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Mental Health Working Party

Data and Modelling Considerations for Mental Health in Life Insurance

by Lisa Balboa, Fraser Ballantine, Maryse Nashime, Serena Soong, Joe Wilson

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Note: This is a discussion paper. It is written as a preliminary observation based on our research and further research/investigation needs to be done. We also want to acknowledge that no (re)insurers have been consulted and that this is not a statement of fact/comments made as a result of independent empirical research/raw data analysis rather a view expressed on the basis of limited sources at this stage."

Mental Health Working Party: Data and Modelling Considerations for Mental Health in Life Insurance

Author/Authors

Lisa Balboa, Fraser Ballantine, Maryse Nashime, Serena Soong, Joe Wilson

Abstract

This paper explores data and modelling considerations in the risk assessment and underwriting of mental health conditions in life insurance products. Alongside this, it considers the possibilities that improved data availability could open up in terms of additional underwriting designs that could further improve the accessibility and affordability of life insurance products for those with mental health conditions. Rather than being a prescriptive recommendation, our aim is for the considerations set out in this paper to form a basis of discussion for Members of the Profession and other insurance professionals.

Keywords

Mental Health, Life Insurance, Data, Modelling

Correspondence details

Lisa Balboa, 20 Gracechurch Street, London, EC3V 0BG

Executive Summary

This paper explores data and modelling considerations in the risk assessment and underwriting of mental health conditions in life insurance products. Alongside this, it considers the possibilities that improved data availability could open up additional underwriting designs that could further improve the accessibility and affordability of insurance products for people with mental health conditions.

The paper is structured as follows:

- Firstly, the paper provides an introduction into how mental health conditions are underwritten for life insurance products. It explains some of the complexities associated with mental health risk assessment, in particular the complexities stemming from comorbidities. For comorbidities linked to mental health, complexity is introduced as the underwriter usually considers the individual's mental health condition(s), physical health condition(s) and wider biopsychosocial factors.
- Secondly, it looks at incorporating newer risk factors. Many of the factors set out in this paper are not new to other actuarial analyses, however an in-depth consideration of these factors may be of increased importance in the context of mental health conditions.
- Thirdly, it considers opportunities for enhancing risk assessment(s). This builds on the suggestions for enhancing the data and modelling of mental health conditions set out in the first two sections. It explores opportunities to use these to refine risk assessment for mental health conditions, especially for comorbidities or conditions that have a wide spectrum of severity.
- Finally, it explores additional underwriting structures that could be considered in the future. These could offer an alternative to static upfront underwriting adjustments that apply for the duration of a life insurance policy based on health conditions at the point of application. The aim for this section is to be used as a starting point for further cross-industry consideration of additional underwriting designs. As such, some of the benefits and challenges of these underwriting designs are provided in the paper.

The paper focuses primarily on mortality risk due to the additional complexities when considering morbidity risk, however many of the principles discussed are likely to be translatable into other protection insurance products.

The aim of this paper is to provide Members of the Profession and other insurance professionals involved in the design and running of protection products with considerations around data analysis and modelling approaches for mental health conditions. With additional analysis and developments these might have the potential to further expand the access of life and protection insurance for those with mental health conditions.

We encourage insurers to consider additional data collection and analyses of mental health conditions, discuss advancements to how mental health risks are modelled and explore the potential development of innovative product and underwriting designs. In particular, we strongly support and recommend:

- The continued use and analysis of data to provide deeper insights into mental health, comorbidities and protective risk factors. This could support the development of models that provide refined risk assessment and allow for more dynamic underwriting that takes into account protective factors.

- The efforts to identify new data analyses of mental health conditions, in line with The Association of British Insurers' (ABI) Mental Health and Insurance Standards requiring decisions on all aspects of pricing and underwriting to be evidence-based (ABI, 2020). Further sources of data, such as better-quality industry data or detailed or specific data from the growing adoption of wearables and health apps by the public, may offer more ways of establishing a deeper understanding of the excess mortality risk resulting from mental health and comorbid conditions.
- Open industry discussion on mental health. Continuing societal progress made in recent years to alleviate the stigma associated with mental ill-health improves the prospect of collecting more accurate and complete data on mental health conditions. We also encourage the support of research into how controllable risk factors and protective factors, such as sleep, diet and exercise impact excess mortality for those with mental health conditions.

