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ROAMER Gaps, Advances and Priorities for Advances in Mental Health

Introduction

All of the issues addressed by the ROAMER project exist in the uneasy light of the fact that mental health problems represent a huge burden on European society. This burden is perhaps unrivalled in the extent of costs – both direct and indirect – to health systems, employment, well-being and economic output. However the state of the art of mental health research has never been so well placed as now to consummately address these burdens, if given sufficient opportunity.

Public health is faced with challenges to develop more effective and efficient models and systems. At the same time, medical, sociological and technological advances offer the potential to make care less stressful and more personalised to users in myriad ways, and on an unprecedented scale. The potential of personalised and person-centred care to revolutionise health has been eloquently addressed by previous Roadmaps for diabetes (DIAMAP¹) and ageing (Futurage²) – and the opportunities for similar coordinated European research in the field of mental health are no less promising.

However there is some ambiguity of terms relating to ‘personalisation’ that may work against the realisation of its full potential. Throughout this document the common term ‘personalised care’ has been used for sake of coherence with a common European terminology for health research, as used elsewhere (for instance in Horizon 2020). However, ‘mental health research’ is wide-ranging, multi-disciplinary and comprises various levels of analysis. It encompasses population and public health research, monitoring of health services and service implementation, individual-level traits and risk factors, as well as research on cellular and molecular levels. Accordingly a term such as ‘personalised care’ can have very different connotations depending at which level of analysis it is used in description of – encompassing terms as wide-ranging as ‘stratified medicine’, ‘person-centred care’ and ‘tailored treatment’. There are also issues in translating findings between these levels of analysis, and clinical research is vital in such instances.

European mental health research is perhaps *singularly* well-placed to address many of the issues highlighted below. Its preponderance of comprehensive, intelligible health systems offers the ability to collect ‘big data’, with access to comprehensive health registers and without the skewness of data involved when e.g. offering additional health care as an incentive for participating in health research. This represents particular added value of European research, in contrast to mixed-market health systems with more reliance on the private sector, the US in particular. This means that research in Europe will have access to more representative samples, which will be easier to follow up via national health services.

Indeed Europe has produced exemplary mental health research to date, with particularly strong research in recent years. A comprehensive review of state of the art research into mental health and well-being generated in Europe is given in the ROAMER report “D11.1: First report on the State of the Art”. However, there is still a great deal of vital research to be done. Current gaps in research and the advances needed to address shortcomings in knowledge and practice in mental health and well-being were first addressed in the ROAMER report “D11.2: Interim report on gaps and advances in mental health and well-being research in Europe”, which identified areas for development in distinct categories of research. The current report develops these ideas, considering over-arching general themes that need to be addressed, spanning research from multiple fields.

¹ <http://www.diamap.eu/>

² <http://futurage.group.shef.ac.uk/>

In response to the gaps and advances needed in research generated, ROAMER work packages also generated lists of the priorities that they felt most pressing in their line of research, decided by consensus. These priorities have been integrated into a list of 20 multi-disciplinary research priorities, presented as the centre point of the current report. They are then discussed in more detail as regards their relevance and pertinence to Europe, in the final section of the report. The research priorities outlined below therefore speak to the most pressing mental health research that takes advantage of Europe's infrastructure and research strengths, and aims to further and build upon a European legacy of excellent science, and in doing so tackle pertinent societal challenges.

Gaps and Advances in Mental Health Research

A. Supporting Mental Health For All

Organising and Implementing Health Services and Systems

There is a lack of theoretical frameworks (for example organisational theory) in research and reasoning about service implementation. There is also a more general lack of European research on the interaction between research and policy, including qualitative research and mixed-method designs. There needs to be much more policy implementation research, especially research analysing the barriers to implementation for evidence-based improvements to health services and systems. There is a pertinent need for better, research-based, knowledge of the frameworks on organisational, managerial and clinician levels that achieve effective care. Moreover, such an empirical research basis needs to act as a guiding principle for how services are organised and implemented. There is a need to realise that health and well-being are not best achieved through leaving healthcare to market forces, and that constant re-organisation of services is ineffective.

To give a specific example, the feasibility of decentralising services in Eastern Europe is relatively unknown, given the extent of differences from the situation in Western Europe when the shift started there. There has been little comparative research on the performance – including technical and allocative efficiency – of mental health systems in Europe, compared to other aspects of healthcare systems. Moreover, when mental health systems are evaluated there remains a reliance on relatively easy-to-obtain indicators, such as rates of readmission and suicide. These are of limited use in benchmarking the performance of mental health systems (and to a lesser extent population-level interventions), especially compared to important non-health indicators such as rates of employment, housing, education status and well-being. There is a lack of comparative outcome measures that can be used as part of economic analyses, particularly for children and young people. For instance, there is little data in the OECD health database on these issues for some countries.

Participatory Research and Mental Health Beyond Clinical Settings

The kind of tailored approach to (mental) health interventions that takes account of individual differences in order to improve outcomes is often referred to as 'personalised care'. However 'personalised care' is a somewhat nebulous term, used in a very variable way. In order for this term to be useful in guiding future research and policy, there is a need to properly define it. Moreover, it is important to take account of the fact that personalisation of mental health interventions should not be a passive process, where service users simply have tailored treatments imposed upon them. Personalisation of treatment and interventions offers the much-needed opportunity to implement user perspectives, focusing on user-relevant outcomes and taking into account user self-help approaches, user values and user research. Service users should be involved in choosing treatment, monitoring outcomes and if needed, in choosing new paths of treatment. Service user empowerment is just as much an individualising factor as targeted pharmacological or psychotherapeutic treatment, and it is important to examine its influence on individual treatment outcomes and subjective well-being.

There is a need to conduct more patient-centred research, taking into account patient preferences. Participatory research (i.e. research involving the active participation of the population under investigation – in this case, individuals with mental health problems) constitutes a small minority of mental health research at present, and should be further developed. A particular issue that is due consideration in the context of participatory research is the need to preserve confidentiality while also retaining the ability to study and report individual cases. There is a lack of bottom-up approaches in evaluation research, and a need for more

systematic reviews where research designs and outcomes are investigated from a user-perspective. Beyond encouraging stronger and more active participation of research participants (children in particular) within the research process, survivor controlled studies (i.e. research directed and controlled by individuals with first-hand experience of psychiatric treatment) should be funded. This emphasis on user perspective should then extend beyond research into evaluations of a system where service users are more engaged in the shared decision-making regarding their treatment, where delivery is respectful and effective, and recovery is viewed with a focus on personal recovery and ability. Such evaluations would then be able to provide evidence on the impact of empowerment on service user and system outcomes.

Additionally, the effects of mental health problems are often felt beyond the scope of clinical settings: in wider society and in secondary effects upon other individuals. There is a need for research that is embedded in the context of family, social support, or cultural networks, as opposed to atomising individuals with mental health problems. To date in mental health research there has been a focus on treating individuals; we need to regain sight of social and economic interventions on a larger scale. There is a lack of existing research into supporting parenting, especially for parents with mental illness or addiction problems, and this shortcoming needs to be addressed.

In addition, there needs to be an increase in research on those who provide care to individuals. Together with the physical, emotional and time demands involved in being a carer, there is a need for more research into the impact of the stigma of being a carer on well-being. Predictors of well-being in informal carers (most often family members) need to be developed and validated, and both general and specific interventions to improve the well-being of carers should be tested. Similar issues apply to mental health workers, as do issues regarding the importance of encouraging well-being in the workplace. Further, the values and aspirations of mental health workers should become topics of research in themselves. Related to this, mental health care provision (under the direction of its constituent workers) should be more aware of its crucial role in society, and must be more self-confident in how it can contribute. There is currently a lack of research examining the potential ways to expand this role.

Access, Service Delivery and Barriers to Treatment

In considerations of improving mental health outcomes, the obverse side of improving interventions is ensuring treatment is as accessible as possible. As well as improving provision of effective services and evidence-based healthcare, there is a dire need to overcome barriers to treatment that may be less about services themselves and more about knowledge of and attitudes towards available treatments. The interventions currently available for mental disorders are at least as effective as those available for other health problems, but the social context in which they are implemented is so unfavourable that their effectiveness is significantly reduced.

Accordingly there needs to be investment and research into models of service delivery. Research on pathways to mental health care is a huge priority, and is vital as the basis for attempts to improve access to services. Furthermore, this is crucial with regards to delivering mental health promotion to hard-to-reach disadvantaged groups, and increasing the focus on low social economic status groups in particular. Individual differences are also currently not sufficiently factored into access to mental health services. This has created a need for user-centred approaches in accessing appropriate care, based on experienced problems, difficulties and disabilities.

Research is also needed on how stigma influences service use, which may have to do with how the services are provided and organised. Firstly, there need to be investigations of the level of discrimination within health services towards individuals with mental disorders. Beyond this, there need to be considerations issues influencing exclusion from treatment, taking account of both supply-side and demand-side problems. Immediate priorities for such research could look at low-threshold primary contact points with mental health service, e.g. pharmacies. A greater research focus is needed on the extent to which seeking help in different settings (e.g. primary care, eMental Health) may reduce the impact of labelling.

For this and related reasons, there needs to be more research on new modes of service delivery, such as eMental Health tools. New technologies such as eHealth, mHealth, virtual reality, and gaming methods all show great potential for diagnostics and intervention, especially with regards to self-managing conditions. However at present the development and assessment of such tools is sorely lacking, as is investment.

Other aspects of mental health care should be integrated into general health and physical care. A way to achieve this is by training non-mental-health staff to deliver mental health care. More widely, there needs to be more focus on the influence of human moderators on processes of care and care delivery. In particular, interventions need to be made more user-friendly so that people really accept them. In line with this, research is needed into policies that would provide safe, accessible and affordable mental health services in the community – in complement to existing services rather than simply replacing current provisions.

When new mental health programmes and interventions are introduced to the public, this needs to be done alongside ongoing research into the efficacy of their implementation. This includes the need to develop implementation strategies in different cultural settings. This is of particular importance in outreach to more deprived communities, as these groups are often neglected despite being in greatest need of help. In order to better target outreach and implementation strategies to those most in need of help, implementation strategies need to be more closely informed by research into economic and social determinants of mental health and marginalisation. At present, research on inequalities in mental health outcomes between different parts of the population, and on the effects of socio-economic crises on mental health is limited. Therefore a critically required research focus is on policies to ensure equal opportunities for everyone to realise their mental well-being, including research on maximising society's mental capital. These issues represent a crucial over-arching gap in existing research into targeted interventions to improve well-being in people with mental disorders that are specific for specific populations (age groups, gender, ethnicity, culture, diagnosis) and carers.

Prevention, Mental Health Promotion

There has been recent progress towards models of preventing mental disorders and promoting mental health, rather than post-hoc treatment of established disorders. However there remains an insufficient body of work in this area. For example, there is a lack of adequate evaluation of interventions aimed at enhancing mental health and preventing mental health problems. There is also currently an absence of research assessing both the effectiveness and value of mental health screening and preventive approaches. Improving screening and diagnostic tools is a priority for research, and will be fostered by efforts to standardise these processes. Such developments will then allow for randomised controlled trials of preventive interventions targeted at specific groups, identified on the basis of risk factors or other markers (including biomarkers). It may be desirable to first coordinate screening and prevention efforts around a single identified issue. As a specific example, there is a lack of research on the effect and cost-effectiveness of screening programmes and preventive interventions for postnatal depression. Beyond diagnostic screening in clinical settings, research is also missing into screening for certain types of behaviour, such as suicidal behaviour or self-harm.

Specific preventive measures will depend to a greater or lesser extent on the disorders or issues that they wish to address. This will be the case in terms of secondary prevention tendencies aimed at reducing the duration of untreated illnesses, which need to be more heavily researched. Potential preventive value for high-risk individuals and groups has also been identified using methods ranging from eMental Health approaches for self-managing chronic conditions, to optimising sleep and sleeping patterns in mood disorders. Such approaches may afford better targeting of preventive measures through personalisation.

Other interventions can be more widely targeted. For instance, research is needed into developing coping strategies (e.g. to deal with the economic crisis in Europe) in order to prevent the development of mental disorders at a population level. This could include developing preventive educational programmes and other community-based strategies. Issues of resilience and coping tie into the idea of promoting mental health – as a

buffer, rather than relying on reactive treatment of mental disorders. This includes research into interventions to improve recovery, resilience and well-being at both individual and societal levels.

There is a need to strengthen the theory base for mental health promotion, otherwise the research will stagnate. However this is complicated by the current lack of consensus as to what is meant by 'mental health promotion', together with a lack of common terminology and definitions of outcomes. Relatedly, there is debate as to whether mental health promotion can be seen as primary prevention. A suggestion of what promotion is in relation to prevention is that prevention focuses on negative aspects, risk reduction and preventing problems. Conversely promotion focuses on the positive, is strength-based and shows preventive qualities as a secondary or side effect. In recent years there has been an increased focus on mental health promotion. Now, health promotion – instead of illness prevention – needs to be given higher priority, learning from how this has previously been achieved in physical disorders. A home needs to be found for mental health promotion, as it does not quite seem to fit neither in health promotion nor mental health research, as well as determining to what extent this area of research overlaps with well-being, both in terminology and in research and evaluative measures.

Evidence has been shown of relationships between health and well-being – namely effects of well-being in the prevention and recovery of mental disorders. Such findings may bear upon health promotion research (and vice versa), but there is presently a lack of coherence between the research bases of well-being and mental health promotion. The concept of positive mental health should be well-defined, and scales for measuring various aspects of positive mental health will need to be established. Similarly, positive well-being measures need to be improved. At present there is a lack of normative data of subjective well-being from European countries across the lifespan and for specific groups. For the normative and longitudinal data that does currently exist, there need to be meta-analyses in order to determine useful and informative relationships between levels of mental health, well-being and psychopathology.

There are three paradigm shifts that could advance the field of mental health promotion and well-being: 1) an increased valuing of the positive instead of the negative; 2) a greater understanding of connectedness – regarding mental and physical health, and the connections between the individual and the collective; 3) embracing new ideas – one current example being the incorporation of ideas from Eastern philosophy into mindfulness research. What then remains is the need to systematically research such methods and techniques with regards to their potential value and applicability to mental health promotion, for both service users and the wider population. For instance, there has been relatively little research on the potential cost effectiveness of approaches to promote and protect mental health such as mindfulness and meditation. There is currently a lack of consensus on outcome indicators for positive mental health for use in economic analysis, which makes it more difficult to make the case for investing in mental health promotion. There also needs to be more research into the use of new technology for mental health promotion, such as different eHealth approaches. An advantage of eHealth from a research point of view is that it is easy to perform randomised controlled studies of different interventions. Research into these and other evidence-based interventions to improve well-being in the general population and in specific vulnerable groups now needs to be encouraged. This will facilitate the development and validation of macro-level mental health promotion interventions (including the sustainability of such interventions), and improve skills in implementing and disseminating findings from intervention studies to promote well-being and mental health.

Developing Novel Interventions and Translating Research Findings into Practice

There is an ongoing need for the development of effective novel treatment interventions, be these pharmacological, psychological or somatic. Insights from neuroscience have implicated the treatment potential of transcranial magnetic stimulation, and brain stimulation in the treatment of refractory mental disorders. Behavioural science and literature influenced by behavioural economics has also shown promise in demonstrating the potential efficacy of behaviour change methodology in encouraging protective or coping behaviours. However, there now needs to be a more methodical evaluation of what motivates people to

change their behaviour ('to shove somebody' vs. 'full intervention' vs. incentives). There are probably different mechanisms of action for the onset, maintenance and change of human behaviour which are to date still poorly understood. All these potential treatments show some evidence of brain plasticity in adulthood, and are therefore promising future directions for novel interventions. However, prior to this they (and any other innovative treatments) require proof-of-concept clinical trials and applied research beyond the confines of laboratory settings.

A huge problem for applied research into novel interventions is the gap in translating basic research into clinical science, and then on into practice. This problem also constitutes the basis for many other gaps in implementing effective mental health services. Part of the issue underlying the translational gap is the distinction in guiding and orienting mechanisms between clinical work and basic research. Clinical work is driven by seeking practical solutions, whereas research develops from itself. Another part of the issue is the lack of communication between research conducted at different levels of analysis – e.g. genotype, functional (including neural and neuroendocrine), 'personality/clinical', and health promotion at the societal level. Examining how cells work is relatively easy in isolation, but integrating this up through the levels to circuits and then onto the functioning of a human or group of humans is extremely difficult. Furthermore, it should be borne in mind that there is no homogeneous process of translation that can be followed. Rather, processes of adapting research findings into relevant and worthwhile clinical practice need to be able to take account of relevant findings together with individual differences, environment, and lifespan factors.

A secondary problem following initial translation of research findings into pilot (clinical) projects is that of gaps in knowledge of how to scale up promising interventions, and how to evaluate scalability when doing so. This is especially pertinent for interventions conducted above the personal level – for instance population well-being or public health interventions. Furthermore, dissemination processes following an initial research finding – both in terms of its translation into clinical research and practice, and in terms of its public dissemination – are relatively unclear at present. There are likely useful advances to be made by gaining insight into these processes, including how the impact of translated interventions is tracked over time. At present there is no broader behavioural science platform that covers basic research and translation into clinical research and practice. Findings are often communicated in peer-reviewed journals, to which the majority of the population does not have access. A potential useful way to address this issue would be to generate lists of all effective interventions produced from research. In the first instance, this practice could be adopted by funding bodies, as it completely aligns with their interests.

Having said this, implementation research does not have a fixed end-point after which a given intervention becomes something to simply disseminate rather than continuing to evaluate and improve. On this note there are a host of future directions that could be taken by research to improve treatment outcomes as part of on-going translation into clinical practice, as well as controlled trials of routine care. With regards to psychopharmacological treatments, there is a need for more insight into adherence and factors that facilitate adherence to treatments, as well as investigations of the effectiveness of alternative methods of administering treatments – for example depot (IM) medication. With regards to psychological therapies, there is a need to establish a more diverse research base (i.e. beyond simple extrapolations of limited research evidence from Northern and Western Europe), as well as examining the relative effectiveness of different formats and frequencies of contact in treatment. Relatedly, questions of dose-response associations and determinations of optimal dosages and durations of treatment apply equally to pharmacological and psychological interventions, and there is currently a lack of information and detail in both contexts. More widely, research into the effectiveness of treatments would be well served by paying greater attention to mediating factors and an increased focus on reducing long-term chronicity. Again these identified gaps in knowledge are equally applicable to psychopharmacological and psychotherapeutic interventions. There is also promise in research on effective interventions that are not dependent on health care professionals, e.g. peer-support and alternatives to conventional psychiatric treatment.

B. Responding to Societal Issues and Values

Economic and Cost-Effectiveness Approaches to Mental Health

Economic impacts of various aspects of mental health interventions are currently under-utilised as outcome measures, given the huge burden entailed by mental disorders. More use could be made of economic approaches in understanding risk factors for poor mental health, and why people present to (non-mental) health services with mental health problems. At present there is limited contact between health economics and other branches of economics. This implies that there is untapped potential in integrating economic techniques into mental health research. A lack of such analyses has led to the disproportionate under-representation of approaches with great potential cost-effectiveness, namely interventions based on behavioural economics, interventions to tackle stigma and discrimination, and the use of the recovery model as an alternative to the 'illness model' of mental health.

One issue in applying cost-effective analyses to mental health research in Europe is that it is difficult to make cross-country comparisons in costing studies, often because of a lack of transparency in cost-of-illness methodologies. More needs to be done to improve the comparability of data across countries and to standardise (or at least make more transparent) the methods used for economic evaluation and analysis. Costing studies and economic evaluations are further hampered in many parts of Europe by a lack of survey, epidemiological and registry data. As a result there are still many gaps in what is known about the costs of poor mental health across different European countries. Furthermore, limited amounts of information are available about resource allocation and funding of mental health in some parts of Europe. There is also limited information on the unit costs of resources for mental health in some countries. Further information on these resources and more comprehensive information about resource allocation would facilitate research of the cost-effectiveness of various forms of mental health interventions in future.

