Internet]. 2008;193(2):101–7. Available from: http://bjp.rcpsych.org/content/193/2/101.short%5Cnhttp://bjp.rcpsych.org/content/193/2/101.full

17. Lindenmayer JP, Czobor P, Volavka J, Citrome L, Sheitman B, McEvoy JP, et al. Changes in glucose and cholesterol levels in patients with schizophrenia treated with typical or atypical antipsychotics. Am J Psychiatry. 2003;160(2):290–6.

18. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990-2010: A systematic analysis for the Global Burden of Disease Study 2010. Lancet [Internet]. 2012 Mar 2;380(9859):2224–60. Available from: http://dx.doi.org/10.1016/S0140-6736(12)61766-8

19. de Leon J, Diaz FJ. A meta-analysis of worldwide studies demonstrates an association between schizophrenia and tobacco smoking behaviors. Schizophr Res [Internet]. 2017 Mar 2;76(2):135–57. Available from: http://dx.doi.org/10.1016/j.schres.2005.02.010

20. Jackson JG, Diaz FJ, Lopez L, de Leon J. A combined analysis of worldwide studies demonstrates an association between bipolar disorder and tobacco smoking behaviors in adults. Vol. 17, Bipolar Disorders. 2015. p. 575–97.

21. Scott D, Happell B. The High Prevalence of Poor Physical Health and Unhealthy Lifestyle Behaviours in Individuals with Severe Mental Illness. Issues Ment Health Nurs. 2011;32:589–97.

22. Bagnardi V, Rota M, Botteri E, Tramacere I, Islami F, Fedirko V, et al. Light alcohol drinking and cancer: A meta-analysis. Vol. 24, Annals of Oncology. 2013. p. 301–8.

23. Holmes M V, Dale CE, Zuccolo L, Silverwood RJ, Guo Y, Ye Z, et al. Association between alcohol and cardiovascular disease: Mendelian randomisation analysis based on individual participant data. BMJ [Internet]. 2014;349:g4164. Available from: http://www.ncbi.nlm.nih.gov/pubmed/25011450

24. Nyboe L, Lund H. Low levels of physical activity in patients with severe mental illness. Nord J Psychiatry. 2013;67(1):43–6.

25. McElroy SL, Keck PE. Obesity in bipolar disorder: An overview. Vol. 14, Current Psychiatry Reports. 2012. p. 650–8.

26. Lee IM, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT, et al. Effect of physical inactivity on major non-communicable diseases worldwide: An analysis of burden of disease and life expectancy. Lancet. 2012;380(9838):219–29.

27. Kushi LH, Meyer KA, Jacobs DR. Cereals, legumes, and chronic disease risk reduction: Evidence from epidemiologic studies. In: American Journal of Clinical Nutrition. 1999.

28. Boeing H, Bechthold A, Bub A, Ellinger S, Haller D, Kroke A, et al. Critical review: vegetables and fruit in the prevention of chronic diseases. Eur J Nutr [Internet]. 2012;51(6):637–63. Available from: http://dx.doi.org/10.1007/s00394-012-0380-y

29. Roberts CK, Barnard RJ. Effects of exercise and diet on chronic disease. J Appl Physiol [Internet]. 2005;98(1):3–30. Available from: http://www.ncbi.nlm.nih.gov/pubmed/15591300%5Cnhttp://jap.physiology.org/cgi/content/abstract/98/1/3

30. Chiuve SE, Fung TT, Rimm EB, Hu FB, McCullough ML, Wang M, et al. Alternative dietary indices both strongly predict risk of chronic disease. J Nutr. 2012;142(C):1009–18.

31. Mitra R, Jones S. Adjuvant analgesics in cancer pain: a review. Am J Hosp Palliat Care [Internet]. 2012;29(1):70–9. Available from: http://www.ncbi.nlm.nih.gov/pubmed/21712306

32. Mai Q, Holman CDJ, Sanfilippo FM, Emery JD, Preen DB. Mental illness related disparities in diabetes prevalence, quality of care and outcomes: A population-based longitudinal study. BMC Med. 2011;9.