Building up and analysing a more granular and comprehensive dataset for mental health conditions is likely to be a medium-term goal for most insurers as it may take time to increase data availability. The additional underwriting structures and product designs highlighted in this paper could be considered by insurers in the future along with the continued improvement in high-quality data availability to support the development of these approaches. The considerations set out in this paper aim to support insurers in their continued efforts to improve availability and choice for customers with mental health conditions, including supporting customers with treatment and management of these conditions.

Rather than being a prescriptive recommendation, our aim is for the considerations set out in this paper to form a basis of discussion for insurers. Through these discussions, insurers may identify opportunities to further tailor their approaches to data analysis, underwriting and product designs in a way that is synergistic with the insurer's existing efforts to improve access to insurance for those with mental health conditions. Cross-industry discussions of this paper may also help to develop new and innovative approaches to data, modelling and insurance risk assessment of mental health conditions and pave the way for additional underwriting and product designs beyond those considered in this paper.

1. Introduction

In general, when a customer applies for life insurance, underwriting is used to adjust the insurance premium that a policyholder pays for factors that have a bearing on the individual's mortality or morbidity risk. This includes medical underwriting for both mental and physical health conditions. Underwriting captures those risks that are not already included in the standard mortality assumptions used to set the base price of the insurance product. Data and modelling are used to ensure that the level of the additional premium charged through underwriting covers the additional mortality risk attributable to the individual's health condition.

One in four people are likely to experience a mental health challenge of some kind each year (WHO, 2001; McManus, 2009). With such a high prevalence of mental health conditions, any increased mortality risk attributable to mild mental health conditions is typically captured in the insurer's standard life insurance premium without the need to charge the policyholder an additional premium via an underwriting adjustment. In the case of more severe mental health conditions or where the policyholder has comorbidities, underwriting ratings may be used to adjust the insurance premium in-line with the individual's elevated mortality risk.

Life insurance products are often long duration contracts, and the underwriting decision can impact the cost of the whole policy. Most individuals who experience mental health conditions can recover and are able to manage their mental health effectively. However, for those who are experiencing a mental health condition at the point of application, or in the recent past, could have an underwriting rating applied for the duration of their contract even if they subsequently recover. This is compounded when you consider that many people are motivated into buying life insurance contracts at particular periods of their lives such as taking out a mortgage or starting a family, so choosing when to apply for insurance cover may be out of their control.

Underwriting mental health conditions is complex with over 200 classified forms of mental illness including conditions such as depression, generalised anxiety disorder, obsessive-compulsive disorder and schizophrenia (Mental Health America, 2022). Some mental health conditions are less severe and some are more severe. Underwriters continually develop and refine underwriting for both physical health and mental health conditions to take into account the latest and most relevant medical evidence available. Underwriting for physical health conditions has progressed significantly with new data changing outcomes on an ongoing basis. The pace of change for mental health underwriting has been slower due to lesser availability of granular data required to augment our understanding of mortality and morbidity attributable to these conditions.

This paper looks at data and modelling considerations when assessing risk and underwriting mental health conditions. Alongside this it considers the possibilities that improved data availability could open up in terms of enhancing risk assessment and developing additional underwriting designs that may be able to improve the affordability and availability of insurance products for those with mental health conditions. It is important to recognise that insurers adhere to a number of professional guidelines and regulatory frameworks to ensure policyholder protection, such as the Treating Customers Fairly principle and outcomes in the UK. Much is already done to ensure customers are protected; however, the insurance industry can always challenge itself to find improvements.

2. Complexities stemming from comorbidities

Comorbidities can create modelling challenges, particularly in older aged lives where the simultaneous presence of two or more health conditions is more common. These complexities typically become more pronounced in the context of mental health. Many psychological conditions share similar symptoms and certain physical health conditions can predispose an individual to mental health conditions. The WHO's World Mental Health Survey demonstrated significant incidences of both physical and psychological comorbidities with mental health conditions (Kessler, et al., 2010). How these comorbidities are allowed for when underwriting life insurance applicants, particularly in cases where individuals have more than one rateable health condition, is not an easy task due to the complex nature of interacting health conditions.