While the use of economic evaluation in health policy and other decision-making is growing, this takes a long time to embed. There remains a lack of both capacity and demand for economic analysis to complement analyses of effectiveness in many countries. The fact that economics is often not mainstreamed into health research across Europe is an extremely timely problem, as there is currently an urgent need for evidence regarding the organisation of mental health systems in times of economic crisis with fewer resources. Research is needed into the impact of financing mechanisms on services provided, and the effect of payment mechanisms on the quality of care. If certain actions taken by the service providers give them an economic advantage, it is probable that these actions will be taken, possibly at the expense of high quality care. As a result, there are considerable ethical implications of mental health economics research, and there has been a lack of due attention conferred to these. There is a need for greater scrutiny of what happens with the results of health economic research, including whether actions taken as a result of such research are ethically justifiable. Pertinent and timely examples include questions of controversial decisions to deny access to an intervention as a result of economic analysis, and decisions to close necessary mental health services. More thorough accounts of the use of economics research in mental health are required to ensure against such events and similar misuses of research.

Wider Outcomes of Mental Health and Policy Implications

As mental health research progresses towards more detailed and nuanced models of predicting treatment outcomes, it stands to reason that the outcomes considered in such research should also be revised, reconsidered and broadened. Though there is a need to analyse rare outcomes and events like mortality, most mental health research cannot just count deaths as some medical sciences do. The efficacy of mental health services should be measured with new outcome variables looking at effectiveness in several dimensions and costs in various contexts, in addition to the current use of rates of hospitalisation and relapses. These include well-being, satisfaction with treatment, quality of life, social inclusion, and the cost-effectiveness of treatment versus prevention.

Beyond straightforward cost-effectiveness evaluations of the economic impact of mental health interventions, outcome measures should also take account of return-to-work, and presenteeism/absenteeism. Research here is sorely needed both into indirect outcomes of interventions targeted at improving mental health in the first instance, and in terms of encouraging interventions specifically aimed at increasing rates of return-to-work and decreasing rates of absenteeism. Mental health interventions aimed at improving work and employment outcomes in the first instance can also be evaluated in terms of their own cost-effectiveness of implementation. Improving mental health outcomes of workers may be found to pay for itself, especially against the background of economic crises and mass unemployment. Appropriate research to investigate this possibility should be conducted. There is also a need for more research on the prevention of work-related mental health problems (i.e. those arising as a direct or indirect result of work) – ideally set in workplaces themselves. As well as researching workplace issues that may represent risks to mental health, there is currently a complementary lack of knowledge on how to prevent loss of productivity due to mental health problems.

The Role of Policy in Research

Not only does policy play a key role in the implementation of mental health services and the organisation of healthcare systems, but it is also central to cultivating strong research, through funding, coordination and innovation. Evidence-based policy needs to be constantly updated to ensure the fidelity of interventions when scaled up from pilot studies, or when translated from one setting/country/system to another. That is to say that currently there is a general lack of evaluation of implemented policies. Policy decisions regarding schools, workplaces and communities are regularly made, but they are not systematically evaluated. This points to a need to develop methodologies and measurements for large-scale evaluation of public interventions relating to mental health. Policy interventions represent prime opportunities for natural experiments or randomised control trials as methods of evaluation. Evaluations of policy should also turn to social science methods beyond experiments in order to take account of the currently neglected interdependence of other societal sectors, such as economics and welfare systems, in their impact on mental health service use and provision.

Setting priorities for policy pertaining to mental health research is no mean feat however – this is not least among the reasons that the ROAMER project was initiated. The cost of mental disorders is insufficiently taken into account by policymakers, and unfortunately this is indicative of wider societal attitudes to mental health. Inclusion in the policy agenda would help raise the profile and status of mental health and its promotion, and make it more intersectoral. The societal relevance of mental health promotion needs to be emphasised by policy, along with indications from research that mental health promotion also promotes ability to cope with everyday life and improves the economic productivity of societies. However, these remain broad-brush terms.

Within the wider scope of promoting mental health and research thereof, there is a need to prioritise among areas in the best interests of public health. For example this could include prioritising research according to burden of disease, prioritising disorders that we know can be prevented rather than what we want to prevent, prioritising reductions in the level of mental distress in the population above a reduction in the number of people affected, and prioritising general rather than targeted interventions at the policy level. These aspects of priority in policy will need to be closely informed by a dynamic and constantly-updated evidence base, as well as the concerns of key stakeholders (primarily individuals with mental health problems and their families, carers, and healthcare workers). Furthermore, the combined expertise and outputs of the ROAMER consortium or a similar team could be a means to continuously inform research priorities (even beyond the deliverables of the current project).

Taking Cultural And Socio-Political Differences Into Account

European research and evidence-based policy needs to take stock of how the geographical, infrastructural and cultural variation across the continent affects questions of service use and provision, and mental health policy

more widely. A large proportion of mental health research currently comes from a small number of countries, and understanding of the cultural context of mental health research needs to be improved. There is sometimes a lack of contextualisation of the results of analyses when transferring study findings between different regions/countries in Europe. Societal priorities differ across Europe, and this affects policy agendas of different countries and regions. This again highlights the need for coordinated policy actions at the European level. This pertains equally to studies employing psychological, behavioural, social, and economic outcomes, as long as such measures lack standardisation and transnational coherence. In order to adequately compare outcomes across Europe, there needs to be far greater recognition than is currently present as to the diversity across European mental health systems. In particular, there is a lack of research relevant for low- and middle-income countries. Relatedly, there is a current lack of clinical research that considers resilience against mental health problems in terms of lifestyle factors, and socio-economic and migrant status.

Accordingly there is a need to develop and direct mental health research (including mental health promotion interventions), to take into account wider socio-economic and (cross-)cultural factors. Events such as economic crises constitute a key area of future research, particularly how these affect social cohesion at both national and European levels, and the impact these have upon mental health. Another specific area of comparatively sparse research is that of social determinants of health in Eastern Europe. Such research also needs to be joined up with additional wider research across Europe into the implementation of community based services, specifically with focus on recovery and user-led research, and policy research – and how such social contexts can impact upon mental health outcomes.

More concrete problems may arise from variation across Europe in the ways that research has previously been directed. For instance, the meanings of well-being, mental health and a mentally healthy society differ somewhat between cultures, and these differences are naturally reflected in variations in measures of well-being and positive mental health. In particular there is a lack of an overview of what has been done in well-being research, a lacking harmonisation of existing data, and a lack of appropriate measures for positive mental health, including protective factors and determinants. This could be addressed to some extent with a map of existing theories of well-being across Europe; there is a need to know which theories of well-being link to which measures and instruments, since not all the instruments link to theories. Advances have been made in this area, but we need more measures adjusted for different age groups and gender. This echoes points made above concerning the necessity of harmonising research methods and outcomes measures for pan-European research – for instance, investigating how existing interventions and policies have an impact on well-being and mental health in different countries, and within countries for individuals from different socio-economic backgrounds. The wider pressing need for integrated and ‘European’ research that is sensitive to economic and cultural contexts is also a result of the current situation of an overrepresentation of U.S. research that is adapted to European settings. To ensure that interventions fit European needs, a greater portion of interventions should be developed in Europe.

Stigma, Discrimination and Social Inclusion

Direct primary research into stigma and experiences of stigma is lacking. Such research is vital for efforts aimed at intervening against or preventing the stigmatisation, self-stigmatisation, and social exclusion of individuals with mental disorders. Initially, efforts must be made to assess the level of stigmatisation (including self-stigmatisation) and social exclusion of individuals and groups with serious mental disorders and/or persons accessing care. However there are a number of complications and difficulties involved in stigma research which need to be overcome in order to realise this.

The area of stigma research is currently dominated by social psychology. This provides a good basis for expanding theoretical knowledge, but there is still a great deal of applied research that is not as well grounded in appropriate theory. Though there have been some recent advances here – including the development of implicit measures of stigma – these can at times be difficult to grasp. There could be more application of

theories and models to guide research, expanding into concrete implications for effective policymaking and financing.

Another key unanswered aspect of society-level stigma centre concerns manners and ways of speaking about stigma – both as they exist now, and what changes to these would be of benefit to those suffering from mental health stigma. Some potential suggestions for lines of enquiry here include considerations of what *positive* stereotypes exist about those suffering from mental illness, whether it is relevant to explore the positive outcomes of suffering from a mental illness, and whether this could help both in reducing the perceived legitimacy of stigma among the mentally ill, and in fostering solidarity among them. However it is important that such research directions are not simply assigned *a priori* importance and then dictated to individuals experiencing mental health stigma. The obvious implication in addressing all such research questions is the need for heavy involvement of individuals with mental health problems, ideally with such research being used as far as possible.

A further issue for applied research is that both mental illness and experiences of stigma are highly under reported, which has led to an under-developed research base. Similarly, those suffering from social exclusion are by their nature hard to reach and engage with, so innovative measures are needed for research here. This highlights the need for a systematic examination of what entails social exclusion and social withdrawal, and to understand to what extent these may be due to side effects of medication, or related to expressions of negative symptoms and despair. Such research needs to inform approaches to increasing access to treatment for individuals experiencing social withdrawal and exclusion. At the same time, issues of stigma and social withdrawal extend beyond questions of improving access to treatment, and deeper considerations are needed of the barriers to participation in the work market and social world. Additionally, there is a hypothesised role of poverty and privilege in exacerbating or buffering against the effects of stigma. Research is needed that adequately investigates the potential connection between poverty, social exclusion and stigma, identifying the most pertinent risks in the interaction of these three factors. Such an approach also includes the importance of an increased understanding of interpersonal relationships in postmodern society, including the potential support (or lack of support) offered by computer-mediated communication and online social networks as well as more traditional social networks.

In light of the stigma and active and passive discrimination faced by individuals with mental health problems, there should be a push-back on the part of sympathetic research in mental health to the rights of people with mental health problems, and wider ethical concerns. There needs to be more research into the protection of existing rights of people with mental health problems, as well as renewed research into whether these rights are sufficient. This encompasses questions such as involuntary psychiatric treatment and inappropriate poly-medication. Alternatives to coercion in treatment must be developed. Moreover, forced community treatment and other coercive measures need research that is independent from service providers, opening the research area of mental health services to other professional groups than those who are currently conducting research.

Together with these initiatives in investigating stigma, there needs to be complementary research into the public's awareness and understanding of mental health, as well as a consideration of how theoretical 'disease concepts' of mental disorders relate to stigma. For example, brain imaging (and some of its associated medicalised models of mental disorder) does not necessarily reduce stigma; it has been shown that it can have the opposite effect. Though public awareness and understanding of mental health issues is related to stigma and discrimination, there is currently less than sufficient useful and detailed knowledge of mental health literacy in the general population and population subgroups. There is a need to focus anti-stigma initiatives on the general public, but this is not limited to increasing awareness of mental health issues. For example stigma can be seen as an indicator of lack of mental well-being in the rest of the population, which leads to the conclusion that the best way to reduce stigma is to raise mental well-being in the rest of the population.

C. Life Course Perspective of Mental Health Problems

Developmental Trajectories and Risk Profiles

There is a need for more research that acknowledges the developmental perspective of mental health problems, with a view to developing tools corresponding to better staging and subtyping of clinical trajectories. This will improve theoretical models of mental disorders, thereby improving treatment and prevention outcomes. Such research should include developing robust outcome measures across the lifespan, including indices of well-being and neurocognitive deficits in mental disorders. It also requires the study of developmental processes or traits in specific populations such as children, adolescents and older people. When considering lifespan and developmental outcomes, there is a need to differentiate between nomothetic (staging) and idiographic (profiling) approaches to be able to distinguish between specific high-risk perspectives from non-specific public health perspectives. This distinction is an important consideration with regards to identifying protective and resilience factors for mental health, and will facilitate the implementation of better-targeted preventive strategies and mental health promotion.

There is general agreement among mental health researchers that interventions stand to be best targeted by identifying treatment targets (both pharmacologic and psychotherapeutic) and delivering prophylactics or early interventions, using therapies that target causal mechanisms of progressive disorders and syndromes. However, the problem of attempts to intervene early – or ideally, prior to disorder onset – is that it is critical to be able to identify relevant risk factors and markers. Accordingly, in order to be able to develop and test potentially extremely useful primary prevention interventions for mental disorders, there is first a need for objective measures of normal development. This would be complemented by prioritising the development and validation of early diagnosis and screening tools, especially for developmental disorders.

At present there is a huge gap in basic scientific knowledge about the mediating effects of environment on mental disorders. In many cases the biological mediators for environmental influences are unknown. A key concern is the relative poverty of defining ‘environmental’ factors in both theoretical and practical terms in research. For example ‘losing a job’ is an ostensible environmental factor that may act as a stressor or trigger for depression. However, the actual stressor effects of this event can vary hugely – for instance between being singled out for poor performance, or losing your job together with all your colleagues (say as part of an investor’s decision to close the factory you work in). Definitions of environments might therefore be better based on subjective experience and how an individual copes, rather than upon discrete events.

Moreover, there is overlap between neurobiology and environment. For example, the experience in Switzerland with different groups covering the two areas is that a general framework is important to avoid missing data. There is also a need to focus more intently upon gene-environment interactions, for instance in elicited mother-child interactions, family structures, and parental age at conception. ‘Toxic stress’ in infancy and early childhood might be a useful concept as a crossing point for environmental and genetic (and other biological) mechanisms. These kinds of environmental concepts are highly pertinent to the development of mental disorders, but represent somewhat subtle effects with poorly-operationalised and unreliable measures at present. Another useful concept may be the ‘exposome’: the entire spectrum of chemical stimulation outside and inside an individual. At any rate, the study of genetic associations requires the valid measurement of environmental factors.

A further outstanding developmental question is how the relative efficacy of preventive interventions administered at different times may vary. Though late childhood and adolescence see the greatest developmental onset of psychopathology, further research into developmental and transitional periods either side of this window may also greatly inform models of normative development, as well as trajectories of pertinent risk factors and symptoms of disorders and problems of interest. For this reason, an integrated research base for early interventions and preventions may wish to extend even earlier, for example into anxiety disorders in childhood or kindergartens. Other research could be extended earlier still: into prenatal, maternal and paternal issues and critical trajectories, so as to maximise the effectiveness of any initiatives. Truly longitudinal and lifespan research and models further needs to take stock of prenatal developmental

influences, and there is a specific lack of current research on the effect of mental disorders and use of psychopharmaca during pregnancy, and their long-term impact on maternal and offspring health.

Although it may be assumed that ‘the earlier the better’ in regards to administering interventions, there needs to be more research on ways of remodelling the adult brain, how to enhance resilience and coping skills in adulthood – especially in light of the high prevalence of disorder onset (mood disorders in particular) later in life. Older people are less frequently identified as a ‘developmental population’ than children or adolescents, but more research in this group is crucial, considering recent demographic changes in Europe. This highlights the need to take a wider view of targeted interventions and preventive measures based on an empirically validated research base of risk factors. A key question is that of where the greatest discovery can be made in the near future, then longer term, in well-being and mental health. Though adolescence and the age range of 12-21 has rightly been identified as a developmental ‘hotspot’ for certain disorders, not all disorders will have the same risk factors occurring at the same stages. Accordingly, other targeted translational and implementation research should focus on other key transitions and salient risk factors throughout the lifespan, and making sure that a wide variety of preventive interventions are eventually best suited and targeted to their relevant critical age-groups and transitions. This includes, for example, the transition of birth and perhaps the most prominent transition associated with older age in the form of retirement.

This goes beyond more straightforward ideas of early intervention to highlight the need for more evidence of appropriate, diverse mental health policies across the lifespan, be they targeted at post-natal populations and parents, children and adolescents, or older people. An obvious relevant issue here is the backdrop to such research and policy – namely the continuing ageing of the European population. Questions may be raised as to whether it is wise to focus on the young when the population is old and getting older. Beyond the points that different transitional periods and developmental stages will be relevant to preventing or ameliorating different issues and problems in mental health, a potential rejoinder to such concerns is that economically a healthy young population is needed to pay for the older population. However, this does not negate the need for resources for older populations. By developing better models of risk factors and more targeted interventions, it will likely become easier to facilitate this delicate balance of resources.

Furthermore there is a need for research on application and development of dynamic models for analyses. Outcome measures (such as symptom levels measured over time) will not be stable, but dynamic – particularly in the case of long-term studies of complex interventions. Together with long-term outcomes – which are difficult to measure within the timeframe of many projects – intervention studies should develop and make use of new intermediate or proxy outcome measures (e.g. behavioural or cognitive markers, using behavioural, neuropsychological or neuroimaging tools). These intermediate and proxy outcomes could then be used as markers of longer-term outcomes in applied research conducted on shorter time-scales, or in basic science.

Longitudinal Studies

The need for longitudinal studies for the specific lines of enquiry above is indicative of the need for longitudinal research more widely in assessing environmental influences and psychopathological burden across the lifespan. Here it is important to note that the greatest psychopathological burden occurs in transitional periods, namely during transition from childhood to adulthood. Transition from adulthood to older age is another period of increased incidence of psychopathology. Therefore there should be a high priority for research focusing on transitional periods and markers of shifts in vulnerability to symptoms and disorders across the lifespan. Such research cannot simply use cross-sectional studies of these age groups, but must involve longitudinal studies following individuals from pre-transition, through their transition period, and with detailed ongoing follow-up work. Owing to the fact that developmental trajectories and transitions vary between individuals, there is a great deal of detail that is potentially lost by trying to study development while relying on cross-sectional samples. Future work might then better consider symptom clusters or likely treatment responses based not on particular diagnoses, but on the effects of environment on transitional stages in psychopathology.

There is also an identified need to conduct more, longer term naturalistic studies – namely clinical cohort studies. Moreover, clinical cohort studies can be combined with randomised controlled trials (RCTs), assessing the course of symptoms and functioning as an RCT control group. This highlights the potential for hybrid trial designs that maximise the efficiency of data collection and analysis, while retaining the level of specification and detail required of future research. Relatedly, there needs to be further consideration of the most potentially useful markers and (intermediate) outcomes to include in longitudinal studies and cohorts. Existing well-being instruments require further validation, but could then be included as outcome measures in cohort studies. This is important for the understanding of well-being and how to best promote it, as well as addressing the open question of the effects of good versus poor mental health across the life course, including studies on the economic impact of lack of mental well-being.

Longitudinal and cohort research is well-placed to answer questions pertaining to long-term conditions, burdens and risk factors associated with mental health. One specific example of great importance is the current lack of comprehensive knowledge about suicidal and parasuicidal behaviour. Reliable tools to evaluate suicidal risks across the lifespan should be developed, based on an interdisciplinary biological, psychological and social approach. There is a need for comprehensive statistical data on suicides (suicide registers).

Children and Adolescents

A crucial aspect of research for nearly all areas of mental health research is that of early detection. Early detection of disorders or risk factors would serve to potentially ameliorate over- and under-diagnosis, which represent huge problems for mental health at present. Even though there is increased knowledge on mental health and related determinants in children and adolescents, there are still gaps in our understanding of mental health problems in the early years. Further research into early detection and early-years research stands to be extremely fruitful for both theory and practice. For example, ROAMER work packages have identified that potentially the best return on money – to produce the most health and well-being – would be by investing in the stages from pregnancy to 10 years of age.

The reasons that child and adolescent research stands to maximise the efficacy of evidence-based interventions in mental health are twofold. Firstly, recent years have seen rising public health needs in child and adolescent psychiatry. These are not adequately matched by the attention of the scientific community, either in absolute terms, or relative to other medical fields or subjects with similar public health impact but rather high publication activity. Secondly, developing early interventions aimed at children and adolescents offers the opportunity to minimise the disease burden (e.g. in terms of quality-adjusted life years), especially for high-burden chronic issues such as mood disorders. Interventions early in life may further serve preventive purposes if administered prior to the onset of disorders.