33. Jaspers MW, Smeulers M, Vermeulen H, Peute LW. Effects of clinical decision-support systems on practitioner performance and patient outcomes: a synthesis of high-quality systematic review findings. Journal of the American Medical Informatics Association. 2011 Mar 21;18(3):327-34.

34. Gleeson M, Hannigan A, Jamali R, Lin KS, Klimas J, Mannix M, Nathan Y, O'Connor R, O'Gorman C, Dunne C, Meagher D. Using electronic medical records to determine prevalence and treatment of mental disorders in primary care: a database study. Irish Journal of Psychological Medicine. 2016 Mar;33(1):3-12.

35. Joling KJ, Van Marwijk HWJ, Piek E et al (2011) Do GPs' medical records demonstrate a good recognition of depression? A new perspective on case extraction. J Affect Disorders 133:522–527

36. Medical Practitioners Act 2007. Irish Statute Book, 2007.

37. National Institute for Clinical Excellence (Great Britain). Principles for best practice in clinical audit. Radcliffe Publishing; 2002.

38. Jamtvedt G, Young JM, Kristoffersen DT, O'Brien MA, Oxman AD. Audit and feedback: effects on professional practice and health care outcomes. Cochrane Database Syst Rev. 2006 Apr 19;2(2).

39. Opdenakker R. Advantages and disadvantages of four interview techniques in qualitative research. In Forum Qualitative Sozialforschung/Forum: Qualitative Social Research 2006 Sep 30 (Vol. 7, No. 4).

40. Chapple A. The use of telephone interviewing for qualitiative research. Nurse Researcher (through 2013). 1999 Apr 1;6(3):85.

41. Cachia M, Millward L. The telephone medium and semi-structured interviews: a complementary fit. Qualitative Research in Organizations and Management: An International Journal. 2011 Nov 15;6(3):265-77.

42. Stephen C, Helen L. Developing Quality and Outcomes Framework (QOF) indicators and the concept of "QOFability." Qual Primary Care. 2010;18(2).

43. TNS Healthcare. Omnibus survey conducted amongst 209 UK general practitioners. Published in: Running on empty: Building momentum to improve well-being in severe mental illness. 2005.

44. Bradshaw T, Pedley R. Evolving role of mental health nurses in the physical health care of people with serious mental health illness. Int J Ment Health Nu. 2012 Jun 1;21(3):266-73.

45. Blythe J, White J. Role of the mental health nurse towards physical health care in serious mental illness: An integrative review of 10 years of UK literature. Int J Ment Health Nu. 2012 Jun 1;21(3):193-201. Available from: http://www.ncbi.nlm.nih.gov/pubmed/22533326 (accessed 14 September 2018).

46. National Institute for Health and Care Excellence. Bipolar disorder: assessment and management. 2016 Available from: https://www.nice.org.uk/guidance/cg185/chapter/1-Recommendations#monitoring-physical-health-in-secondary-care [Accessed 19th February 2018]

47. National Institute for Health and Care Excellence. Psychosis and schizophrenia in adults: prevention and management. 2014. Available from: https://www.nice.org.uk/guidance/cg178/chapter/1-Recommendations#promoting-recovery-and-possible-future-care-2 [Accessed 19th February 2018]

48. Commission on Patient Safety and Quality Assurance. *Building a Culture of Patient Safety – Report of the Commission on Patient Safety and Quality Assurance*, 2008.

49. Health Information and Quality Authority. *Report of the investigation into the quality and safety of services and supporting arrangements provided by the Health Service*

Executive at Mallow General Hospital. Dublin: Health Information and Quality Authority, 2011.

50. Bush K, Kivlahan DR, McDonell MB, Fihn SD, Bradley KA. The AUDIT alcohol consumption questions (AUDIT-C): an effective brief screening test for problem drinking. Archives of internal medicine. 1998 Sep 14;158(16):1789-95.