Currently most individuals with a mental health condition will receive standard premium rates when applying for life insurance. Those who have experienced mild depression, for example, are unlikely to have an underwriting adjustment applied to their life insurance premium as this can often be a normal response to certain events such as experiencing a bereavement. For more serious mental health conditions an underwriting adjustment is applied to the premium due to the additional mortality risk attributable to this health condition, over and above the mortality risk allowed for in the insurer's base premiums. Additional mortality attributable to these more serious mental health conditions can be comprised of numerous different causes. Examples include increased suicide risk, increased mortality risk attributable to various lifestyle factors and increased risk of other comorbid physical conditions (Angst, et al., 2022). Exploring the latter example in more detail, when an individual has a moderate or severe mental health condition which would receive an underwriting rating, as well as a physical health condition such as cardiovascular disease, there could be an adverse effect on mortality that is worse than the sum of the two (Huffman, et al., 2013). In some cases, this additional mortality risk could arise from difficulties adhering to treatments (Grenard, et al., 2011). This example could apply across a variety of medical conditions ranging from diabetes to chronic heart conditions (Katon, et al., 2005). Note that the converse situation could also apply where for certain health conditions the effect on mortality of the presence of two health conditions could be less than the sum of the additional mortality risk attributable to each health condition in isolation. For example, good adherence to treatment could lead to reductions in mortality risk being amplified.

Using risk assessment to set the underwriting adjustments for these multiple comorbid conditions is complex due to the often specific nature of the individual's case. These cases can require an underwriter's expert judgement to identify the key risk drivers for the individual by considering the individual's mental health condition(s), physical health condition(s) and broader biopsychosocial factors. This is because, even though, there are studies showing how mental health conditions impact the mortality component of comorbid conditions, they are often limited to specific conditions and do not always consider the severity of those conditions, nor do they capture broader contextual factors (Cuijpers & Smit, 2002). When setting underwriting adjustments, insurers often use population studies and medical research to inform their underwriting philosophies. It is only with continued research in this area that underwriting philosophies can be further refined to incorporate an increased understanding of risks attributable to comorbid conditions.

When incorporating population-based research into underwriting philosophies, where possible the differences between the general and insured populations should be taken into account. To assist with this, ideally insurers would use internal data on comorbidities to inform their underwriting approach;

however, this could be challenging for comorbid mental health conditions. Some mental health conditions are low frequency, particularly in combination with certain comorbidities. In addition, mental health conditions have historically been under-reported by individuals due to the stigma attached to them and are still under-reported today despite progress made to reduce stigma in recent years. This makes it difficult to build actuarially credible internal data sets for modelling and risk assessment. By continuing to encourage open discussion of mental health this may increase disclosure. Insurers could use this to improve their own internal data sets and therefore enhance the data used to model the additional mortality and morbidity risks attributable to comorbid mental health conditions. In addition, continuing to understand how controllable risk factors and protective factors, such as sleep, diet and exercise, could impact excess mortality from mental health conditions could lead to refinements when underwriting individuals with both mental health conditions and physical health conditions. The potential to integrate some of these newer risk factors is explored in the next section.

3. Opportunities to incorporate newer risk factors

The life insurance underwriting journey for those with a mental health condition typically assesses the severity of a mental health condition through examining the applicant's disclosure form, together with additional information from tele-underwriting, medical reports, medications and medical history including past hospitalisations and suicide attempts. This section explores newer risk factors that could potentially be incorporated into the underwriting risk assessment process. It also considers some risk factors which are not new to actuarial analyses, but where an in-depth consideration of these factors may be of increased importance in the context of mental health conditions. When incorporating these factors, as with all data considered by insurers at underwriting stage, data protection and policyholder consent are of the utmost importance when handling this personal, medically sensitive information.