Epidemiological data show that most psychopathology begins its expression between the ages of 12 and 21, yet a minority of funding goes into this age range. This lack of early research and intervention then inflates both disease burden, and economic and social costs involved in dealing with chronic and established disorders later in life (e.g. depression, psychosis, bipolar disorder – which account for 60% of research funding). Focusing on ages 12-21 (when most psychopathology begins) may then be the most effective way to reduce psychopathology at the population level, maximising the efficiency, efficacy and cost-effectiveness of interventions aimed at improving well-being, quality of life and so on. While this issue is important, recommendations for pertinent mental health research and interventions must go beyond saying ‘Europe must do child and adolescent mental health research’. There is a compelling need for better understanding of how to optimise child mental health and so develop a clearer idea of how mental health services can best contribute alongside population and community social and economic actions. In contrast to more common (at least in the case of mental health) focuses on treatment and illnesses, prevention and early intervention work needs to address issues at the population level. This is reflected in the kinds of tools employed by the initiative, for instances preventive measures aimed at advising midwives, educators and politicians.

However, concerns of early intervention tap into wider issues inherent in developmental science, together with their entailed difficulties. Development is dynamic rather than stable, and often unpredictable at the individual level. Therefore in order to complete the necessary work towards increasing knowledge of how to properly install child and adolescent interventions, there is a need for a research base that considers differentiated responses instead of just mean effects, as variation can be more interesting than averages. Before implementation, it needs to be established for whom an intervention works well, and for whom less well, as well as defining the most effective developmental stages at which to intervene. There are also ethical issues associated with early detection (particularly detection of risk factors prior to the onset of a disorder), and these need to be given due consideration.

D. Research Towards Personalised Care

Theoretical Directions for Basic Science

Individual ROAMER work packages clearly identified the need for basic science to understand the mechanisms of mental disorders. There is a need to identify risk and resilience factors or markers (neurological, biological, psycho-social, consumption and lifestyle) for both subjective well-being and mental health problems. This research is needed for preventive purposes, in order to foster the development of adequate screening tools for symptoms of mental disorders rooted in neurobiology, and for identifying groups of individuals for targeted intervention strategies. Such markers are invaluable for better understanding of vulnerabilities to mental disorders and other negative outcomes.

A number of disorder-specific key gaps in knowledge and research have been identified. For example, the genetic architecture of depression is better delineated for bipolar than for unipolar depression; certain mechanisms are implicated in drug addiction that may or may not be involved in behavioural addictions; better understanding is needed of neurobiology behind acquired vulnerability for certain disorders (e.g. how to avoid posttraumatic stress disorder); more knowledge is needed on the causes for fear of delivery and its risk factors, through national-wide cohort and register studies. A lack of understanding of the mechanisms and causal pathways involved in mental disorders also limits the ability of current theories and models to explain wider issues that are not specific to single disorders. Two such examples are gender differences in the rates and expressions of certain disorders, and the role of intellectual functioning and other aspects of cognition as a risk factor for mental disorders.

An example of where underlying markers may influence features across a range of disorders is articulated by symptoms network approaches. This line of argument pertains to complexity factors in molecular genetics, relating mental disorders to multiple causes that give rise to underlying states, which in turn give rise to symptoms, which again can influence one another. That is to say that there is an identified need for more research that takes a diffuse, multivariate and symptom-led approach to risk factors and causal mechanisms in mental health research. Analogous gaps are evident in current behavioural genetic research, for instance in examining common genetic factors across depressive disorders, dysthymia and personality disorders, and investigating associations between fathers' mental health and mental health problems among children. Again such research needs to take complexity theories into account, considering the role of putative interactions on behavioural, genetic and/or cellular levels in giving rise to identified symptoms.

Development of such lines of enquiry to take account of complex paths from low-level mechanisms to more large-scale models will require basic research to be integrated with epidemiological, psychological, and genetic research. There is a need for neurobiological research at the population level (which is different from the patient level), and large-scale epidemiological studies. This is needed to address the overall mental health of Europe, and to capture the complexity of mental health and its determinants across the lifespan. There is incomplete research on genetic influences upon mental disorders (i.e. genetic risk factors) and little research on (neuro-)cognitive deficits associated with mental disorders. Such research would be enhanced by a more considered use of the distinction between clinical and functional phenotype and genotype, insofar as population and patient levels of mental health and disorder will vary depending on outcome measures, as well as gene-environment interactions in coping ability.

More research needs to explicitly take stock of the differential and complementary influences of genetic and (modifiable) environmental risk factors in shaping mental well-being as an explicit outcome measure. Identification and characterisation of environmental factors conferring risk and resilience for mental disorders and their interaction/correlation with psychological and biological mechanisms is thus also of high priority. One specific and illustrative example of research into environmental effects that could differentially confer either risk or resilience to individuals would be basic research into consequences of (social) media use and other computer-mediated communication on neurobiology, cognition and emotional functioning in children and adolescents. Such research would further benefit from the use of longitudinal studies.

The need for research into risk factors and developmental trajectories of mental disorders also stands to inform clinical practice. That is, it informs the additional identified need to incorporate individual differences and risk profiles into individually targeted and optimised preventions, interventions, and treatments. Clinicians need to know how and when interventions should be applied – e.g. in the acute phase, for chronically ill patients, for different age groups etc. Research that helps to establish risk profiles of different service users will inform the necessary development of guidance tools that help clinicians to choose between various treatment modalities based on the type of mental disorder, stage/progression, previous outcomes, comorbidity and other factors. Put simply, there needs to be a move towards development of specific interventions for specific target groups, to the extent that such an approach will be able to improve the efficacy of a given intervention. To give a specific example in the case of basic brain science, the neurocircuitry of some clinical anxiety states has been relatively well studied, including posttraumatic stress disorder (PTSD) and obsessive compulsive disorder (OCD). However the ‘common’ anxiety disorders, i.e. panic disorder, social anxiety disorder and generalised anxiety disorder (in which fear/anxiety circuitry is believed to be the key circuitry involved) are understudied from this basic science perspective. A greater focus on basic science here may inform more effective targeted treatments for these disorders.

Diagnoses and Basic Research

Given the huge recent advances in neuroimaging and biomarker research, there are resounding calls for such information to be developed, validated and integrated into the diagnosis and stratification of mental disorders, with particular reference to the insight that such information may hold for predicting treatment responses. Current diagnostic systems (i.e. ICD/DSM) have limited utility for biological research because they are distant from biological mechanisms. However there is a risk to being too negative about existing clinical diagnostic systems. Existing systems represent real disorders which occur frequently, and there is a risk that political understanding of this may be compromised if there is a shift to an alternative classification system. It is right to have doubts about the relationship between diagnosis and biology, and this can be borne in mind when doing research, but it is not necessarily appropriate when approaching funding issues, or other instances of disseminating or conveying ideas to a wider audience. Current diagnoses do have specificity: there is a huge difference between schizophrenia and depression, reflected in the strong and valid differential predictions that these diagnoses have for treatment.

However, the validity of current clinical diagnoses is less appropriate for genetic and biological investigations of mechanism. There are common intracellular pathways and genetic variants that can cause different mental disorders – by analogy, a house and a bridge may both be made from bricks but that overall constructs are very different. A diagnosis encompasses a variety of different kinds of individuals with mental health problems and is by definition a simplification. A potential method of resolving this issue from the perspective of basic, mechanism-level research would be to define underlying mechanisms for big symptom clusters, and then deal with diagnoses latterly. Use of epidemiological approaches to explain variance, together with other research informing the role of individual differences in manifestations of different mental disorders may help to define more valid end-points, markers, or endophenotypes with greater explanatory power for use in basic research. Following on from this, any adaptations to diagnostic measures or strategies based on advanced knowledge of biomarkers, mechanisms and other basic (psychological or social) science would latterly require appropriate research into the development and validation of diagnostic measures and questionnaires via psychometric and validation studies. Clinical research would be imperative in validating any such attempts to generate more specific diagnostic criteria.

Though not directly related to the specific basic research issues faced in regards to current diagnoses, embracing more dimensional approaches to mental disorders may also be relevant to clinical research and practice. This ties into a wider need to further investigate aetiological associations between physical and mental health, and understanding the implications these have for physical and mental health outcomes. This is especially relevant to the handling of multidimensional problems of alcohol abuse and other problems with addiction. In addition, there needs to be more research into complications, coincidence and causal

associations in the overlapping space between disorders. The end point of such lines of enquiry would be towards developing an integrated psychosomatic model of mental health and mental disorders.

Comorbidity

Related to any research into basic-science led reconsiderations of disorder boundaries and models is the underlying and under-researched issue of co- and multimorbidity. Risk factors identified via biological and other basic research need also to be considered in terms of fostering the development of screening tools for comorbidity in mental disorders. Various mechanisms (e.g. of sensitivity to reward and punishment) underlie shared and distinct symptoms cutting across different categories of mental disorders, substance abuse problems and perhaps even somatic disorders. There is a need to rethink the role of biomarkers in such instances, since categories of mental disorders are extremely overlapping and interrelated, and disorders tend to breed across categories almost as frequently as within.

Another limitation of the majority of present intervention studies that it is directed at the group level rather than addressing variation within sub-groups or individuals in terms of variation in treatment response. This lack of fine detail in intervention studies means that it can be difficult to predict treatment outcomes or make the most informed treatment decisions for specific individuals who show aspects of atypicality or comorbidity in their symptom presentation. As a result, there is a need for implementation studies that take into account and adapt interventions to the individual's comorbidity or symptom profile in terms of developmental stage, disorder process and context. The downstream goals of such research would be towards personalised interventions that could address current issues with un-personalised treatments, such as difficulty in treating individuals with comorbid problems, and any related lack of predictability and therefore treatment guidance. One such example would be individuals with schizophrenia-related disorders' likelihood to relapse, and therefore their personal need for antipsychotic maintenance therapy. All such progress should ultimately be aimed at improving the well-being of individual service users.

Evaluating Current Interventions and Methodological Practice in Research

Currently there is a lack of knowledge of routine treatments' outcomes and their effectiveness, and this needs to be addressed by research including both psychotherapeutic and psychopharmacological intervention studies. Put simply, there are not enough controlled trials in routine care. Furthermore, detailed research is lacking into investigations that would attempt to identify the active components of interventions that are currently known as to be effective. Such an approach would also help to improve treatment outcomes, and is necessary since only a limited part of the disease burden of mental disorders can be taken away with treatments as they are currently implemented.

In complement to examinations of the differential efficacy of single interventions, there is a need to conduct experimental medicine studies focusing on potentially synergistic pharmacological and non-pharmacological interventions. Examples include interventions combining of psychotherapy and pharmacotherapy, and those combining approaches to treating physical and mental comorbidities. Complex and long-term interventions (incorporating multiple aspects of treatment) have been identified as potential solutions to the long-term chronicity (and associated heavy burden of disease) of some mental health problems, but such interventions require a great deal more research before they could be considered viable in addressing these issues. Development and evaluations of complex, long-term interventions would need to work on many levels (e.g. biomedical, psychological, behavioural, social) and with input from many different scientific disciplines – drawing on an evidence base of identified functional mechanisms of action informed by robust basic research. Studies of complex interventions need to use more long-term outcomes, and there is a need to expand study periods beyond the period around illness onset in order to better research relapse prevention. Evaluations of complex long-term interventions also require the development of appropriate statistical models in analysis.

An over-arching issue identified by ROAMER work packages is that clinical trials – and randomised controlled trials (RCTs) in particular – have perhaps lost sight of questions they are best placed to answer and how this might best be achieved. At present there is somewhat of a disconnect between trials being conducted and questions in need of accurate and timely answers. There is a need to systematically collect and prioritise backlog RCTs, with regards to a range of common questions that require answers but have not yet been appropriately trialled. This includes a need to address the lack of knowledge of routine treatments' outcomes and their effectiveness. There also need to be more thorough and systematic replications of findings in order to establish them as valid and useful. This latter point is imperative to overcome the problem of approximate replications, which neither confirm nor refute research findings, particularly in neurobiological research.

Trials for routine (as well as novel) interventions need to conform to a level of theoretical and methodological rigour that is currently lacking. There is a need for registration trials for new medicines or medical devices. Active and control conditions within these trials need to be robustly randomised ahead of time, and more research needs to be conducted without financing by the pharmaceutical industry. The use of placebos needs to be evaluated and improved, with a view to achieving standardised placebos, and evidence of how these influence the observed effect sizes in a given study. Related control issues exist in the fact that adequate placebos are difficult to obtain for psychotherapy. Though blinding issues (i.e. preventing participants and ideally also researchers from knowing which group is receiving which treatment) also exist in pharmacological studies, control groups are effectively impossible to blind in psychotherapeutic interventions, making it difficult to measure effectiveness of psychotherapies. A potential direction for future research here would be the alternative or complementary use of equivalence studies in preference to treatment-control in evaluations of psychotherapy. All such issues must be addressed in order to conduct future multi-arm clinical trials necessary to develop evidence-based guidelines for psychiatric treatments (including pharmacologic and non-pharmacologic intervention).

Further, there is a need for a holistic approach in studies of mental health services that takes into account factors such as accommodation, occupation, family life, social relationships, etc. Randomised controlled trials have become a gold standard that picks one single intervention in one single circumstance, as if the surrounding sectors have no influence. Randomised controlled trials are ideal designs that do not translate well to reality, and more caution needs to be exercised when using them. An example is polypharmacy, where the interactions that may occur when using several drugs at once are seldom examined. This limitation is perhaps most clearly seen in the problem of 'supernormal' controls (often volunteers for clinical research, with no history of mental health problems) being compared to clinically heterogeneous groups of cases, and novel research paradigms are needed to advance beyond this. Experimental evaluations are often lacking in depth or detail with regard to actual implementation, and constrained by the outcome measures chosen ahead of time with which to evaluate them. Experiential knowledge from individuals with mental health problems should become a legitimate source of knowledge and acquire a role in conceptualising services. The need for this kind of detail in predicting outcomes points to the necessity of exploring and developing extensions and alternatives to randomised controlled trials. One example alternative is the growth-curve or latent growth modelling techniques widely used in social science and public health. Within-person designs – such as ABABAB (idiographic) designs – conducted in addition to efficacy and effectiveness trials (nomothetic approaches) would also stand to inform individual-differences research into treatment outcomes.

Similarly, more insight is needed into pharmacological effectiveness in the 'real world' beyond efficacy outcome measures. Research is needed that addresses these problems by identifying factors that should always be taken into account in clinical trials, and developing pragmatic practice-based clinical research in real-world settings. One such issue is sex differences, as research (basic research in particular) is biased towards males, with no consideration of sex or gender in many analyses. Gender effects are seen across swathes of basic and applied research, though not universally across all disorders. This highlights a need for more research that can help identify both mechanisms and predictive outcomes of gender in relation to mental health. An example question is why marriage is so good for men (halving the rate of depression) but bad for women (doubling the rate of depression). As well as guaranteeing the inclusion of patients from all sexes and genders, more research is similarly needed that includes individuals of all age groups, as part of an effort to incorporate

more dynamic and nuanced predictions of outcomes. There is a particular need to conduct more clinical drug trials in children and adolescents, for example. But rather than simply controlling for age, gender or socio-economic status as extraneous variables, there is a lack of research featuring these and other factors as the primary research focus.

There needs to be an increase in the attention paid to differential effects of treatments in research – for instance whether certain treatments are more effective in certain groups. Rather than focusing on average patient responses or treatment outcomes, there should be more focus on the variance in these. Implementation of mental health interventions will introduce a number of variables (e.g. matching therapist – method – service user) beyond those addressed in the clinical trial evidence base for the implementation, meaning that there will not necessarily be one ‘best way’ to administer any given treatment. More research needs to take account of such facts in its design and how it goes on to build an evidence base. Furthermore, there needs to be a better integration of quantitative and qualitative research (depending on the specific research questions) in order to capture the complexity of mental health in such evaluations.

A further, vital, aspect of evaluating current treatments is the need for interventional and non-interventional research assessing the safety of treatments and treatment side-effects. In particular, outstanding questions of side-effects, safety and efficacy of treatments are extremely pertinent to explorations of treatment combinations. Suicidality has been identified as a particularly crucial side-effect for consideration. Interdisciplinary research coordination of the systematic evaluation of suicidality as a treatment side-effect should also then foster the links and infrastructure needed for evaluations of other psychotherapeutic treatment side-effects.

E. Building Research Capacities

Open Access, Data Sharing and Harmonisation of Concepts

There is a need for internationally comparable data based on common methodologies and for integrated databases enabling more comprehensive studies. Research networks and data-sharing initiatives are needed to ensure the storage, sustainability and protection of databases, and to avoid research overlaps and redundancies throughout Europe. ROAMER work packages and experts have been unanimous in their attitude to data-sharing, pointing out that withholding public access to the output of publicly funded research cannot be justified. All publicly funded research should provide open access to its publications (not just abstracts), as well as (anonymised) data – as far as this is ethically possible in light of sensitive data. At the European level, open access would necessitate a homogenisation of the language(s) used in databases. Although there is overwhelming support for open-access data and research output, questions remain as to how such initiatives should be implemented. It could for example be implemented as a mandatory counterpart of all EU funding. Alternatively, incentives could be created for researchers who provide data.

Open data refers to access and storage; it has therefore been underscored that data cannot be used without collaboration and proper methodology (e.g. for homogenisation or standardisation). Another key issue here is that provisions should be put in place to extend beyond the end of a research project as designated by funding cycles. Databases or registries, for instance, should be exploited after the end of project to ensure the most efficient use of existing resources. Existing treatment-related and socio-economic outcomes also need to be defined and specified according to common criteria, in order to facilitate both data sharing and collaborative research. Infrastructures and other outputs (e.g. databases) created by grant-based research are not always sustainable and/or accessible to the wider research community. There is a lack of multidimensional study designs and measures to capture the prevalence and impact of various mental health indicators. There needs to be a standardisation of classification systems and measurements used in research across countries and over time, as well as developing novel measures more appropriate to a transnational or European research focus.

Other aspects of data-sharing (e.g. clinical data that might have been collected as part of routine medical care, or other means) present subtler issues than those that can be solved via open access and standardisation of measures. There is a clear need for clinical data access and broadcast: sometimes data does not circulate sufficiently even within a single hospital. The EU and research infrastructures can be particularly useful for data gathering, management and access, especially with regards to coordinating the standardisation and quality control of (raw) data. Initiatives such as Euroreach³ have been identified as good examples of what is needed. Mental health registries and databases in Europe could be mapped, detailed and provided by the EU. Such an initiative would be of great value and interest, since access to private and public data in the EU is a bottleneck for research. At present there is a vast amount of information that can be found in registers, but this is under-utilised by research.

One issue that straddles research data and clinical registers is that of biobanks. Transnational biobanks and similar transnational repositories would be valuable to mental health research, and accordingly there is a need to look at present biobanking initiatives such as the BBMRI (Biobanking and Biomolecular Resources Research Infrastructure)⁴ and make specific statements about what is needed to take these forward to study psychopathology. However, there are a number of logistical constraints upon the prospect of truly integrated European biobanks. Firstly, most individuals with mental health problems in Europe are not treated in centres of excellence, and for many doctors (e.g. GPs seeing patients in the general population) the motivation to do the work in contributing to biobank samples would be unclear. Secondly, stigma regarding mental disorders has been identified as a reason for why there has not been an uptake of mental health registers in the same way as there has been for somatic disorders. Thirdly, there are issues of regional organisation – for example conflicts between the Ministry of Health and National Universities in Italy. The common result of many of

³ <http://www.euroreach.net/>

⁴ <http://bbmri.eu/>

these issues is that patients with certain disorders from provincial areas may not be included in research programmes, leading to a biased sample of about 5% of the population. A further complication is that there are different data protection laws across Europe, different political attitudes and different interests involved. Sufficient political support will likely help with the resolution of some of these issues (namely, transnational biobanks mandated at a political level), but there is still a need for researchers to develop creative practical solutions to data collection and management for such repositories.

An underlying necessity of all attempts to integrate research across Europe is some degree of harmonisation: of research methods and practice, and of considerations of varying contexts across European countries and regions. In reference to the need for research networks identified elsewhere in the report, it will be necessary for researchers to develop the use of common research languages, procedures and standards throughout Europe, and for different research groups to work together using the same tools. A large part of this will be to standardise outcome measures of research in general, and of psychological interventions and diagnoses in particular.