51. Sullivan G, Han X, Moore S, Kotrla K. Disparities in Hospitalization for Diabetes Among Persons With and Without Co-occurring Mental Disorders. Psychiatr Serv. 2006;57:1126–31.

52. Howard LM, Barley EA, Davies E, Rigg A, Lempp H, Rose D, et al. Cancer diagnosis in people with severe mental illness: Practical and ethical issues. Vol. 11, The Lancet Oncology. 2010. p. 797–804.

53. Aggarwal A, Pandurangi A, Smith W. Disparities in breast and cervical cancer screening in women with mental illness: A systematic literature review. Vol. 44, American Journal of Preventive Medicine. 2013. p. 392–8.

54. Farasatpour M, Janardhan R, Williams CD, Margenthaler JA, Virgo KS, Johnson FE. Breast cancer in patients with schizophrenia. Am J Surg [Internet]. 2013;206(5):798–804. Available from: http://www.sciencedirect.com/science/article/pii/S0002961013002250

55. Burns T, Cohen A. Item-of-service payments for general practitioner care of severely mentally ill persons: Does the money matter? Br J Gen Pract. 1998;48(432):1415–6.

56. Robson D, Gray R. Serious mental illness and physical health problems: A discussion paper. Int J Nurs Stud. 2007;44(3):457–66.

57. Greening J. Physical health of patients in rehabilitation and recovery: A survey of case note records. [Internet]. Vol. 29, Psychiatric Bulletin. 2005. p. 210–2. Available from: http://ovidsp.ovid.com/ovidweb.cgi?T=JS&PAGE=reference&D=psyc4&NEWS=N&AN=2005-06569-004

58. Paton C, Esop R, Young C, Taylor D. Obesity, dyslipidaemias and smoking in an inpatient population treated with antipsychotic drugs. Acta Psychiatr Scand. 2004;110(4):299–305.

59. Roberts L, Roalfe A, Wilson S, Lester H. Physical health care of patients with schizophrenia in primary care: a comparative study. Family Practice. 2006 Oct 24;24(1):34-40.

60. Lee MJ, Oza B, Pakianathan M, Hegazi A. Making every contact count: improving the assessment of gay, bisexual and other men who have sex with men using a structured proforma. Sex Transm Infect [Internet]. 2016;92(1):48–48. Available from: http://sti.bmj.com/lookup/doi/10.1136/sextrans-2015-052290

61. Garg AX, Adhikari NK, McDonald H, Rosas-Arellano MP, Devereaux PJ, Beyene J, Sam J, Haynes RB. Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: a systematic review. Jama. 2005 Mar 9;293(10):1223-38.

62. Kaner EF, Heather N, Mcavoy BR, Lock CA, Gilvarry E. Intervention for excessive alcohol consumption in primary health care: attitudes and practices of English general practitioners. Alcohol and Alcoholism. 1999 Jul 1;34(4):559-66.

63. Car J, Black A, Anandan C, et al. The impact of eHealth on the quality and safety of healthcare. A Systemic Overview & Synthesis of the Literature Report for the NHS Connecting for Health Evaluation Programme. 2008 Mar.

64. Whitford DL, Copty M. General practice in Ireland: are we equipped to manage mental health. Ir J Psych Med. 2005;22(2):40-1.

65. Copty M, Whitford DL. Mental health in general practice: assessment of current state and future needs. Irish Journal of Psychological Medicine. 2005 Sep;22(3):83-6.

66. Department of Health and Children. A vision for change: Report of the expert group on mental health policy. 2006

67. World Health Organization. The World Health Report 2001: Mental health: new understanding, new hope. World Health Organization; 2001.

68. Khan NF, Harrison SE, Rose PW. Validity of diagnostic coding within the General Practice Research Database: a systematic review. Br J Gen Pract. 2010 Mar 1;60(572):e128-36.