The fact that there have been great advances in mental health in recent years driven by different research traditions has resulted in a lack of common key terminology and concepts. An indicative example of this is the disparate use of the terms mental and psychiatric 'disorder', 'disease', 'disease entities' and 'illness'. Some misunderstandings in biological mental health research stem from the incorrect idea that 'diseases' are being dealt with. 'Mental disorders' is the only term used in classifications made by the ICD and DSM. 'Mental and behavioural disorders' is a WHO term that European countries have signed up to. 'Disease' often implies a monogenic, pathogenic entity, and the term is often disliked by individuals with mental health problems. Accordingly, respecting the convention of using the term 'mental disorder' seems to be the most advisable course of action. However this example is not simply a case of dry hermeneutic distinctions made in academia – it represents a very real issue in that there is widespread ambiguity and confusion about what constitutes mental disorders, not only among the lay public, but also many prominent researchers. These concepts are in need of clarifying and coordinating across research groups and networks, especially if future multidisciplinary research into mental health is to be successful and worthwhile. Similar issues also apply to related theoretical concepts and distinctions between good mental health and well-being – for example, whether the possibility of having a good quality of life is orthogonal to having a mental disorder.

Research Networks

A recurrent theme across feedback from ROAMER work packages was agreement on the need for more collaborative research, to balance the current competition-driven research field. Collaboration needs to occur across countries to develop mental health policy research capacity and foster a European critical mass in mental health policy research. Referring back to issues regarding the lack of direct replications and comparability across studies (in favour of approximate replication), there is a lack of comparative and longitudinal studies using common methodologies across Europe. An over-arching goal of collaboration in research networks is to allow research strengths to pass from individual to collective excellence. One postulated mechanism for such advances is by the fact that research coordinated by wider and more diverse collaborative networks (compared to small research groups) will serve to limit bias and increase the reproducibility of studies – which in turn improves the quality, transparency and credibility of European research results. Though the number of research networks in Europe is increasing, it remains limited.

Collaborative networks should be researcher created and led, and not top-down administrative creations. They should promote collaboration without dictating what should be researched. Researchers themselves should be able to contact each other and work together without the intervention of any supervision and without necessarily requiring funding. However, when first set up, research networks may be fuzzy, and so may need to focus on a particular need, e.g. schizophrenia. Aims in schizophrenia that would benefit from wider collaborative projects and input include prolonging life, addressing nicotine dependence, metabolic syndrome and others, to ultimately provide care as good as for patients with somatic disorders. There is also a lack of

visionary 'man-on-the-moon' projects (e.g. zero suicide mortality) – the encouragement of such ambitious and targeted goals for mental health research could help to focus, motivate and coordinate large swathes of research with complementary skills and aims.

Networks, platforms and collaborative spaces are necessary for European researchers and groups to collaborate more intensively. Transnational collaborative structures and infrastructures should take into account the competitive advantages of different European regions, collaboration with existing institutions, European research infrastructure projects, national cohorts etc., as well as capacity building across Europe. The scope of the effort to establish structural and infrastructural advances is considerable and includes the establishment of dedicated centres for data acquisition and analysis, as well as research networks. Together, dedicated centres and networks may contribute to developing and supporting a research infrastructure to maximally benefit from Europe's unique universal access to healthcare and its cultural diversity which allows differentiated analysis of environmental and cultural influences.

When considering the competitive advantages of different European regions in collaboration, Eastern and Central Europe (which comprise a huge part of Europe) must be included. Eastern and Central Europe should be regarded as resources that are not being used and developed as much as we would like. There needs to be a clearer focus on the comparative strengths and advantages that these regions have (e.g. large populations, large cohorts, appropriate centres and registers) and a more thorough consideration of what these regions can do that other regions find more difficult. Iceland is another example of a region that is highly competitive in research that should be looked to for collaboration. Such collaborations cannot and must not be reduced to Western European countries simply exploiting the resources and advantages of other countries. It would be more desirable for collaborative networks to be horizontally organised and reciprocal, rather than simply having Eastern and Central European countries using their resources and comparative advantages to support research directed by Western European research groups. As a guiding principle, the actions of any transnational collaborative network should serve not to worsen the West/East gap, but on the contrary facilitate its closure.

A key point to bear mind across all such considerations is that inequalities exist between 'new' and 'old' member states of the EU (and non-EU members such as Serbia). Prejudices against Eastern European countries have led to their marginalisation in collaborative research. Contributing to and exacerbated by this problem is the brain drain that sees numerous young researchers move from Eastern European to Western research units. A related issue of great pertinence to collaborative research networks is that health priorities may differ at the national level between Eastern and Western Europe. Taking Estonia as example, its main health priorities are more centred on 'survival' than mental health. By no means is this to say that there is no interest in mental health research among Eastern European researchers, but it does highlight the fact that national funding cannot be relied up to address East/West asymmetries in mental health research, and that international funding and infrastructure have crucial roles to play here. In addition to this, it has been suggested that some countries are not large enough to have the appropriate means for building a dedicated programme in mental-health research training. These countries are therefore particularly dependent on initiatives at a European level.

The process of setting up and developing research networks should not be taken lightly. Arguments were made by ROAMER expert panels that networks can be 'a harmless way to waste a lot of money'. Doubts have also been raised about the efficiency of such structures. At their worst, due to the high numbers of participants in networks, research could be reduced to the smallest common denominator and would as a result lack innovation. Having said this, such criticisms are best considered as avoidable mistakes rather than constitutive elements of networks, and several successful networks (e.g. clinical trials networks in the UK) have avoided such pitfalls. In light of this, there are three main criteria for research networks to guard against inefficacy or counter-productivity: 1) to be flexible enough to ensure innovation, 2) not to be 'invasive' and hinder research performed outside the network, and 3) to have a limited administrative burden and be sufficiently independent from the institutions that 'house' them.

Two main types of research networks have been identified: scientific networks and investigation networks. Scientific networks are rather inexpensive, and easily created and managed. They bring together scientists of different disciplines and nations in a common field of research, and allow them to discuss and elaborate projects together. Increased contact and familiarity between researchers in and of itself has been identified as a worthwhile outcome from any research network, whether informal or institutional. Scientific networks are dynamic and heterogeneous, and their mapping is difficult. On the other hand, investigation networks allow small research units to mutualise their research tools, instead of buying expensive facilities which would be underused in each research unit. Investigation networks afford the optimisation of facilities (e.g. offices), equipment (e.g. MRI), databases or infrastructures (e.g. cohorts). Investigation networks could be mapped through the MERIL® project⁵, and the ROAMER general survey of researchers and stakeholders.

In addition to these two broad distinction between scientific and investigator networks, there is a growing need for e-networks that allow researchers to identify each other and facilitate contacts and exchanges. These can be virtual and general (e.g. ResearchGate®⁶), or more specialised – for example specific to mental health. E-network contacts should also lead to real meetings and room for knowledge exchanges, such as workshops or conference where researchers can meet. This implicates an appropriate budget for such networking activities. Examples of dynamic researcher networking have been demonstrated at the national level (e.g. in the UK, and Canada), and these should now be developed at the European level.

In the short term the need to be fulfilled by European research networks would be that of sharing and linking data, and coordinating larger clinical and cohort studies and databases across Europe. At present there is a split between research units and technical facilities, and this can lead to disjointed progress in research and practice. In order to scale up research towards a truly effective European mental health system that maximises treatment and population outcomes based on the resources and expertise available in Europe, there is a need to encourage and facilitate research aims and approaches through appropriate coordinated infrastructure projects. Infrastructure and sustainability of European mental health research could be greatly enhanced by a dynamic and adaptive trans-European network of centres of excellence with specific competencies and a sustained perspective. Centres of excellence could foster and facilitate the areas of lacking research identified above. This could include data acquisition and data analysis at a coordinated level (e.g. access to high throughput genotyping, creation of functional –omics and neuroimaging centres), and maintaining resulting repositories of methodological and procedural expertise that otherwise tend to get lost between successive waves of national network funding. They would also facilitate knowledge transfer within networks and to the wider scientific community.

Capacity Building for a Multidisciplinary Research Base

Following on from the fact that mental health research is now conducted by a multitude of disciplines, there is an immediate need to integrate knowledge through multidisciplinary theory and research. Within medical and psychiatric contexts there remains a need not only for deeper collaborations between clinicians and academic researchers, but also for interdisciplinary population-based research by biological, neurocognitive and behavioural scientists in order to identify the developmental and life-course determinants of mental health. Beyond this there is also now a need for other fields and disciplines, (such as sociology, anthropology, complimentary medicine, economics, psychology and biology among others) to be consulted in mental health services research, as well as in the translation of research findings into practice. This wide variety of disciplines highlights the fact that mental health research should not be dominated by the biomedical model. A first step in this regard would be to regain a comprehensive bio-psychosocial approach to mental health and not simply a 'biological' or 'psychological' one. To date there has been a great deal of emphasis on reductionist genetics at the expense of the concept of quality of life, which has not been taken up and utilised to its full extent. The

⁵ <http://portal.meril.eu/converis-esf/static/about>

⁶ <http://www.researchgate.net/>

inclusion of philosophy researchers (especially in regard to the mind-brain-body debate) would additionally help to overcome the subjectivity gap in imaging and other preclinical studies.

The narrow area of research into mental health services should not exist. Instead it should form a part of research into health services in their totality – as a gain to the whole, not a loss to mental health. There is an artificial separation of mental and physical health in both research and policies, and this needs to be redressed. Research needs to be a hybrid of many things; today there are public health researchers that are not comfortable with mental health, and there are mental health researchers that are not comfortable with going beyond an individual paradigm. This state of affairs needs to change. Links to other policy fields, such as nutrition and exercise, need to be included in future research. As these shortcomings in the focus of mental health research are gradually overcome, it will hopefully then become progressively easier for research to advance even further beyond the dominant psycho-medical model.

However, the integration of mental and physical health research will likely not be simple or straightforward – research capacity will need to be expanded in order to bridge these areas. Appropriate capacity building comprises issues such as moving researchers around and providing appropriate training schemes. Mental health research covers such diverse areas of knowledge that it requires multidisciplinary and transversal approaches which should be enhanced in the current master's and PhD programmes devoted to mental health research and promotion, and for the creation of new ones. It would also be of great benefit to develop European master's and PhDs involving several universities, in order to more readily foster coordination of training content across Europe. Such coordination would help to address certain other issues in European mental health training – for example some countries do not have the critical size to create relevant training programmes in mental health research. Inequalities in training capacity between East and West contribute to the brain drain which damages new member states and eastern countries.

In this context, more multidisciplinary training programmes should be offered in Europe, with optional modules allowing students to develop their knowledge in the different fields encompassed by mental health research. E-learning may be of particular use here to bridge training gaps. This kind of innovative multidisciplinary mental health research training is needed in complement to multidisciplinary collaboration between established researchers and groups who have already received training in disparate disciplines (as advocated above). Administering multidisciplinary training to mental health researchers would also require considerations of what content such training should contain. An especially pertinent point for consideration is that of research areas that have been important but are not yet fully defined, such as health promotion and prevention research. The EU may be of use in providing some guidance in order to harmonise this landscape, and in helping to coordinate larger training projects. There is also a need to put in place robust infrastructure to monitor and evaluate such initiatives as they are set up.

However, prior to any questions of designing and implementing new forms of multidisciplinary mental health training, there needs to be a systematic investigation and evaluation taken of what mental health research training is currently available, and what current level of access exists to different areas of mental health research. The training programmes that currently exist are numerous, but their quality is not known and little information on the actual research training is available. Indicators to assess these points do not exist, and so should be strongly encouraged. Currently it is difficult to obtain information indicating which training programmes have actually been taken by researchers working in mental health. Similarly, it is not easy to follow the trajectory of students after graduation, all the more so as there is currently no clear-cut career path after training programmes in mental health.

Furthermore, the current scope of European training programmes in research or clinical mental health is not sufficiently known, and there is often little indication of how many disciplines are covered by any available courses related to health. For example there are differences between countries regarding the contents of psychiatry, psychology, nursing and paramedic courses. In some countries medical schools offer mandatory or dedicated research training but this is not the case in others. The content of medical research training differs considerably across Europe – at times encompassing mental health, at times not. Indicators of the quality of

the programmes should additionally be developed. A simple inventory of the various forms of mental health training across Europe, even if it is still needed, would not be sufficient here.

While it has often been advocated and supported that a minimum of research training should have been mandatorily performed before an individual is able to enter into an academic career, this state of affairs is not the case in all EU countries. Academic appointments should also be based on publications in European countries where this is not currently the case. This obligation would contribute to reducing the differences of research training and performance between European psychiatrists. At the same time, future research training should be concentrated on the quality and excellence of the researchers more than on their quantity.

In general, research in public mental health lacks critical mass due to an inadequate volume of researcher training and capacity building, resulting in an imbalance between medical research and public mental health research. Dedicated journals are lacking, which contributes public mental health research being less widely disseminated than it otherwise might be, but there are also other structural issues at work. Owing to rising workloads and increasing levels of responsibility, it is more and more difficult for mental health professionals to find time both for research and clinical practice. More generally, the question has been raised whether or not physicians should continue to pursue a dual research and clinical practice career. On the other hand, it has also been highlighted that the gap between clinical practice and research must be reduced; implicating mental health professionals in research seems to be a meaningful way to facilitate the required knowledge transfer between practitioners and researchers. Though it would not be practical or relevant to give highly detailed training on the methodology of research to each clinician, every European practitioner should ideally have consistent training in knowledge transfer and be able to understand and implement evidence-based medicine outcomes in their day-to-day practice. Clinicians should be able to be confident in the value and impact of the care they provide, and as such there is a need for compelling evidence. Researchers, together with service users, relatives and clinicians, should be able to develop services that use good measures to monitor treatments, because it is useful and beneficial for everybody. Taking part in research should be an accepted and routine part of the use of mental health services, as is currently the case in e.g. cancer services. Without the ability for clinicians and health workers to be able to understand, discuss and implement evidence-based medicine and interventions (without necessarily having to conduct such research themselves), the evidence gap between research and practice will only widen.

It bears mention in such discussions that funding is still very limited, and there is no international fund dedicated to mental health. In the context of the economic crisis, national research funding has decreased, and within the EU research has to compete with other EU priorities. However, compared to the disease burden represented by mental disorders, research in mental health is not sufficiently funded in comparison with other health fields. It would be particularly important and interesting to deepen the investigation on the payback of mental health research, especially in periods of economic crisis. Research highlighting the currently lacking areas of health economics that would make the case for the cost effectiveness of investing in mental health research is identified in part above. However the lack of funding is also due in part to the prevailing problem-focused (i.e. 'disease-focused') paradigm in mental health. Published research tends to be repetitive: there are only small areas where there is disagreement or where nobody has done research. Methods and strategies are needed to stimulate innovation and creativity, and to encourage unconventional research. Moreover, these are needed on the part of researchers as well as policymakers. Reviewers may be more critical of unconventional research, and this obstacle to innovative research needs to be overcome. Having said this, and even though researchers have to be aware of societal issues and priorities expressed by policymakers, innovations cannot be prescribed.

There is a need for programmes and funding to encourage research that is not 'more of the same', including funding for proof-of-concept pilot studies with lower probability of success. In the US for example, foundations provide specific funding for studies with high risk and low probability of success, which if successful can then apply for conventional grants. These are not large grants but are sufficient for proof-of-concept pilot studies. Alternatively, mental health research may have to demonstrate its wider applicability, for example showing the potential of mental health to impact physical health. An obvious shortcoming of this latter approach is that

it is often difficult, if not impossible for research in its early stages – such issues have made FP7 requirements more and more difficult to meet. FP7 calls have proven to be too specific and too ‘top-down’ to foster innovation in many instances. A useful and viable alternative here would be for researchers to be more able to propose projects themselves with less strict conditions. This therefore again highlights the importance of flexible funding for early and proof-of-concept research. Reducing regulatory barriers for conducting research in Europe (e.g. pharmacological research) may also serve to encourage innovation, but such steps would obviously come with varying levels of ethical concerns.

Including Stakeholders in Research and Coordinating Focus

Of course the role of policy in facilitating, guiding and shaping research goes beyond questions of funding. The dialogue between researchers and policymakers – though extremely important – is not the only dialogue that needs to be encouraged in the area of mental health. Individuals with mental health problems, their relatives, professionals, the public and decision-makers additionally need to contribute more to the discussion of what directions mental health research now needs to take. Again there is a need here to take a Europe-wide view for the sake of comparability and to maximise the strength and usefulness of mental health research and the resources it draws upon. For instance, research networks can go some way to harmonising clinical research in Europe, but common European research guidelines developed at the policy level – if conducted correctly – could be invaluable. Further, any research strategy should reflect strategic priorities of mental health policies, such as the forthcoming WHO European mental health strategy – provided of course that these mental health policies have been based on appropriate evidence.

However there is currently a lack of communication between the research community and the EU Directorate General for Research and Innovation, in the sense that researchers are not sufficiently implicated in the set-up process of calls. Though in principle calls are supposed to be created together with researchers and using a bottom-up methodology, some calls appear out of step with the current state of research, or with current mental health priorities. Other topics have not been covered by calls for a long time. Though it may be possible to bring research topics to the attention of the EU Directorate General for Research and Innovation (especially through the National Contact Points), existing processes for doing so are perceived by researchers as requiring too much time, and entailing excessive administrative burden. Fast and flexible funding processes should be developed in order to perform rapid research when necessary and relevant.

There is a general feeling among researchers that research funding is decided by administrators and not enough by researchers. At least part of the reason for this is that researchers are not competent in ‘lobbying’ their cause within the system as it stands. There should be more visible consulting processes or ways for researchers to voice their research questions and wishes. The methodology of calls for research has also been criticised on the grounds that it is too time-consuming and expensive. Furthermore, though EU processes of evaluation and funding control are necessary, these are currently too rigid. It is difficult to know exactly a research budget will be spent over a period three years, and so more flexibility should be introduced in the allocation of the money. Due to the particular funding modalities – i.e. mainly through projects – concerns have also been raised about the instability of research careers. After generally long studies, researchers are hired through repeated fixed-term contracts with few guarantees in term of salary and career. This job insecurity could be reduced by increasing the part of core funding in research, at the national and European levels. However this is an issue that varies in its extent across Europe (due to differences between institutions and research infrastructures across the EU), and so priority should be given here to those areas identified as having the least stable career prospects.

ROAMER List of Priorities for Mental Health and Well-Being Research

The priorities for mental health research listed below are structured such that they begin with research at the population level, becoming gradually more specified to the individual level, on to biological and other basic research, and then finally outlining the necessary research capacities and infrastructures to realise these needed research advances. Proposed advances are grouped thematically into 5 general headings. The order of presentation does not reflect to the priority or prominence assigned to any given research advance.



A. Supporting Mental Health for All

1. Research is required into the **quality of mental health services across Europe**. This requires quantitative and qualitative interdisciplinary research across countries with different health systems and cultures, to investigate how these systems affect service users and population-level mental health outcomes.
2. Research is required into patient treatment and intervention preferences, as well as how to **support and empower people with mental health problems, their families and other carers** to improve well-being. The evidence base, particularly for younger carers, needs to be strengthened and the disproportionate burden of care that falls upon women should be investigated. Research on continuation of non-effective treatments should harness the involvement of healthcare staff and service users.
3. Research is needed that focuses on **improving access to mental health resources**, in reducing inequality in service provision, and in encouraging health systems to make better use of community assets. Implementation research is a useful but under-utilised tool in ensuring access and adherence to service users' preferred, tolerable treatments and interventions. In addition to disorder prevention, services should aim to promote mental health and well-being.
4. There should be **more research into preventative measures, resilience factors, and buffer interventions** for positive mental health and well-being, as part of a wider focus on positive mental health and well-being. This requires investigating both societal (e.g. economic crises) and personal factors (e.g. lifestyle and behaviour change). Novel interventions research (e.g. eHealth and self-management of disorders) will elucidate these factors and their relationship to each other – for instance relationships between psychopathology and subjective well-being.
5. There should be a **focus on developing novel, safe, and effective interventions** using new scientific and technological advances (e.g. Technology-enabled interventions). Interventions and diagnoses will be based on developments in mental health research. Studies are required of applications for routine health care settings, investigating increasing adherence and evaluating new interventions as they are implemented. This research needs a participatory approach including target groups together with research on translation into policy and wider dissemination.

B. Responding to Societal Values and Issues

1. **Research is needed that uses economic approaches to measure benefits** in interventions for the promotion and protection of mental health and well-being across Europe. This should range from low-level behavioural economics (e.g. behaviour change, motivation/incentives), to determining the cost-effectiveness of different ways of funding, regulating and organising mental health services. These analyses are especially needed to investigate the costs of comorbidity.
2. Research **outcomes should be expanded to include useful new indices of wider social and economic outcomes** (e.g. employment, housing, education, social life, happiness), and interventions need to be developed that directly target these. Policy implementations (including those addressing e.g. education, parenting and schooling) and any changes to the delivery of care must be robustly evaluated, for instance by systematic natural-experiment methodology. There especially need to be closer links between policymakers and researchers with regards to evidence-based policy in mental health and well-being.
3. There is a need to address the **international, social and cultural context which results in mental health disparities, with especial reference to under-researched groups such as at-risk, disadvantaged, or marginalised populations**. These contexts include economic inequality, lifestyles, population well-being, effects of public and economic policy, ethnicity, religion, and nationality.
4. There needs to be more research into **protection of the rights of people with mental health problems, including a consideration of the effects of stigma and discrimination**. In particular the potential reciprocal relationship between stigmatisation (including self stigma) and mental ill health can be addressed in evidence-based interventions, especially randomised trials. This should lead to research and interventions aimed at increased social inclusion, as well as secondary stigma effects on carers.

C. Life Course Perspective of Mental Health Problems

1. There needs to be a greater focus on the **aetiology, development and progression of symptoms, syndromes and well-being across the lifespan**. This requires research on conceptualising developmental risk and resilience factors and outcomes on various levels, including proxy and intermediate outcome measures (e.g. transcription, gene-environment relationships, epigenetics, stress exposure, cognitive control). Potential causal associations between mental health and cognition should be considered in terms of ageing, especially how this might inform interventions.
2. **Analyses of existing data sets should be carried out, as well as new longitudinal and clinical cohort studies** (with nested RCTs), including children and older adults. This would be especially valuable in pan-European collaborations, so that larger cohorts would be formed. In addition a focus on significant or stressful events, transitions (e.g. return to work, adolescence, transition to older age, suicidal behaviour) and chronic issues across the life-span (e.g. absenteeism/presenteeism, employability of individuals with long-term illness or disability) with regards to mental health and subjective well-being would be useful.
3. **Research and interventions for children and adolescents** (including parenting) are crucial to understand how early experience and wider social influences affect health over the life-course, including identifying risk factors. This research will require age-appropriate measures and should guide the development of new, early and preventative interventions to help improve outcomes in these populations.

D. Research Towards Personalised Care

1. Research is required into the **aetiology and mechanisms of mental disorders, mental health and related behaviours** through use of ‘-omics’ and bio-markers (adapted from validated biological/animal models) and other basic (psychological and social) science. This research should be directed towards developing novel interventions and understanding their therapeutic mechanisms.
2. There needs to more research into **diagnostic strategies and the stratification of mental disorders**, discovering valid subtypes and individual variations with differential treatment outcomes. These should be based on neurobehavioural or cognitive markers and other validated empirical findings – rather than commercial or professional interests – including findings at the (epi-) genetic level, through endophenotypes, neuroimaging, experimental psychobiology, and identified progressive stages of disorders.
3. Research is needed concerning the **comorbidity of mental disorders with one another, and with somatic disorders**. Improvements in understanding can only be achieved through adhering to agreed common standards (e.g. outcome measures, methods of measurement), and addressing comorbidity in terms of progression, underlying physiological and cognitive mechanisms, and risk factors. Clinical research is required for a thorough consideration of the treatment implications for comorbidity.
4. Research on **standardising methodologies for mental health treatment research** (including economic analysis) is essential to ensure better design of randomised trials of pharmacological, psychological and combined and complex interventions. Where appropriate, this would involve close working with industry in a pre-competitive framework. Better understanding is needed of the mechanisms of treatment response (e.g. to CBT), and of whether alternatives to randomised designs may be possible for such research.

E. Building Research Capacities

1. **Shared databases** (bio-banks, specialist cohorts, mental health registries, status surveys, normative data of subjective well-being etc.), should be strongly encouraged across Europe. These should be open access, and as visible as possible. Research outcomes, databases and terminology (e.g. 'well-being', 'mental health', 'personalised care') should be standardised to facilitate data-sharing and collaboration.
2. **International and interdisciplinary research networks** should be developed and maintained for knowledge exchange and rigorously standardised and coordinated research training and practice. Networks should make use of common research infrastructures, including genetic and neuroimaging resources. Specifically collaborative research and large European initiatives should have access to adequate funding.
3. There needs to be a greater focus on a **strong and interdisciplinary empirical research base in mental health**, and consideration of mental health issues in training courses such as public health and epidemiology. Career opportunities should be created for academics with research training, with funding infrastructure that can quickly respond to emergent issues, as well as sufficient long-term funding dedicated for mental health research.
4. **Stakeholders need to be involved in research, and this includes individuals with mental health problems.** This could be achieved by greater transparency and horizontal organisation in mental health research strategy and agenda-setting, with service users identifying problems and proposing research outcomes. Basic research training should be provided to all healthcare professionals.

ROAMER Justifications for Mental Health and Well-Being Priorities in Europe

Justification Criteria

Identified priorities for the most pressing and promising advances in mental health research in the near future were justified according to four common dimensions of criteria. These priorities have been grouped into common themes, and are presented below together with these justifications. The four dimensions are as follows:

Efficacy/effectiveness: Likelihood that the advance results in an effective intervention to diminish the appearance of a disorder or its consequences, or to solve a concrete problem.

Impact/deliverability/economic benefits in Europe: Likelihood that the advance could be provided to the Europeans and impact on the society (i.e. to decrease disease burden, to improve the well-being, or to produce economic benefits).

Answerability/feasibility in Europe: Likelihood that the advance can be achieved in Europe (lead to new knowledge, enabling development or planning of an intervention).

European research strength: Relative competitiveness of Europe to other regions to achieve and implement the advance.

A. Supporting Mental Health for All

A.1 Research is required into the quality of mental health services across Europe. This requires quantitative and qualitative interdisciplinary research across countries with different health systems and cultures, to investigate how these systems affect service users and population-level mental health outcomes.

Efficacy/effectiveness:

Mental health services are highly needed but high-quality intervention research on governance, funding mechanisms, organisation and delivery of mental health care is scarce. This encompasses all levels of services, including inpatient and outpatient care, community care and peer support, among others. Randomised controlled trials are crucial for such research, but other research designs should also be promoted and developed to evaluate and develop service provision. Research is needed on mental health services programmes that have potential for major public health impact, such as deinstitutionalisation programmes, universal promotion and prevention programmes, primary care capacity-building programmes and programmes that improve access to mental health services.

Impact / deliverability / economic benefits in Europe:

The role of clinicians and healthcare professionals greatly influence mental health services. Communication skills, attitudes, and motivation of health workers may improve outcomes, and as a result there deserves to be more research into this. It will be necessary at the policy level to explore innovations in the organisation and delivery of healthcare. Such research is also vital if Europe is to meet the demographic and economic challenges that it will face in the future. Re-organisations of healthcare may be forced on Europe by external events (e.g. ageing populations), but policymakers will need models to consider, and evidence upon which to base their suggested health system innovations.

Answerability/feasibility in Europe:

A typology of healthcare delivery systems across Europe and elsewhere will be a helpful research contribution. This could be coupled with, for example, targeted investigations into the relative benefits of community care versus inpatient care. However it is essential that mental health (and the issues associated with problems in mental health) not be overlooked as these debates are conducted. What is needed, in particular, are instruments that can reliably measure not only satisfaction with the health care system, but the impact of health care encounters on the subjective well-being of people with mental health needs. These same instruments would also be useful in determining the relationship between social investments in mental health services and the general well-being of the population, in order to support additional policy innovations. With an appropriate sampling design – including cohorts from different age groups and responding to different economic, social and cultural differences – it would be possible to form the basis for a multi-centre study to address this central question across Europe.

European research strength:

There are a number of European groups already looking at mental health in Europe at the systems level (e.g. MHEEN, ASPEN, ENMESH), highlighting the aptitude of Europe for this kind of research. The infrastructure of healthcare systems in Europe allow for the collection of systems-level data at the national level in a way that is not possible with more privatised systems of healthcare. Furthermore the ability to compare these national systems-level data across international research groupings is perhaps unique to the European research community. Europe additionally has pioneering research initiatives led by service users, which stand to provide singular and extremely important input to the design and considerations of metrics for the quality of mental health services.

A.2 Research is required into patient treatment and intervention preferences, as well as how to support and empower people with mental health problems, their families and other carers to improve well-being. The evidence base, particularly for younger carers, needs to be strengthened and the disproportionate burden of care that falls upon women should be investigated. Research on continuation of non-effective treatments should harness the involvement of healthcare staff and service users.

Efficacy/effectiveness:

Research is needed to overcome methodological gaps regarding the inclusion of patient preferences by study designs. Specific gaps include the lack of time for the explanation of trials to patients, a lack of consistency in the measurement of preferences, and insufficient coverage of research into patient preferences. There needs to be a concerted effort to build this kind of information and explanation into trials, rather than treating patients as passive subjects of interventions. There needs to be a more dynamic incorporation of insights and input from individuals with mental health problems (as well as their families and carers) with regards to treatment. For instance, research needs to take account of how best to address the specific impairments experienced by individuals, going beyond generic interventions for a given diagnosis.

In order to do this, research needs to develop or identify standard measures of preferences, which will allow for more consistency in the measures of preference used. More generally, given that considerations of patient preferences are still (unfortunately) rather novel, there need to be efforts to develop standardised designs for preference studies. Once these standardised measures of preference are developed, research can progress to examining the impact of patient and provider preferences on the effectiveness of different psychotherapies.

Impact / deliverability / economic benefits in Europe:

One of the most prominent issues addressed by patients' groups and recent international statements of the human rights of persons with disabilities and health problems is the central importance of preserving and promoting autonomy, both within and outside of the health sector. The impact of patient preference research would be felt not merely in increasing participation in and compliance with mental health interventions, but also in the development of mental health policies designed to further patient autonomy.

Evidence of demographic and economic changes across Europe make it clear that more and more reliance will be put on informal care, typically by female family members. The available research suggests that care-giving involves a considerable loss in happiness; however not all care givers show such a decrease. There is as yet little indication on the reasons for these differences. More comprehensive research methods will produce results addressing issues like these, with greater relevance to community contexts. This will support more rational decisions by public health policymakers.

Answerability/feasibility in Europe:

Universal healthcare systems in Europe afford access to wide and representative samples of patients, with diverse yet close contact between patients and service-providers at various levels. Europe is also home to a number of patient rights and advocate groups actively encouraging opportunities for patients to have greater autonomy, and have their preferences given stronger and more active consideration. This existing infrastructure allows for the implementation of plans to introduce or expand patient preference research. It provides numerous, multifaceted bases from which research into patient preferences may be developed and maintained.

Extensive European research on caregiver socio-economic burden has typically ignored the issue of positive mental health and well-being. In future, however, European social services will be required to promote subjective well-being and prevent mental health problems in this important population of informal caregivers, and it will be essential to base these policy initiatives on sound evidence.

European research strength:

European values and EU fundamental rights provide a basis for an inclusive approach to public mental health research. Europe is a leader in the area of mental health human rights. Research building on this expertise in the psychological determinants of empowerment and related notions such as locus of control and autonomy – and in particular the linkages between these factors and subjective well-being – is a key European priority.

A.3 Research is needed that focuses on improving access to mental health resources, in reducing inequality in service provision, and in encouraging health systems to make better use of community assets. Implementation research is a useful but under-utilised tool in ensuring access and adherence to service users' preferred, tolerable treatments and interventions. In addition to disorder prevention, services should aim to promote mental health and well-being.

Efficacy/effectiveness:

Prudent use of mixed-methods approaches in public mental health research will support the attainment of research results which are generalisable, and feasible in public health practice. This is especially true for a better understanding of aspects of treatment such as its salience, acceptability and appropriateness. A practical example of this approach would be in the context of implementation studies on process of delivery. Additionally barriers to access of adequate mental health services currently disproportionately affect disadvantaged groups, including older or social isolated people, and marginalised cultural groups.

Population-level mental health interventions need to build on individual and community assets. Research on how to best mobilise these assets by public engagement and active participation of target groups is the important next step in the evaluation and implementation research of public mental health interventions. This applies regardless of whether the field is mental health promotion, prevention of mental health problems, delivery of mental health care or policy actions.

Impact / deliverability / economic benefits in Europe:

Research on policies to ensure equal opportunities for everyone to realise mental well-being has high policy relevance, especially when considering that across Europe there are huge inequalities in mental health between population groups. It is not enough to develop effective treatments or interventions – these must be effectively implemented and made accessible to all who require them. Appropriate research will greatly facilitate such a process.

Effective mental health services result in lower mortality rates, higher longevity, less medical expense and fewer medical adverse events. Improving efficiency of mental health systems will increase system affordability and accessibility. Removing barriers in access to mental health and establishing universal access are key objectives in doing this. Effective mental health services, together with interventions that improve mental health and reduce mental health-related morbidity, will have major impacts on the health of Europeans.

Answerability/feasibility in Europe:

European mental health systems face common challenges in the need to shift resources upstream, improving access and integration. The mental health systems in Europe are highly developed but fragmented, and thus there is both a need and a potential for research on integrated service provision models. The European community mental health tradition forms a basis for implementation research focusing on mobilisation of community assets and avoiding unnecessary and possibly harmful medicalisation of mental health challenges.

European research strength:

Europe is strong in research on socio-economic determinants of health and access to services, and there is a growing awareness of the need for action to reduce health inequalities. There is a European commitment to public health systems and reduction of social inequalities in health. There are European research groups within this field (e.g. ENMESH) and their work can be built upon and further developed.

A.4 There should be more research into preventative measures, resilience factors, and buffer interventions for positive mental health and well-being, as part of a wider focus on positive mental health and well-being. This requires investigating both societal (e.g. economic crises) and personal factors (e.g. lifestyle and behaviour change). Novel interventions research (e.g. eHealth and self-management of disorders) will elucidate these factors and their relationship to each other – for instance relationships between psychopathology and subjective well-being.

Efficacy/effectiveness:

Following considerable speculation on this issue, there is some empirical evidence for the causal role of subjective well-being in recovery from mental health problems. Though well-being is under-researched in light of this promise, early evidence also suggests its effectiveness in protecting against future mental and physical illness, and increasing longevity, healthy life years, and productivity. These effects should next be replicated in long-term follow-up studies analysing across the full lifespan.

Application requires knowledge of which subgroups these effects are most pronounced in. It is important to integrate the perspectives of mental health resources and protective or resilience factors in public mental health research in order to gain full understanding of population mental health. Interventions to promote public mental health and well-being reach wide audiences from being implemented in workplaces, schools, and other information centres that can reach individuals of all (working and non-working) ages.

Shifting viewing research and interventions from 'treating symptoms' will improve outcomes as part of a wider paradigm shift to personalised and holistic treatment of individuals as situated in wider somatic, social and environmental contexts. Promoting research into the utility of a Collaborative/Integrated Care approach to managing mental health problems (away from the tradition of institutional care) would also fit well with this agenda.

Impact / deliverability / economic benefits in Europe:

An emphasis on positive mental health reduces stigma and makes mental health a matter for everybody. Mental well-being is closely connected to healthy life years and productivity of Europeans. Some policies and programmes to improve mental well-being are already being implemented in European countries, showing positive outcomes and economic benefit. There is a great need for more research, development and evaluation to enhance impact and deliverability of these programmes. This includes defining society's mental capital and other community determinants of mental well-being.

It is essential to increase Europe's evidence base regarding the impact – and cost-effectiveness – of public health interventions designed to improve subjective well-being. The evidence base also needs to take account of the impact of improving subjective well-being on mental health outcomes. This research provides the important link between recent European endeavours to use subjective well-being as a general population indicator of policy effectiveness, and the urgent work that is required to investigate effective public health promotion measures targeting mental health. The impact of this research would be profound, both clinically and from a public health perspective. It would not only increase scientific knowledge of the effect of subjective well-being on mental health, but would also assist in the development of suitable interventions, whether these are generic public health interventions, or targeted clinical interventions. This important research provides a crucial input into policy decisions. Translational and implementation research are critical priority research areas in relation to both mental health promotion and prevention interventions. Put simply, the facilitators and barriers in moving from 'knowing' to 'doing' need to be identified.

Answerability/feasibility in Europe:

The need to reform medically oriented public mental health is widely accepted in Europe, and the user-defined recovery concept has gained widespread acceptance. Many of the leading centres in positive mental health and well-being research worldwide are located in the EU. Europe is thus well equipped for the development of concepts and answering questions about the role of positive mental health in preventing mental health problems and promoting well-being. These are among the most important unresolved issues in public mental

health research. Existing national mental well-being surveys (e.g. in England, Iceland and Scotland) form a starting point for pan-European measurement and monitoring of mental well-being.

Retrospective research on past public health interventions would be the most feasible start, but this research needs to be complemented by more prospective investigations. Using existing experience, it would be possible to design and perform randomised controlled trials on subjective well-being interventions, in order to empirically substantiate the impact of these interventions on the well-being of mental health patients. In addition, meta-analyses of such interventions could be carried out, provided that first all available data are presented in a comparable way in a findings archive. Cost-effectiveness analyses can then be performed, suited to the nature of the intervention.

European research strength:

There is certainly European expertise in this area that can be channelled to research targeting subjective well-being interventions. The positive mental health perspective has largely been conceptualised in Europe, and many of the leading centres in positive mental health and well-being research are located here. Several existing national or regional cohort studies in the field of mental health provide unique research skills and databases for long-term cohort research, which will best inform the impact of early detection and preventative strategies. In northern Europe, well-developed health registers and unique identification codes provide unique and cost-effective opportunities for register-based long-term cohort studies, both within and across countries.

A.5 There should be a focus on developing novel, safe, and effective interventions using new scientific and technological advances (e.g. Technology-enabled interventions). Interventions and diagnoses will be based on developments in mental health research. Studies are required of applications for routine health care settings, investigating increasing adherence and evaluating new interventions as they are implemented. This research needs a participatory approach including target groups together with research on translation into policy and wider dissemination.

Efficacy/effectiveness:

Research should address questions about real world service implementation, conducting explicit effectiveness and transfer trials to ensure the validity of research findings when they are implemented in practice. Techniques of knowledge translation and evidence-based policy development are essential tools for moving research into the domain of practice, both at micro (clinical) and macro (policy) levels. Furthermore, translation is not a unidirectional process, and there needs to be a constant dialogue between research, practice and implementation, including back translation.

Research about these techniques is greatly needed, especially as it relates to accumulating research about subjective well-being into practice across the mental health sector. Organisation of eHealth services can improve access to and compliance with mental health care. However, evaluation research, dissemination research and research on the public mental health implications of these emerging new technologies is still lacking. It is important to study the uptake and implementation of new interventions developed by researchers and also why some interventions disseminate widely but many other effective ones do not.

Outcome measurement can be improved by implementing new forms of technology-assisted clinical tools (e.g., virtual reality applications or minimal contact therapies such as telepsychiatry) and by supplementing traditional treatment modalities with psychometric feedback tools. The multi-modal data collection possibilities offered by mobile phones (e.g. accelerometer, GPS, audio, contact with other phones) with personal information from the user (e.g. Where are you? What are you doing? How is your mood? How did you sleep?), allow for assessment mental health problems in real time, during day-to-day life.

Impact / deliverability / economic benefits in Europe:

There is a need for improved models of dissemination and transfer to routine care that take into account the needs of clinicians, individuals with mental health problems and their families. Appropriate translation of state-of-the-art research into interventions will improve outcomes and ensure the most effective treatment possible. For example, the implementation of existing tools that predict personalised risk could serve to greatly increase the effectiveness of interventions.