69. Kennedy C, O'Brien C, Collins C. Experience of diagnostic coding in irish general practice: the practice perspective. JMED Research Article ID. doi. 2014;10(2014.583528).

70. Swan D, Hannigan A, Higgins S, McDonnell R, Meagher D, Cullen W. Development and implementation of a 'mental health finder'software tool within an electronic medical record system. Irish Journal of Medical Science (1971-). 2017 Feb 1;186(1):191-200.

71. Citizens Information. Medical cards and GP visit cards http://www.citizensinformation.ie/en/health/medical_cards_and_gp_visit_cards/ (accessed 14 September 2018).

72. Perälä J, Suvisaari J, Saarni SI, Kuoppasalmi K, Isometsä E, Pirkola S, Partonen T, Tuulio-Henriksson A, Hintikka J, Kieseppä T, Härkänen T. Lifetime prevalence of psychotic and bipolar I disorders in a general population. Archives of general psychiatry. 2007 Jan 1;64(1):19-28.

73. Cerimele JM, Chwastiak LA, Dodson S, Katon WJ. The prevalence of bipolar disorder in general primary care samples: a systematic review. General hospital psychiatry. 2014 Jan 1;36(1):19-25.

74. Hasin DS, Goodwin RD, Stinson FS, Grant BF. Epidemiology of major depressive disorder: results from the National Epidemiologic Survey on Alcoholism and Related Conditions. Archives of general psychiatry. 2005 Oct 1;62(10):1097-106.

75. Scully PJ, Owens JM, Kinsella A, Waddington JL. Schizophrenia, schizoaffective and bipolar disorder within an epidemiologically complete, homogeneous population in rural Ireland: small area variation in rate. Schizophrenia Research. 2004 Apr 1;67(2):143-55.

76. Nuallain MN, O'hare A, Walsh D. The prevalence of schizophrenia in three counties in Ireland. Acta Psychiatrica Scandinavica. 1990 Aug 1;82(2):136-40.

77. Saha S, Chant D, Welham J, McGrath J. A systematic review of the prevalence of schizophrenia. PLoS medicine. 2005 May 31;2(5):e141.

78. Mayo Clinic Staff. Schizophrenia Diagnosis & Treatment. Available from: https://www.mayoclinic.org/diseases-conditions/schizophrenia/diagnosis-treatment/drc-20354449 (accessed 14 September 2018).

79. Malhi GS, Adams D, Berk M. The pharmacological treatment of bipolar disorder in primary care. Med J Aust. 2010 Aug 16;193(4 Suppl):S24-30.

80. Primary Care Reimbursement Service. Personal Communication. 2018 April 23.

81. Central Statistics Office. Population estimates from 1926 by Single Year of Age, Sex and Year. https://www.cso.ie/px/pxeirestat/Statire/SelectVarVal/Define.asp?maintable=PEA11&PLanguage=0 (accessed 14 September 2018).

82. Hudson CG. Socioeconomic status and mental illness: tests of the social causation and selection hypotheses. American journal of Orthopsychiatry. 2005 Jan;75(1):3.

83. Behan W, Molony D, Beame C, Cullen W. Are Irish adult general practice consultation rates as low as official records suggest? A cross sectional study at six general practices.

84. Munce SE, Stewart DE. Gender differences in depression and chronic pain conditions in a national epidemiologic survey. Psychosomatics. 2007 Sep 1;48(5):394-9.

85. Carretero MT, Calderón-Larrañaga A, Poblador-Plou B, Prados-Torres A. Primary health care use from the perspective of gender and morbidity burden. BMC women's health. 2014 Dec;14(1):145.

86. Astbury J. Gender and mental health. Harvard Center for Population and Development Studies; 1999 Dec.

87. Merikangas KR, Akiskal HS, Angst J, Greenberg PE, Hirschfeld RM, Petukhova M, Kessler RC. Lifetime and 12-month prevalence of bipolar spectrum disorder in the National Comorbidity Survey replication. Archives of general psychiatry. 2007 May 1;64(5):543-52.