Rigorous evaluation of the implementation of novel interventions stands to improve understanding of how variations in usual care practices affect patient outcomes. It further allows for the integration of constructs of organisational culture and climate into services and intervention research. Together these developments will aid in designing culturally and socially adapted interventions. There is a need for innovative implementation, including holistic approaches, empowerment-based strategies and use of virtual social network implementation support. The development of new treatments and interventions also stands to positively impact on European growth and job creation, especially in the ICT sector in the case of eHealth interventions.

eMental health has the potential for a major impact on the mental health of Europeans. It may be possible to substitute cost-effective eMental health applications for more expensive face-to-face interventions. eMental health interventions have the potential to become successful commercial products. It is also important to get more insight into the mental health impact of increasing use of the internet and mobile media. eHealth platforms may also be useful in improving healthcare professionals' adherence to evidence-based guidelines, given adequate research into such approaches. If successfully implemented, this would improve both the effectiveness and cost-effectiveness of care.

Answerability/feasibility in Europe:

European researchers are well-versed in both the need for knowledge translation and its methodologies, although most of this research has been directed to biomedical results. There is an urgent need, however, to extend Europe's expertise in this area to the translation of results on the interaction between subjective well-being and mental health to practice. This requires experimental studies on a much larger scale than performed up to now. Public mental health interventions are contextual, and it is essential that research on intervention components is performed within the established welfare models of Europe. Strong public policies and well-organised public services in Europe form an excellent ground for universal promotion and prevention actions, as well as for identifying those in need of selective or indicated interventions.

Europe is a well-developed information society, with a high level of computer literacy and an abundance of innovative enterprises in the eHealth field. The potential for the Internet as a cost-effective tool to enable both social contacts and accessibility of various services and interventions is broad. Simultaneously, there is an evident risk of social exclusion and other inequalities if for example the older generations are not given the support they need in order to be introduced to these e-resources. This is a challenge that should be given attention and priority.

European research strength:

Existing European research creates the necessary empirical base for studies trying to determine the effects of components of interventions. There is a growing body of evidence on the effectiveness of mental health promotion and mental disorder preventative measures that have potential to be further developed and implemented in Europe. There is an existing pool of expertise in translation methodologies and clinical implementation research in European institutions. Some of the leading centres in eMental health research are located in Europe, and by joining forces a critical mass could be achieved.

B. Responding to Societal Values and Issues

B.1 Research is needed that uses economic approaches to measure benefits in interventions for the promotion and protection of mental health and well-being across Europe. This should range from low-level behavioural economics (e.g. behaviour change, motivation/incentives), to determining the cost-effectiveness of different ways of funding, regulating and organising mental health services. These analyses are especially needed to investigate the costs of comorbidity.

Efficacy/effectiveness:

There is general scope for increasing and improving the quality of country-specific economic evaluations of interventions to protect and promote mental health, and of treatments and support for people living with mental health problems. This includes improving information on the unit cost of resources for mental health. Research evidence is increasingly utilised in the organisation and management of mental health policy and care. However, the evidence is traditionally focused on clinical decision-making and research designed to support evidence-based policymaking in the public mental health field. Therefore focusing on the organisational and managerial concepts as well as financial mechanisms for funding of service provision is warranted.

Impact / deliverability / economic benefits in Europe:

Ineffective mental health systems, management models and financing mechanisms burden both the individuals in need of mental health care and wider society. Costs of ineffective healthcare systems are significant and these can be reduced by developing effective, evidence-based models to be applied at both clinical and policy levels for organisation and management of mental health care. In particular, use of economic approaches allows for considerations not only of the costs of mental health burdens, but of the *avoidable* costs given appropriate prevention and mental health promotion strategies. One pertinent example would be comparisons of the relative costs and efficacy of different forms of treatment in the long-term as well as immediately. For example, some psychological treatments may offset burden-of-disease in the long term, but this would not be accounted for by cost-benefit analyses immediately following interventions. Longitudinal studies are needed in order to show whether interventions to improve well-being have an impact on the health (both physical and mental) of the population, and whether these lead to reductions in healthcare expenditure, improvements in the labour market and economic benefits for society.

Answerability/feasibility in Europe:

Europe is already developing and implementing interventions to improve the well-being of the population, but the benefits of these interventions need to be evaluated. The use of economic techniques can help inform policymakers of the benefits of improving the subjective well-being of the population. Using existing experience, it would be possible to design and perform randomised controlled trials on subjective well-being interventions, or carry out meta-analyses of such interventions, in order to empirically substantiate their impact upon individuals with mental health problems. Cost-effectiveness analyses can then be performed, appropriate to the nature of the intervention. Meta-analyses examining the cost-effectiveness of different interventions and their implementation across Europe would first require that available data are presented in a comparable way in a findings archive – as outlined elsewhere in these recommendations.

European research strength:

There are well-established European research networks in this area and their work can be built upon and further developed. Europe is also home to research and policy groups dedicated to informing the cost-effectiveness of interventions increasing positive mental health and well-being at the population level. In recent years, networks focused on economic issues in relation to mental illness and well-being have formed to facilitate research in these areas across Europe, including the Mental Health: European Economic Network (MHEEN); Mental Health Economics European Network and REFINEMENT (Research on Financing and Quality of Mental Health Care in Europe).

B.2 Research outcomes should be expanded to include useful new indices of wider social and economic outcomes (e.g. employment, housing, education, social life, happiness), and interventions need to be developed that directly target these. Policy implementations (including those addressing e.g. education, parenting and schooling) and any changes to the delivery of care must be robustly evaluated, for instance by systematic natural-experiment methodology. There especially need to be closer links between policymakers and researchers with regards to evidence-based policy in mental health and well-being.

Efficacy/effectiveness:

An important dimension of the efficacy of public mental health is its utility in yielding relevant outcomes for public mental health, and this needs to be reflected in research. Natural experiments pertaining to this dimension include, for example, shifts in policy regarding families, schools, workplaces or communities. At present, rigorous evaluation of natural experiments is scarce, which leads to policy decisions frequently being based on uncertain assumptions. Better evaluation of policy actions and other natural experiments as well as effective knowledge translation is essential for building evidence-based policy.

There is a lack of dialogue between researchers and policymakers. It seems that European societies and decision-makers are not fully aware of the importance of mental health and well-being research. More direct links from empirical evidence to policy are vital to ensure the correct and timely implementation of significant research developments.

Impact / deliverability / economic benefits in Europe:

Formulation of robust and standardised measures of interventions and services as well as mental health and its determinants and consequences will be a major step forward for public mental health research. Good, valid measures are necessary in order to monitor the impact of policies and programmes and allow comparison across countries. As one example, educational outcome measures are necessary in efforts to compensate from missed educational opportunities resulting from experiences of mental health problems while in school or training.

Longitudinal outcomes of interventions are also extremely important in ensuring the safety and efficacy of prospective interventions. They offer the additional ability to identify detrimental downstream effects, which is not possible with cross-sectional analyses. High quality evaluation research will inform and guide health decision-makers to improve policies, including the effective allocation of scarce public health resources. This will make public mental health policy more transparent and accountable, as well as more representative of societal needs.

Answerability/Feasibility in Europe:

European countries are experiencing shifts in public policies which form natural experiments that provide unique research opportunities. The diversity of European public policies provides a rich soil for comparative policy evaluation research, involving two or more European countries. Existing measures of and attention to socio-economic outcomes in European society (as a result of economic crises) will facilitate the collection of these same kinds of outcome measures in relation to mental health interventions. Comparing the social and economic outcomes of mental health to these same outcomes resulting from physical health problems would also serve to contextualise findings.

Further research in the field of public mental health will lead us to European harmonisation of measurements, which will form a common base for European public mental health research that takes full account of burden of mental health problems upon society.

European research strength:

Considerations of social impacts are currently well-placed in Europe. These cohere with numerous research networks established in recent years that specifically consider wider social issues and outcomes surrounding mental health research (e.g. ASPEN, ENMESH).

European countries have stronger public health policies than many other countries, thus offering a wealth of natural experiments. Evidence-based policy and research into policy as it is implemented also cohere with moves towards science-based and evidence-based policy in recent years. Assessments of existing and already-implemented policies and interventions could build on current required evaluative measures, but enhance them with more rigorous scientific methodology. Inter-country variation in Europe creates unique opportunities for comparative and transferable policy evaluations. Several theoretically well-founded measurement tools have been developed in Europe and field tested across European countries.

B.3 There is a need to address the international, social and cultural context which results in mental health disparities, with especial reference to under-researched groups such as at-risk, disadvantaged, or marginalised populations. These contexts include economic inequality, lifestyles, population well-being, effects of public and economic policy, ethnicity, religion, and nationality.

Efficacy/effectiveness:

Health research – including mental health research – should be dominated by multiple perspectives to understand the complexity of health. For that purpose even the comprehensive biopsychosocial model needs to be extended. Public mental health research needs to involve all potential aspects (including cultural, economic, spiritual and relational aspects) and stakeholders, in order to adopt a more holistic view. This may be reflected in a wider conception of ‘interventions’ in research, including for example exercise, psycho-education, peer-to-peer contact, and self-therapy. Including new perspectives will strengthen the innovativeness of European public mental health research.

The validity and relevance of mental health research will be strengthened by a better consideration of the intercontinental as well as intra-European cultural aspects (e.g. ethnicity, nationality, religion and other value systems) of mental health. This is relevant in order to assess transferability of the evidence base for mental health policies and practice between countries.

Disadvantaged groups (e.g. minority groups, people living in poverty, institutionalised individuals) have low levels of mental well-being and high levels of mental health problems, but are often excluded from or do not participate in research. A solid research basis is needed to reduce social inequalities in mental health and to promote inclusion of lesser-heard groups in mental health research, in order to overcome the extant research gap. It has been shown that non-responders in population studies may often be those with most problems. Representative sampling will improve external validity of research, and highlight the needs and outcomes most relevant to disadvantaged groups, as well as potential solutions to such issues.

Impact / deliverability / economic benefits in Europe:

Existing research, although fragmentary, points strongly to the fact socio-economic factors show differential impact upon subjective well-being for individuals with and without mental health problems. Health at a population level (i.e. public health) is to a large degree influenced by how we organise our society and our economy. A broadened scientific scope will contribute to better public mental health actions and improve the mental health of Europeans. New models, interpretations and conceptions of mental health can underpin new approaches to promotion, prevention, care and rehabilitation.

The burden and costs of mental health problems in Europe are distributed unequally. Improving mental health in population subgroups with the worst mental health status will result in the greatest individual health gains. Emerging evidence indicates that interventions which promote social inclusion and mental health literacy can

lead to improvements in mental health. Poverty reduction, family and parenting support, and universal access to mental health promotion in schools have all been linked with reducing mental health inequalities.

Understanding cultural factors – such as people’s beliefs, attitudes and values – is crucial for transferability, adaption and reinvention of public mental health policies and interventions. It is increasingly important for individual countries to have the capacity to provide culturally sensitive societies and understand the impact of diverse cultures on mental health promotion and prevention initiatives.

Answerability/feasibility in Europe:

European social policy aims at social cohesion and inclusion. Being at the heart of European values, there is both a need and a willingness to pursue this track of research. Existing fundamental rights and anti-discrimination research provides a supportive base for improving the mental health of disadvantaged groups. The cultural diversity of Europe and its migrant population creates a rich starting point for conceptual and empirical studies of the role of culture in mental health. Strong European values of equity provide support to this research area, as well as cross-sector strategies of mental health promotion supported by the European Union.

Cross-disciplinary public health and mental health research programmes exist in many European countries, building a base for the inclusion of multiple perspectives. This forms the basis for considerations of societal and cultural impacts on mental health. Further, it is not enough to show that public health initiatives work; the contexts in which they work and the balance between costs and benefits need to be established. Retrospective research on past public health interventions would be the most feasible start, but this research needs to be supplemented with more prospective investigations.

European research strength:

There is a long European tradition of diverse research approaches (British empiricism, German hermeneutics and French post-structuralism) and today several strong research groups in both qualitative and quantitative fields of research exist. In Europe, there is a strong tradition of questioning biological reductionism and psychiatric positivism. The relevant expertise for all these methodologies is well-represented, and further research targeting well-being determinants can greatly strengthen the European global position in this area.

A number of European countries have good population and health registers. From a practical standpoint, these registers enable the linkage of health data and socio-economic data at the individual level. Some research of culturally sensitive mental health services, including trans-cultural psychiatry, is already based in the EU. Several Pan-European research projects have been implemented in this area. Research can build on existing European research networks, such as the COST network for migrant health research⁷

B.4 There needs to be more research into protection of the rights of people with mental health problems, including a consideration of the effects of stigma and discrimination. In particular the potential reciprocal relationship between stigmatisation (including self stigma) and mental ill health can be addressed in evidence-based interventions, especially randomised trials. This should lead to research and interventions aimed at increased social inclusion, as well as secondary stigma effects on carers.

Efficacy/effectiveness:

Universal fundamental rights of Europeans must include people with mental health problems on equal grounds, as well as the special rights laid out in the UN Convention on Rights of People with Disabilities. Involuntary psychiatric treatment and physical restraint and seclusion need special consideration. There is a

⁷ http://www.cost.eu/domains_actions/isch/Actions/IS0603 http://www.cost.eu/domains_actions/isch/Actions/IS1103

need to revisit psychopathology and associated concepts and to consider to what extent some symptoms may be secondary to stigmatisations, possibly leading to reclassification of some symptoms.

Impact / deliverability / economic benefits in Europe:

Research on discrimination and protection of rights of people affected by mental health problems and their family members is needed in order to avoid discrimination and protect fundamental rights. Such research (and its dissemination) will contribute to the removal of stigma surrounding mental health problems, and will advance public awareness of – and participation in – mental health promotion and prevention strategies. Mental health legislation plays a crucial role in addressing stigma and protecting patient rights, but such legislation varies across Europe. Promoting rights of people with mental health problems will support social inclusion and respect for fundamental rights of all Europeans.

Answerability/feasibility in Europe:

The respect for fundamental rights is a core value in the EU, and this is reflected at numerous levels of organisation. Advocate groups for the rights and wider representation of people with mental health issues are active in Europe. Such groups and movements would facilitate projects to reduce stigma and self-stigma, especially given the willingness such organisations to work with both policymakers and research centres.

European research strength:

Cross-European research networks on mental health legislation exist. As previously mentioned, patient empowerment and support is a key priority in Europe, and European countries are world-leading in addressing questions regarding the rights of people with mental health problems, as well as in service user led research that will inform critical issues relating to stigma. Furthermore, given current reconsiderations of symptom and disorder classifications, the timing is apt to try and incorporate stigma into models of mental health problems and potentially re-classify symptoms. Europe is especially well-placed to do this, perhaps uniquely, in light of the fact that it is not unilaterally adherent to any of the recently revised classification systems (i.e. DSM-5, ICD-11, RDoC).

C. Life Course Perspective of Mental Health Problems

C.1 There needs to be a greater focus on the aetiology, development and progression of symptoms, syndromes and well-being across the lifespan. This requires research on conceptualising developmental risk and resilience factors and outcomes on various levels, including proxy and intermediate outcome measures (e.g. transcription, gene-environment relationships, epigenetics, stress exposure, cognitive control). Potential causal associations between mental health and cognition should be considered in terms of ageing, especially how this might inform interventions.

Efficacy/effectiveness:

There is a strong need for improved models of and approaches to normal and abnormal functioning within a developmental perspective. In order to promote mental health and to prevent mental health problems, more knowledge is needed about risk and protective factors and processes, as well as developmental trajectories. Development does not end at adolescence, and needs to take into account older adults as part of truly comprehensive life-course research. As treatments improve and decrease mortality rates (e.g. for severe psychotic disorders), there are commensurate increases in morbidity which then need to be addressed. It is crucial to disentangle the effects of environment and genes on population mental health and resilience. Intermediate outcomes, appropriately assessed, are vitally important to good quality evaluation research.

Studies into the identification of intermediate outcomes should be designed so as to be able to assess and decompose relevant functional components of mediative processes, such as decision-making and cognitive control. These relationships (particularly the latter) are especially important to research in older adults. Epidemiological is also integral to life-course research. Models of these findings should also incorporate measures of behavioural, cognitive, and neural phenotypes. This requires prospective-longitudinal designs, validating developmentally sensitive behavioural tasks.

The exposome encompasses environmental exposures of great importance in psychiatric and somatic morbidity and mortality. Exposures to various chemical compounds have different effects during pregnancy (e.g. foetal alcohol syndrome spectrum; low-birth weight among smokers). In addition, lasting effects on brain development have been reported that are still poorly understood in humans, despite good documentation in rodent models. In general little is known about the effects of several chemical/medications/drugs over the life-course. It is therefore necessary to investigate the effect of these toxins on the exposome and its implications for transgenerational transmission, and its possible modulation by genetic and epigenetic factors.

Ultimately, the same neuroplasticity that engenders vulnerability to toxins also provides the potential for focused interventions during transitional periods. In order to supplement existing knowledge, research should include age groups which are underrepresented so far, such as the elderly. For example, research in older adults is currently confined mainly to dementia and Alzheimer's, though there is a need to additionally focus on the increased risks for depression, suicide and other issues in this population.

Impact / deliverability / economic benefits in Europe:

Use of intermediate outcomes increases the feasibility of lifespan research and facilitates achieving research results within a shorter time frame. Significantly, use of valid intermediate outcome measures will improve cost-effectiveness of intervention studies. Identification of possible intermediate outcomes is especially important when final outcomes are rare, like suicide.

Understanding the environmental prerequisites for mental health and well-being (including intra-uterine and family environments as well as parenting) in all age-groups is important in order to find ways of improving mental health and reducing the burden of mental health problems, beyond treating manifest disorders. Risk factors implicated by exposome research carry a large and diverse set of public health and economic burdens.

Understanding the mechanisms of such exposures will allow treatments that reduce their associated burdens and disabilities.

There is a need to investigate the contribution of gene-by-environment interaction factors to age-related resilience (or vulnerability) to mental disorder and well-being. Such investigations need to be conducted in different environments and populations across Europe. This is required to better understand the relation of individual vulnerability/resilience in adverse conditions as well as the consequences of a nurturing environment on mental health. Understanding the systemic organisation of vulnerability and resilience to mental disorders will allow for earlier treatment and more effective prevention, thereby reducing disability and unemployment. Such treatments will reap economic benefits by treating disorders earlier, when the burden of disease has not yet fully developed.

Answerability/feasibility in Europe:

Some existing European infrastructures may be recruited for lifespan research – in particular, family doctors and GPs could greatly facilitate research into families and parenting. More widely though, further collaborative networks will be required for research across the life-course. Multicentre studies measuring genotype and environment have been feasible in Europe and there have not been ethical impediments to such research. The identification of more associated genes, the use of genetic risk scores and genome-wide scores will in any case allow smaller, more feasible studies. Such studies will require massive datasets if current crude environmental measures are used, due to the modest effect sizes associated with single genes; development of better and more relevant environmental measures are sorely needed. On the other hand, as more and more genes are identified to be associated, use of genetic risk scores and genome-wide scores will bring much more power to such studies, permitting analyses in sample of reasonable size (i.e. from a single study rather than combined over multiple studies). Multicentre studies measuring aspects of the exposome along with genetic and epigenetic characterisation have been feasible and ethically approved in Europe.

European research strength:

Due to the high level of healthcare provision in Europe it is relatively easy to recruit large cohorts of individuals and examine epigenetics, genetics and neuroplasticity across the lifespan. Additionally, there are already Europe-wide biobanking initiatives that could be harnessed to gather the required data. Europe encompasses diverse socio-economic conditions and other environmental factors. It also encompasses populations with diverse patterns of chemical and other exposures, all of which are ideal for examining environmental and exposome effects. Several existing long-term studies in Europe with data on genes, early environment and mental health outcome create a promising starting point. It is also well-placed in terms of its high scientific capacities in measure development.

C.2 Analyses of existing data sets should be carried out, as well as new longitudinal and clinical cohort studies (with nested RCTs), including children and older adults. This would be especially valuable in pan-European collaborations, so that larger cohorts would be formed. In addition a focus on significant or stressful events, transitions (e.g. return to work, adolescence, transition to older age, suicidal behaviour) and chronic issues across the life-span (e.g. absenteeism/presenteeism, employability of individuals with long-term illness or disability) with regards to mental health and subjective well-being would be useful.

Efficacy/effectiveness:

Mental health is built in life-long processes. Long-term observational studies, as well as long-term outcomes of experimental studies, provide invaluable information about the distribution of mental health as well as determinants of mental health and mental disorders and their stability over time. Longitudinal and clinical cohort data are needed in order to establish the causal links between well-being and mental health. Since the effects will differ across subgroups, large panels are also needed. As well as efforts to increase mental health

promotion, routine data collections and long-term datasets will strengthen the knowledge base for the current (and lifelong) status of mental health and well-being in Europe.

Impact / deliverability / economic benefits in Europe:

Mental disorders are leading causes of burden of disease and productivity loss in Europe, and more widely. Mental well-being improves productivity and reduces healthcare costs. Long-term studies are needed to understand long term courses of mental well-being and mental illness. Linking research with European biobank data derived from genomics, proteomics and metabolomics provides unique possibilities to study biological as well as environmental determinants of mental health. The development and validation of an evaluation tool for suicidal risks based on an interdisciplinary biological, psychological and social approach is an important task, and a clear example application of the approaches recommended here.

Longitudinal research may also help to inform questions relating to chronic issues that cross-sectional studies may be insensitive to (e.g. absenteeism, long-term employability of individuals with chronic problems). These will also inform models of key life transitions associated with onsets or upturns in the rate or extent of mental health problems (notably adolescence and the transition to older age), which are proportionately under-researched at present in terms of the burden they represent to mental health and well-being, as well as in terms of educational and economic outcomes.

Answerability/feasibility in Europe:

The high level of health informatics in Europe, as well as strengths in cohort and parenting studies, builds the ground for longitudinal studies across the life-span. Several large-scale panel studies are already available in Europe and most of these involve measures of both subjective well-being and mental health. A first step is to locate and harvest this existing information. A next step is to add measures in future waves of ongoing panel studies. This approach is not only feasible but is a cost-effective and highly efficient use of existing research funding. Existing longitudinal studies, health registers and biobanks based in Europe provide cost-effective sources of data necessary for the proposed research. Universal public health and welfare structures in EU countries make long-term cross-country studies quite feasible in Europe as opposed to, for example, the US. Existing longitudinal administrative healthcare registers provide rich opportunities for collecting additional data in many EU countries.

European research strength:

Several existing national or regional cohort studies in the field of mental health provide unique research skills and databases for long-term cohort research. In northern Europe, well-developed health registers and unique identification codes provide near-perfect opportunities for register-based long-term cohort studies, both within and across countries. As a result of this, the necessary experience to conduct such cohort-studies also exists in Europe. Several centres across Europe are well positioned to take the lead in the development of suitably powerful longitudinal datasets, and developing this existing research capacity (especially in countries with lower research outputs at present) will have a direct impact on the clinical and public health usefulness of these data.

C.3 Research and interventions for children and adolescents (including parenting) are crucial to understand how early experience and wider social influences affect health over the life-course, including identifying risk factors. This research will require age-appropriate measures and should guide the development of new, early and preventative interventions to help improve outcomes in these populations.

Efficacy/effectiveness:

It is important to understand how to optimise child and adolescent mental health, not least because it is crucial for life-long development of mental health and strongly predicts mental health in adulthood. It is also important to understand how health and social services can best contribute to these efforts, alongside

population and community social and economic actions. Public policies supporting parenthood and parenting and ensuring safe and non-abusive family life are proven to be effective, and urgently need to be implemented. Day care and schools can additionally promote mental health and prevent mental health problems, given an adequate research base and infrastructural support.

Research into the understanding of mental health trajectories needs to cover the whole lifespan but in particular child and adolescence as the core high risk period for onset of mental disorders. There is a need to specify how vulnerabilities and stress influence critical developmental trajectories to poor health and specific mental disorders. There is also a need to understand why a substantial proportion of this age-group does not respond to evidence-based treatments, or are otherwise difficult to treat (e.g., young people with learning difficulties, children and adolescents with autism spectrum disorders). This should be approached together with finding methods of potentiating the effects of (or adherence to) interventions and treatments in children and adolescents.

There is a need to implement knowledge and expertise derived from developmental neuroscience research in order to establish links between childhood psychopathology and aberrant processes in the developing brain. This can then progress to explorations of whether and to what extent such processes can be corrected or modified by means of psychotherapy. Understanding the mechanisms of adverse early life experience and subsequent trajectories will permit more effective treatments, on the basis that treatments will be more targeted to those at most risk and delivered earlier in the natural history of a disorder.

Impact / deliverability / economic benefits in Europe:

The proposed advances are central to treating mental disorders earlier and ultimately preventing them and their economic and public health burden. Such a focus is also necessary to address the missed educational opportunities as a result of experiencing mental health problems in childhood or adolescence.

Targeted child and adolescent research will further improve the efficacy of already effective psychotherapeutic interventions. It will also help develop new psychological interventions targeting newly discovered vulnerability and protective factors of childhood psychopathology, and contribute to more developmentally sensitive and appropriate treatment programmes. Effective implementation of relevant promotion and prevention interventions by public services will support the mental health of children and adolescents. Interventions targeting the early years and parents have potential to foster long term effects and are thus also cost-effective.

Answerability/feasibility in Europe:

During pregnancy and early years of life parents and children utilise health services more frequently than in other life stages. This provides a good platform for implementing effective mental health promotion and mental disorder prevention. There is universal coverage of such services in many European countries, which further facilitates their use in public health research. Long-term birth cohort studies have been shown to be feasible in Europe.

European research strength:

Europe's healthcare infrastructure coupled with centres of excellence in genetics and epigenetics and diverse populations create an excellent environment to study the effects of early life experience over the lifespan. Europe has a strong tradition of child and adolescent psychiatry and a diversified social care system. There is a similar strong research tradition on parenting. These factors suggest the existence of relevant knowledge bases and expertise for the expansion of competitive child and adolescent research.

D. Research Towards Personalised Care

D.1 Research is required into the aetiology and mechanisms of mental disorders, mental health and related behaviours through use of ‘-omics’ and bio-markers (adapted from validated biological/animal models) and other basic (psychological and social) science. This research should be directed towards developing novel interventions and understanding their therapeutic mechanisms.

Efficacy/effectiveness:

Modelling how different (single or small chains of) molecules and cells act in concert will provide novel therapeutic targets, prompting the development of treatments with greater efficacy and effectiveness. Models of mental disorders that implicate a single molecular perturbation (e.g. the ‘dopamine hypothesis’ of schizophrenia) were useful in the development of prototypical psychiatric drugs, but they are insufficient as a basis for developing new treatments. Stratified treatment of mental disorders will require pertinent and reliable biomarkers. Better insight into mechanisms of vulnerability and resilience may help to identify genes and epigenetic modifications influencing critical pathways, serving to stratify patients by risk.

There needs to be a stronger emphasis on and integration of research of basic psychological functions (e.g. attention), processes (e.g. learning) and higher-order cognitive factors (e.g. decision making, impulsivity-control, motivation) relevant for healthy functioning and mental health, including their neurobiological underpinnings. There is a strong need to identify whether impairments of decision-making and cognitive control are consequences (by-products) of mental disorders, or if they are antecedent vulnerabilities – or even causal factors. A closer integration of computational models and psychopathology would provide an avenue towards explanations of how phenotypical expressions of mental disorders emerge from nonlinear interactions among underlying neurocognitive mechanisms, dysfunctional meta-control parameter settings, and aberrant systems interactions on different levels of analysis.

Pharmaceutical companies have been pulling out of psychiatric drug development. In great part this is due to attrition: for every compound that reaches market approximately ten others fail. Forward translation (into humans) of valid animal models will allow earlier ‘go/no-go’ decisions to be made about candidate compounds, reducing the attrition cited as a reason for withdrawal of pharmaceutical companies from neuroscience research. Moreover such models will facilitate the development of truly novel drug mechanisms, as opposed to simply improving the tolerability and toxicity of prototypical psychiatric drugs.

Impact / deliverability / economic benefits in Europe:

Identifying the active components (or combinations of components) of treatments will enable the development of more precise and economical public mental health interventions. Similarly, understanding the mechanisms underlying individual variation in mental disorders will allow for more effective targeting of treatments and interventions – including combinations of treatments or complex interventions. Economic benefits will also be reaped from treating mental disorders earlier, through understanding the systemic organisation of vulnerability and resilience, thereby reducing disability and unemployment. There are clear, unmet needs in terms of treatment-resistant disorders and inadequately addressed aspects of disorders (e.g. negative symptoms in schizophrenia). These carry heavy economic burdens (e.g. 80% unemployment in individuals with schizophrenia). Stratification of patients using biomarkers will bring about more intelligently focused use of healthcare resources.

Answerability/feasibility in Europe:

Biomarkers may be based on knowledge of the biological mechanisms of mental disorders and forward translation from animal models. There are already multicentre translational studies taking place in Europe involving translation between humans and animal models. Further collaborative networks will be required, but there are no ethical barriers to doing such studies. Large-scale studies examining putative biomarkers have

been shown to be feasible in Europe, typically employing multi-centre consortia. Research concerning cognitive markers is similarly feasible, again providing adequate collaborative networks are in place.

Social processes have been well charted over development at the behavioural level, together with some evidence of their relationship to mental disorders. What remains is to describe their neurobiological underpinnings. This will require a combination of developmental and environmental studies with integrative approaches which will provide the new knowledge with which to formulate research and clinical questions. More widely, social measures (e.g. interpersonal functioning, social support, relationship quality) can be incorporated into larger or ongoing projects as a complement to cognitive or behavioural measures. If these are planned ahead of time then this should not be difficult. Developments in social media and analyses that of the networks that these give rise to may also serve to enhance and facilitate such research. An interesting empirical challenge is whether the positive impact of social support and networks in traditional relations on mental health will be displaced by social media and what the balance sheet will be of positive and negative outcomes.

European research strength:

Europe has research strengths and appropriate centres of excellence spanning various academic disciplines, from molecular biology to epidemiology and public health, encompassing all the required components for developing research towards personalised and individual-focused medicine. Europe combines diverse and accessible populations with translational expertise in -omics, animal models, neuroimaging and neuropsychology, all of which domains have the potential to yield pertinent biomarkers. It has research strengths spanning the required levels of research, for example neuropsychological testing, animal work and neuroimaging.

Moreover, the existence of this experience and expertise forms the basis of research that can realistically be competitive on a world stage. Europe has advantages including excellent public data registries and isolated populations for study. Eastern and Central Europe in particular are resources that must be further developed.

Considerations of basic social science are currently well-placed in Europe. Research focused on identifying cognitive neural markers for aberrant social processing would be well-informed by Europe's wealth of research centres specialising in both biomarkers and social psychology, as well as its competitive research background in social neuroscience.

D.2 There needs to more research into diagnostic strategies and the stratification of mental disorders, discovering valid subtypes and individual variations with differential treatment outcomes. These should be based on neurobehavioural or cognitive markers and other validated empirical findings – rather than commercial or professional interests – including findings at the (epi-) genetic level, through endophenotypes, neuroimaging, experimental psychobiology, and identified progressive stages of disorders.

Efficacy/effectiveness:

Disorder classification and stratification, and related constructs in mental health must be based on verified empirical data. More effective treatment will require not only medications developed on the basis of biological and psychological mechanisms, but relating such mechanisms to practical diagnostic systems. Diagnostic classifications are still largely based on clinical observation and symptom reports by patients, rather than evidence from basic (biological, psychological or social) science. Consequently, treatment is aimed at merely reducing and managing observable symptoms. This inability to target the causes of disorder results in suboptimal response rates and adverse effects of medication.

Using multiple levels of assessment will improve response prediction for different individuals. Such different levels of assessment might include (epi-) genetics, neuroimaging; experimental psychobiology; objective behavioural measures (virtual reality EMA, actography, mobility); bio-, psychological and social-behavioural markers (e.g. emotional regulation, self-efficacy, executive function). This will allow research to identify

individual patient constellations associated with non- or partial response to treatment. Further, identifying the role of concomitant and prior appropriate or inappropriate treatment experiences will help refine personally-relevant treatment outcomes for different service users - i.e. determining what type and pattern of medication has an impact.

At a basic science level, failures in brain systems associated with social processes are core to a large number of mental disorders, though because they contribute only modestly to differentiation between ICD categories they often go undiagnosed. While the behavioural phenomena of such failures have been described, there is a need for developmental studies that chart these and describe their neurobiological bases, as well as integration of information from different approaches into unitary paradigms. Treatments targeting failures in systems for social processes have the potential for broad efficacy due to the pervasive nature of such failures across mental disorders. Given the centrality of social processing problems or deficits across various disorders, research more widely should also take care to include social and interpersonal indices as outcome measures.

Impact / deliverability / economic benefits in Europe:

Three important aspects form the basis for successful mental health research: 1) theoretical contention and clarity about competing arguments about generative mechanisms (explaining causal processes); 2) meanings attached to psychological difference in society (interpreting professional and lay knowledge); and 3) solid empirical data. It is in the interest of all Europeans that mental health concepts and diagnostic strategies are based on sound pre-empirical and empirical research, instead of being dictated by commercial or professional conflicts of interest.

Testing putative endo-phenotypes and respective neurobiological, psychological and behavioural markers could more reliably guide clinicians' treatment choices and improve the prediction of treatment outcomes. Further, an archive of such findings would be an invaluable resource to identify gaps in understanding of the association between levels of subjective well-being and different levels of psychopathology. Identifying the needs of neglected, or particularly vulnerable patient sub-groups would aid in incorporating matching treatment components. This is especially pertinent in regards to treatment-resistant and chronic disorders, which show some of the heaviest health burdens in Europe. Personalised treatment (treatment of mechanisms) is required to move part the current impasse of treatment resistance. Moreover, moving to a personalised focus on individuals in overcoming these issues stands to greatly impact wider social and economic outcomes, owing to the nature of the disorders and impairments most closely associated with treatment resistance.

Failures in social processes carry a heavy burden for the individual as well as society. Yet these are not well covered by the current diagnostic system, in spite of several obvious clinical phenomena – e.g. shyness vs. unsocial personality traits; callous/unemotional vs. reactive/impulsive aggressive behaviour. Thus there is great scope for delivering benefits in terms of reduced morbidity, mortality and economic burden.

Answerability/feasibility in Europe:

From the starting point of a findings archive, more focused research questions – relying on different expertise across European mental health research centres – could target research to specific disorders and stages of disorder in order to more effectively increase our clinical knowledge in this important domain. Reductions of exclusion rules in randomised controlled trials to include typical patterns of comorbidity beyond current diagnostic categories could help provide guidance as to what targets and procedures should be chosen in individuals who do not show prototypical manifestations of disorders. Such research would build up more representative and useful profiles of service users at the individual level.

Further research in this field will lead to a better European convergence of concepts and harmonisation of measurements, which will form a common base for European public mental health research. Europe provides a diverse population with near universal healthcare, allowing field trials in large cohorts of relationships between neurobiological mechanism and observed symptoms.

European research strength:

Europe has a strong tradition of theoretical research regarding concepts and meanings of mental health in many disciplines, such as sociology, anthropology, psychiatry and psychology. There are centres of excellence in the different disciplines required to study the concerted mechanisms that underlie and differentiate different disorders. Europe has other advantages, for example isolated populations for study such as on the islands of Sweden that are extremely useful for biomarker research. Relatively universal healthcare systems' facilitate large cohort studies across the lifespan. Such studies are ideally suited to the development of dynamic diagnostic criteria that reflect how disorders change across the lifespan, rather than representing static and monolithic lists of symptoms.

Europe is not yet fully committed to the US-based DSM mental disorder classification system (nor the new US rDOC system), which provides opportunities for exploring alternative conceptual systems. In terms of relating neurobiological mechanisms to clinical diagnoses, Europe carries the advantages of the open development process of ICD-11 and expertise in translational research.

D.3 Research is needed concerning the comorbidity of mental disorders with one another, and with somatic disorders. Improvements in understanding can only be achieved through adhering to agreed common standards (e.g. outcome measures, methods of measurement), and addressing comorbidity in terms of progression, underlying physiological and cognitive mechanisms, and risk factors. Clinical research is required for a thorough consideration of the treatment implications for comorbidity.

Efficacy/effectiveness:

There is a high level of co-morbidity between physical diseases and mental disorders, including substance use problems. Physical and mental comorbidity is linked to worse outcomes, lower access to care, and high mortality rates. This is especially pronounced for long-term health problems. Effective models for organising the care of people with complex needs will improve outcomes of people with comorbid health problems. There is a need to extend aetiopathogenic research on single disorders to typical comorbid constellations. There is also a need to examine the clinical implications of comorbidity with regard to treatment effects, side-effects, clinicians' judgement and patient preferences, and moderators (including developmental and socio-cultural factors) within appropriate clinical trial designs.

Findings like these will inform and improve models of mental disorders. Complementary computational models can help generate novel hypotheses about common mediating mechanisms across disorders. Future treatment strategies that target allostatic load (the chronic cost of stress on the body) have the potential for effectiveness across different mental disorders, and across mental and somatic disorders. Such treatment strategies would do well to target allostatic load at a number of levels, including its epigenetic, inflammatory and neuroendocrine aspects, across population, circuit/physiology, and molecular levels.

Such investigations will prompt more effective treatments of somatic and psychiatric disorders, and moreover a holistic, personalised approach to treating an individual based on somatic, mental and environmental factors. However, the lack of consensus about methodological standards in comorbidity research hampers progress and requires agreement on methodological standards at various levels of analysis.

Impact / deliverability / economic benefits in Europe:

The establishment of integrative health, sensitive to the context and needs of people with comorbid conditions, will improve health outcomes and productivity of Europeans. This may be enhanced by the integration of physical and mental health promotion. Understanding the interactions between mental disorders and physical health will have a positive impact on the leading causes of mortality in Europe (e.g. cardiovascular disease) as well as chronic, disabling mental disorders. Treatments that modulate allostatic load have the potential to address the most burdensome mental and somatic disorders in Europe (chronic mental disorders, cardiovascular disease, cancer).

Answerability/feasibility in Europe:

In spite of a generally acknowledged need for integration, Europe is still dominated by isolated service systems, creating a need for research that will support integrated care. A great deal is already known about hormonal and autonomic mechanisms that have been implicated in issues of comorbidity; what remains is a precise integration of the diverse mechanisms that mediate mental and somatic health. The identification of specific mechanisms will make developing new treatments targeting specific impairments associated with comorbidity feasible and ethical. Beyond this, there is a need for the development of clinical and research methods for the assessment and evaluation of comorbidity within mental disorders, as well as with regard to relationships to somatic disorders and social functioning/disability. Such methods may include for example the use of innovative approaches like clinimetrics, for which there is currently promising research being conducted in Europe.

European research strength:

Europe has research strengths encompassing public health and epidemiology, neuroimaging and physiology, molecular biology and genetics. In Europe, epidemiological research on occurrence of mental and physical disorders is of high quality, as well as mental health service research. This creates a fertile ground for addressing research issues that link epidemiology with mental health services. Europe has centres of excellence that span mental and somatic health, including expertise in studying hormonal, autonomic and other systems and which deliver healthcare to the entirety of their catchment population, allowing the recruitment of appropriate cohorts.

D.4 Research on standardising methodologies for mental health treatment research (including economic analysis) is essential to ensure better design of randomised trials of pharmacological, psychological and combined and complex interventions. Where appropriate, this would involve close working with industry in a pre-competitive framework. Better understanding is needed of the mechanisms of treatment response (e.g. to CBT), and of whether alternatives to randomised designs may be possible for such research.

Efficacy/effectiveness:

Improved principles and heuristics in evaluation need to be adopted in evidence-based psychological interventions. There also need to be thorough replications of the efficacy of existing interventions, both in absolute terms, and in ensuring the generalizability and transferability of interventions. In such evaluations in must be borne in mind that randomised controlled trials will not always be the most useful approaches, and appropriate alternatives need to be formulated in such instances.