88. Ochoa S, Usall J, Cobo J, Labad X, Kulkarni J. Gender differences in schizophrenia and first-episode psychosis: a comprehensive literature review. Schizophrenia research and treatment. 2012 Apr 8;2012.

89. Corrigan PW, Watson AC. Understanding the impact of stigma on people with mental illness. World psychiatry. 2002 Feb;1(1):16.

90. Mitchell, A.J., Vaze, A., Rao, S., 2009. Clinical diagnosis of depression in primary care: a meta-analysis. Lancet 374 (9690), 609–619.

91. Das AK, Olfson M, Gameroff MJ, Pilowsky DJ, Blanco C, Feder A, Gross R, Neria Y, Lantigua R, Shea S, Weissman MM. Screening for bipolar disorder in a primary care

practice. Jama. 2005 Feb 23;293(8):956-63.

92. Simpson CR, Hannaford PC, Lefevre K, Williams D. Effect of the UK incentive-based contract on the management of patients with stroke in primary care. Stroke. 2006 Sep 1;37(9):2354-60.

93. McGovern MP, Williams DJ, Hannaford PC, Taylor MW, Lefevre KE, Boroujerdi MA, Simpson CR. Introduction of a new incentive and target-based contract for family physicians in the UK: good for older patients with diabetes but less good for women?. Diabetic Medicine. 2008 Sep 1;25(9):1083-9.

94. McGovern MP, Boroujerdi MA, Taylor MW, Williams DJ, Hannaford PC, Lefevre KE, Simpson CR. The effect of the UK incentive-based contract on the management of patients with coronary heart disease in primary care. Family Practice. 2008 Jan 24;25(1):33-9.

95. Department of Health and Children. Building a Culture of Patient Safety. Report of the Commission on Patient Safety and Quality Assurance. Jul 2008. The Stationery Office, Dublin.

96. Darker C. Integrated Healthcare in Ireland–A Critical Analysis and a Way Forward. An Adelaide Health Foundation Policy Paper. 2013.

97. Brunero S, Lamont S, Myrtle L, Fairbrother G. The Blue Card: a hand-held health record card for mental health consumers with comorbid physical health risk. Australia Psychiatry [Internet]. 2008;16(4):238–43. Available from: http://www.ncbi.nlm.nih.gov/pubmed/18608170 (accessed 14 September 2018).

98. Lecourturier J, Hall R, Bond H. Evaluation of a patient-held record for patients with cancer. European Journal of Cancer Care 2002; 11: 114-121.

99. EMIS Web. A clinical system for delivering integrated healthcare (Internet). Available from: https://www.emishealth.com/products/emis-web/ (accessed 14 September 2018).

100. Hawley G, Janamian T, Jackson C, Wilkinson SA. In a maternity shared-care environment, what do we know about the paper hand-held and electronic health record: a systematic literature review. BMC pregnancy and childbirth. 2014 Dec;14(1):52.

101. Walsh E, Sahm LJ, Kearney PM, Smithson H, Kerins DM, Ngwa C, Fitzgerald C, Mc Carthy S, Connolly E, Dalton K, Byrne D. The PHARMS (Patient Held Active Record of Medication Status) feasibility study: a research proposal. BMC research notes. 2018 Dec;11(1):6.

102. E-Health Ireland. Electronic Health Record http://www.ehealthireland.ie/Strategic-Programmes/Electronic-Health-Record-EHR-/Progress/ (accessed 14 September 2018).

103. HSE. Strategy for the Design of Integrated Outpatient Services 2016-2020. https://www.hse.ie/eng/services/list/3/acutehospitals/patientcare/outpatientservices/strategy-for-the-design-of-integrated-outpatient-service.pdf (accessed 20 May 2019).

104. Thornicroft, G. Physical health disparities and mental illness: the scandal of premature mortality. British Journal of Psychiatry 2011: 199(6); pp441-442. https://doi.org/10.1192/bjp.bp.111.092718 Published online: 02 January 2018.