Basic experimental research can be used to characterise commonalities and differences across disorders in terms of responses to psychotherapies, such as CBT. This will additionally help optimise core active components of such treatments. At present, in spite of high effectiveness and some progress in clinical psychological research, little is known about the mechanism of action of established methods of CBT and related psychotherapies. Research should look to establish the neural and neurobiological changes associated with changes induced by psychotherapies. This can then progress to questions of which factors and mechanisms are diagnosis-specific and which are shared or common factors that apply to a wider scope of clinical problems and diagnoses. Most importantly this will help identify what the core moderators and mediators of change are in patients that show effective change as a result of undergoing treatment. There are analogous methodological gaps in pharmacological trial designs that must be overcome in order to guarantee a robust evidence base for effective treatment and practice.

There is a general lack of understanding about the basic mechanisms of behaviour, as well the moderators or mediators of interventions. There is a limited understanding of the mechanisms of behaviour initiation, maintenance and change and their critical trajectories and determinants. We do not know whether mechanisms governing these aspects of behaviour change are the same, or different, and whether, for

example, individual variation (genetic, or in capacities such as 'self-regulation') play a role. These issues must be addressed in order to enhance models of effective treatments, and so to improve their implementation.

Impact / deliverability / economic benefits in Europe:

Despite some coordinated EU efforts in this domain, there is a profound lack of knowledge about the degree to which psychological treatments are applied in EU countries, where and what kind of research and service delivery programmes are in place, and how they are integrated into the wider network of mental health care infrastructure. As a result of this situation, Europe lacks even the most basic prerequisites for an evidence-based mental health research policy. Ensuring that implemented interventions are validated and evidence-based stands to greatly enhance both their efficacy and cost-effectiveness. Additionally, standardisation of trial procedure will facilitate systematic reviews and meta-analyses, which will maximise the usability and value of research findings.

Answerability/feasibility in Europe:

Consensus is currently missing about the way to define treatments (psychological and psychosocial treatments in particular), and to translate this into a standardised, European typology of interventions and service delivery modes and associated strategies in the current and future mental health system. Building towards such a consensus would first entail collecting existing data on psychological and psychosocial treatments in Europe, their spectrum and delivery formats, taking into account the perspectives of different countries and geographical regions. This would require developing a map of existing research centres and programmes involved in psychotherapy research as well as more broadly psychological and psychosocial interventions, including basic research issues in all countries.

Such a coordinated research focus would also need to develop a methodology to identify gaps between science, evidence-based psychological methods, and their application and delivery in routine care. A methodology aiming to successfully identify gaps between basic science and practice must be able to make distinctions by country, diagnostic domain, age group and so on. Finally, knowledge and insight gathered in the preceding steps needs to be unified, updated and processed in an integrated database – from which consultations processes and consensus can be developed.

European research strength:

Europe also has extensive public data registries (for example the ability to identify almost all individuals with schizophrenia), together with information about the forms of treatment that such individuals receive. This perfectly places Europe to investigate the mechanisms of efficacy of interventions. Coordinating such work across Europe would serve to enhance the power of any such research initiatives, not least because of the large sample sizes this affords. Drawing on existing registries and information across Eastern, Central and Western Europe will give a preliminary indication of the relative efficacy of various extant treatments, and inform subsequent targeted and collaborative research.

E. Building Research Capacities

E.1 Shared databases (bio-banks, specialist cohorts, mental health registries, status surveys, normative data of subjective well-being etc.), should be strongly encouraged across Europe. These should be open access, and as visible as possible. Research outcomes, databases and terminology (e.g. 'well-being', 'mental health', 'personalised care') should be standardised to facilitate data-sharing and collaboration.

Efficacy/effectiveness:

Even though Europe has an increasing network of research infrastructures, there is still a need to better communicate their presence so as to facilitate access by a maximum of users. In order to improve the accessibility and the (e-)sharing of European clinical and research data, it seems necessary to create a database of all available mental health databases in Europe – including clinical, routine, survey and research data. This recommendation aims to optimise the use of research data generated by public funding. This newly-available data would ultimately need to be structured and presented in an accessible format (e.g. a unique internet platform, the database of databases), within a dedicated infrastructure. The activity of an infrastructure in charge of mapping mental health databases could be linked to the promotion of mental health registries and comparable indicators in order to increase the comparability of data across Europe.

It is important to conduct research that clarifies and validates the concepts underpinning public mental health research. Conceptual clarity is a cornerstone of successful research because today much public mental health research is partly inconclusive and non-comparable with other research in the field. At present this is due to simplistic or unclear concepts, which are neither linked to empirical data nor to theoretical considerations. The concepts of mental health, psychological well-being and mental ill health and their relation to functions and capacities need to be defined in a cross-disciplinary approach.

Valid research lies on valid measurements. A suite of reliable measures of positive mental health and well-being, as well as indicators of key protective factors, need to be developed and validated. Likewise, valid typologies for mental health interventions and services are needed for cross-national comparative studies. An agreed-upon classification of concepts and related measures will open the door to the establishment of a 'findings archive' in which the available research findings are sorted by subject matter and become available for synthetic analysis. A firm conceptual foundation, moreover, will increase the effectiveness of subjective well-being as a clinical outcome for mental health interventions.

Impact / deliverability / economic benefits in Europe:

Standardising results and information across databases would facilitate meta-analyses across Europe – taking account of differences across nations, healthcare systems, cultures and research backgrounds. Secondary analyses of data collected for specific trials would allow for more questions to be answered using the same set of findings. This would allow for Europe-wide systematic reviews and meta-analyses that would maximise the usefulness of extant data. Due to exponential increases in the amount of available data, meta-analyses have become more involved and time-consuming, and as such now require dedicated funding.

It is paradoxical that public money finances projects for which access to the published results requires payment of additional public money. Research funding entities and/or commissioners should establish open-access publications as an obligation for publicly-funded research to ensure that results are available to other research units. More complete and informative data will prompt greater understanding of neurobiological mechanisms and more effective treatments. Providing visible and harmonised information about existing databases (including owner, objectives, types of variables, method and language), available in English, would facilitate the dissemination and usage of publicly funded knowledge in a way that matches its potential.

Answerability/feasibility in Europe:

Open access publication has increasingly become standard practice for publicly-funded research in Canada and the US, and implementation of an open access requirement is planned for 2014 in the UK. Thus, the recommendation should be feasible for publicly-funded research in Europe. Penalties and random controls could be considered in order to enforce this rule. The open data philosophy is making inroads in the scientific community, and it would be possible to condition public funding on open access to data unless these data are particularly sensitive or non-anonymised.

The US and UK governments have already implemented websites⁸ where national databases are available to their citizens. Likewise, a number of journals and websites offer the possibility of publishing anonymised datasets. Based on these examples, it seems feasible for the EU and national governments to condition funding to public access to data. The European network of Research Infrastructures (a leading example being the ESFRI roadmap⁹) is sufficiently developed so that an online database of health databases and normative population data with free access for the research community could be established. Owing to the demands associated with expanding data pools, there is a need for infrastructural support in terms of updating and managing databases, as well as statistical analyses of shared data. Translation into English of the databases would further be needed in order to encourage use and analysis of the data across countries. Specific funding would be dedicated to the creation, maintenance and translations related to this database of mental health databases.

European research strength:

European e-networks are capable of ensuring the storage, sustainability and protection of open access databases, developing the use of common research languages, procedures and standards throughout Europe, limiting biases and increasing the reproducibility of studies.

The Euroreach project and existing working groups (e.g. at OECD and Eurostat) could provide models for creating mental health registries. There are also several European research centres with expertise in the required survey methodologies for creating a database of normative well-being data, and this research would further extend the European research experience and worldwide reputation in this area.

The Cochrane Collaboration in the UK and other European grants have highlighted the benefits of supporting meta-analyses and reviews of existing data in extracting the maximum value from research findings. Such initiatives could be expanded through Europe, following these models and examples.

E.2 International and interdisciplinary research networks should be developed and maintained for knowledge exchange and rigorously standardised and coordinated research training and practice. Networks should make use of common research infrastructures, including genetic and neuroimaging resources. Specifically collaborative research and large European initiatives should have access to adequate funding.

Efficacy/effectiveness:

European e-networks and investigative and scientific networks have been identified as key infrastructures to develop interdisciplinary and international research.

Moreover, networks can bring together scientists of different disciplines and nations in a common research field and allow them to discuss and elaborate projects together. Collaborative networks are required both to provide a translational approach involving different disciplines and to study large diverse cohorts, to ultimately elucidate the mechanisms of mental disorders and provide more effective treatments. Such networks will help

⁸ <http://data-archive.ac.uk/> ; <http://www.data.gov/>

⁹ http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri-roadmap

share different and complementary resources and strengths. Networks should be inclusive in order to allow researchers from all geographic origins to close existing gaps. Virtual or physical spaces as well as some events dedicated to mental health topics are needed so that researchers may meet, have discussions and share contacts, ideas and concepts.

Comparable research training among European researchers would facilitate exchanges like those above, and would likely improve overall research quality. To this end, specific mental health research masters and PhDs could be created at the European level and organised by several universities. This could also address the specific training needs of clinicians by giving them the clinical and research skills necessary for the specificities of mental health research.

Impact / deliverability / economic benefits in Europe:

The lack of coordination across Europe with regard to mental health research opens an opportunity to pool complementary resources into networks of excellence, stimulating translational medicine for mental disorders. This builds on ideas expressed above relating to the establishment of shared research resources. A systematic knowledge exchange for mental health research in Europe would be a step towards reaching the 'critical mass' necessary to attain a leading position in mental health research worldwide. This common tool would facilitate collaboration and the launch of single- and multi-national projects for the European research community. Moreover, by doing so, mental health would become more attractive for young researchers who are often interested in fields with solid research materials.

Increasing the sharing of available training resources in research and encouraging students' mobility (physically and virtually) would ensure access to research training in regions without their own capacities. This latter point is especially important in order to reduce the East-West gap in research training. Potential benefits of public-private collaboration stem both from more effective treatments reducing the burden of disease and establishing Europe as a more attractive location for pharmaceutical research and development.

Answerability/feasibility in Europe:

Important research projects in mental health require a minimum of financial and human resources in order to be competitive with the rest of the world. The critical mass can easily be reached at the European level. Multicentre consortia have been shown to be feasible across Europe, without insurmountable ethical issues. The European Innovative Medicines Initiative has already shown the feasibility of public-private collaboration.

Small events where researchers can meet and develop ideas together could be initiated by public authorities, but they likely would be more efficient if they were initiated by the researchers themselves who would need funding. Therefore, a specific budget for 'knowledge exchange activities' could be included in all funding, as a routine part of researchers activities. These types of activities could be virtual or physical and do not have to be formal. Additionally, investigative networks can be initiated by public bodies in order to provide services to national and European research units. These networks are Research Infrastructures as defined in the ESFRI roadmap¹⁰ and may be linked to it. Numerous, important generic RIs exist in Europe and are mapped by the current MERIL¹¹ project. The recent European Research Infrastructure Consortium (ERIC) provides another example of tools promoting RIs: ERIC confers a specific legal status to infrastructures of European interest, thereby facilitating their extension to additional countries.

The EU and individual countries can provide incentives for the creation of European mental health masters and inter-university PhDs, guidance for the harmonisation of research training in medical schools and additional support for student mobility. Efforts should be directed to increasing the possibility of e-learning and other distance training, based on existing pilots and experiences in other fields. For example, CIBERSAM is currently launching a specific mental health research master¹², which could be an example for other initiatives.

¹⁰ http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=esfri-roadmap

¹¹ <http://portal.meril.eu>

¹² http://www.ub.edu/web/ub/en/estudis/oferta_formativa/master_universitari/fitxa/R/M2806/index.html

European research strength:

The number of RIs in Europe is high, and via the ESFRI Roadmap the EU has expanded and streamlined them over the past ten years. Thus, Europe is in a favourable position due to the relative density of its scientific community, so that no research should be hindered by the distance between a research unit and the relevant RI(s). The diversity and number of research units is clearly an advantage of European research. Considering the quality and quantity of data collection and linkage in some countries, Europeans are in position to be leaders in mental health research if the resources are mutualised. Current EU funding also provides unprecedented opportunity for large-scale collaboration among European research teams.

The coordination of European centres of excellence with complementary areas of expertise will facilitate large cohort studies and unravel the heterogeneity of mental disorder. Europe has extensive experience in the mobility of students with numerous European masters in a variety of domains. There are also immense research strengths in both public and private sectors, which can again be maximised by complementing each other's resources and expertise.

E.3 There needs to be a greater focus on a strong and interdisciplinary empirical research base in mental health, and consideration of mental health issues in training courses such as public health and epidemiology. Career opportunities should be created for academics with research training, with funding infrastructure that can quickly respond to emergent issues, as well as sufficient long-term funding dedicated for mental health research.

Efficacy/effectiveness:

The main share of mental health research training is currently taking place in courses related to psychiatry, psychology and neurosciences. However, mental health research is concerned with and requires a much wider range of disciplines. Due to the absence of clear career paths and the prevalence of short-term employment contracts, young trainees (in medical school or research training) may be discouraged from entering into an academic career in mental health research. In particular, there is a gap between academic and industrial careers in some parts of Europe, compared to regions where researchers can easily pass from a private company to a public research unit with few difficulties (and vice versa), which needs to be addressed with more versatile training. In order to make the case for mental health research careers, efforts should be made to increase future researchers' awareness of implications for mental health research and to transmit the specific skills needed. To that end, mental health content should be incorporated into public health, epidemiology, health statistics and other related courses, given the disease burden represented by mental disorders.

There is a lack of resources dedicated to mental health research in Europe, and it appears that the proportion of investment in human and financial resources does not match the burden of mental disorders. Dedicated mental health research funds would allow implementation of several of the recommendations made above, particularly the database of databases for mental health research. Some dynamic fields of mental health research necessitate rapid investigation under specific circumstances; sufficiently reactive funding mechanisms should be developed in order to facilitate competitive research on these topics.

Impact / deliverability / economic benefits in Europe:

Due to the dominance of project-based funding in European research, researchers are often faced with professional insecurity, which is a disincentive for pursuing research careers (especially compared to clinical practice). In order to increase the competitiveness of European research, incentives should be created to increase the number of merit-based appointments, i.e. focusing on the publications and/or the research training and skills of the candidate. Calls for proposal represent an administrative burden, such as the requirement of detailed budget predictions that may seem arbitrary. The necessary funding controls could be made more *a posteriori* and linked to a lighter administrative burden. These measures are likely to increase the

attractiveness of academic mental health research for junior scientists. A shift towards longer projects and an increase in core funding would also help to ameliorate this problem.

Introducing renewable funding for existing projects will yield the benefits of more complete data sets and less wastage of resources from incomplete analysis. The costs of high-risk and high-impact pilot studies, exchange and stimulation packages need not be great, but would bring about considerable benefits in terms of discovery and cross-pollination of expertise. This would increase the exchange between private and public research as well as employability and research career opportunities, which would clearly improve the attractiveness of mental health research. Moreover, the quality of research itself would be likely to be improved because cross-fertilisation could occur between ideas and concepts in private and public research. Finally, several skills developed in the private sector could be useful in the public sector (e.g. project management, human resources management, public relations, etc.).

Answerability/feasibility in Europe:

The recommendation for incorporating mental health research into wider health training tracks is relevant both to institutions offering courses and to EU/national authorities. While the former may readily incorporate such a change in practice into their course designs, the latter may provide the appropriate guidance and harmonisation. There is already exchange of expertise between EU countries. It is entirely feasible to develop this into a more organised programme. Europe currently leads initiatives that bridge academia and the private sector in the wider field of biomedicine. These experiences can provide concrete and applicable lessons that may be readily applied in the mental health field.

Initiatives from researchers are difficult to fund at the European level, and thus the calls system may be balanced with more investigator-driven projects, such as those offered under the FP7 programme 'Ideas'. Further, with H2020, a window of opportunity is open for modifying funding procedures. Competitively renewable funding is feasible and ethical in extracting the maximum value from funded projects. The awarded projects often require a significant investment in the establishment of methods and infrastructure. Often the most informative data are acquired towards the end or after funding for the project has expired. In order to avoid incomplete data analysis and maximal benefit from methods and infrastructure development a competitive renewal of projects after the initial funding period is highly desirable.

It seems worth considering the possibility of having an institution dedicated to funding and structuring European mental health research, similar to the NIMH¹³ in the US. Agile funding schemes for high-risk and high-impact pilot studies already exist in the US; the funding they supply is modest, enough for proof-of-concept. Such schemes would be feasible in Europe.

European research strength:

Europe has a well-trained research workforce as well as the training capacities needed to provide appropriate incentives for the next generation of mental health researchers. European research resources are numerous but need to be secured in order to ensure sustainability and quality. EU funding has the potential to provide the sustained, renewable funding necessary to extract maximum benefit from projects. Europe has investigators with diverse backgrounds and expertise. This strength would be maximised by the programmes described here.

E.4 Stakeholders need to be involved in research, and this includes individuals with mental health problems. This could be achieved by greater transparency and horizontal organisation in mental health research strategy and agenda-setting, with service users identifying problems and proposing research outcomes. Basic research training should be provided to all healthcare professionals.

¹³ National Institute for Mental Health - <http://www.nimh.nih.gov>

Efficacy/effectiveness:

In order to bridge the gap between research and clinical practice in mental health, it would be of great interest to transmit research basics to every health professional so that they understand the use of evidence in medicine and are equipped to implement research outcomes. By the same token, efforts should be made to educate researchers about the organisation and delivery of mental health services. Individuals with mental health problems and their families are obviously at the centre of any decisions made in mental health, and this needs to be reflected in a greater input from these individuals into key research directions and outcomes. In complement to this, researchers need to be informed by clinicians about current interrogations and observations that could lead to research questions.

Additionally there is a lack of dialogue between researchers and policymakers. It seems that European societies and decision-makers are not fully aware of the importance of mental health and well-being research. It appears that sometimes calls for proposals in mental health research do not respond to research needs and that their phrasing is ambiguous. This may be due to the absence of or weak visibility of existing bottom-up and consultative mechanisms for the development of calls.

Impact / deliverability / economic benefits in Europe:

Researchers are the most informed about the state of research in their own domains, and they should be more involved in the selection of EU research topics, which would orientate the calls for proposals to the most innovative fields. At the same time, exchanges among researchers and policymakers may be fruitful as policymakers are in a position to prioritise areas with particular importance for society. In any case, the transparency of the development of calls for proposals must be improved, and the possibility to participate in this process should be actively communicated. Such changes would give rise to more targeted and efficient funding calls and research programmes, with more directly applicable findings.

Answerability/feasibility in Europe:

Consultative entities should be created and expanded in order to transfer to decision-makers the knowledge acquired about the mental health and well-being of the European population and the evidence on how to improve it. Likewise, researchers need to be better informed about the questions that are of particular interest to policymakers, healthcare professionals, individuals with mental health problems and their families. Clarifying the means and consultative processes that allow researchers to voice their research priorities appears to be feasible at a limited cost, if any. In this context, the EU and many individual countries may draw upon a number of existing networks that can collectively and efficiently solicit participation in the setting of themes for calls for proposals. Guidance could be provided on the EU and national levels. Moreover, better transparency regarding the criteria and processes of academic appointments would require little in terms of financial resources. The recommendation of basic research training for every health professional is of particular concern for professional associations and medical schools; the role of the EU and individual countries would be to provide leadership and recommendations in order to close the knowledge gap between clinical practice and research in mental health.

Research strength in Europe:

Europe has sufficiently developed research networks and administrative bodies that would allow the creation of effective consultative initiatives. Additionally, Europe has specific professional associations (e.g. the European Federation of Psychologists' Associations, European Psychiatric Association etc.) that promote mental health training within a scientist-practitioner model. Such bodies offer useful bases for expanding research at all levels of the mental health system. Some new formats may need to be created in order to allow this exchange of knowledge between researchers and policymakers with the goal of supporting evidence-based policy. Moreover, indicators to evaluate the potential benefit of mental health research, especially in terms of socio-economic impact, should be developed in order to 'make the case'. For instance, little is currently known about the return on investment in mental health research but early evidence has indicated a

high rate of return¹⁴. Innovative service user-led research in Europe is also apt to inform worthwhile outcome measures for future mental health research.

¹⁴ Health Economics Research Group, Office of Health Economics, RAND Europe. Medical Research: What's it worth? Estimating the economic benefits from medical research in the UK. London: UK Evaluation Forum; 2008.