Research undertaken by AIA Australia supported by Quantium Health highlights that 30% of depression risk is linked to risk factors within the individual's control including diet, sleep and exercise (AIA Australia, 2022). There is further evidence in the literature of reduced risk of depression associated with higher levels of physical activity and better sleep quality. A meta-analysis of 111 cohort studies found increased physical activity is associated with reduced risk of depression, and that more vigorous activity confers additional benefits (Dishman, et al., 2021). In terms of sleep, both more sleep and a better quality of sleep are associated with reduced risk of depression (Vitality, 2019). There is also supporting evidence for dietary interventions being effective in the treatment and management of moderate to severe depression (Jacka, 2017).

At present, the understanding of an individual's diet and nutrition in an insurance context would rely on self-reported information. For physical activity and sleep, wearable technology is capable of tracking these, but self-reported information may nonetheless be preferred. By tracking these variables using biometric data or by gathering self-reported information on these controllable risk factors this could provide an opportunity for continuous underwriting to facilitate reduced premiums where an individual is actively engaging in protective factors. There is already a precedence for this. For example, The Exeter previously offered a continuous underwriting product for those with Type 2 diabetes (The Exeter, 2021). This provided the opportunity for reduced insurance premiums each year where an individual could demonstrate they were actively engaged in managing their diabetes. Applying this approach to mental health, hypothetically speaking a customer who is actively engaged in behaviours that protects them from severe depression, for example, could benefit from lower

premiums due to the health benefits associated with these protective factors. This could be particularly advantageous in the case of certain comorbidities where an individual with a mental health condition may perhaps otherwise find it prohibitively expensive to purchase insurance. It is worth noting that while there is great potential with wearable technology, this approach may not be suitable to all individuals. For instance, obsessive exercising or diet behaviours may be detrimental to one's mental and physical health. It is therefore important for insurers to work with the medical profession in bringing any of these proposals to a finished product design.

Moreover, incorporating these newer risk factors on a dynamic basis is likely to be a medium or longer-term aspiration for many insurers as significant changes to established underwriting and pricing processes would be needed. Continuous underwriting approach for mental health is considered further in section 5 of this paper, including an exploration of the benefits and challenges of this approach.

Looking at medical pathways for mental health conditions, there has been a change in the diagnosis of mental health and treatment approaches over time. Early screening and intervention is being encouraged under the NICE guidelines (Patient Info, 2019). There has also been a rise in adoption of telehealth support services, including in the insurance sector (Unum, 2022). National surveys in England show that public awareness of mental health has improved in recent years with reduced stigmatisation of mental health related conditions (Henderson, et al., 2020). There could be an opportunity to adjust underwriting ratings for insurance applicants to reflect that reduced stigmatisation is prompting earlier diagnosis and management of mental health conditions and advances in medical understanding are improving efficacy of treatment.

To get to the position where insurers can incorporate new risk factors such as protective factors and newer treatment approaches, it will be key to obtain and analyse more in-depth data sources that provide a deeper understanding of the excess mortality resulting from mental health and comorbid conditions. It is useful to consider what might be included in this ideal dataset so the industry can begin to consider how to build up this more detailed data as the research into these areas advances.

Alongside commonly used risk factors such as age, BMI, smoker status and medical history, doctors' reports are used for more severe mental health conditions. The box on the next page provides some suggested additional data fields that could contribute to an improved understanding of mental health mortality and pave the way to incorporate these newer risk factors when underwriting life insurance applicants who disclose mental health conditions. Some of these factors will be more challenging to measure objectively but considering them could nevertheless still be useful to understand how they influence mortality rates.

Box 1: Additional data fields that could contribute to an improved understanding of mental health

Age at diagnosis

Age is not a new risk factor for insurance, but research finds a link between age and incidence of some mental health conditions such as depression. The AIA and Quantium Health study shows that older individuals were more likely to be depressed, but this could be explained by non-age features such as stress and comorbidities (AIA Australia, 2022). Interestingly, a separate study finds incidence of depression decreases with age (Kessler, et al., 2010). This could suggest a weakening comorbidity between physical illness and developing depression. The issues and limitations highlighted in the journal article around response rates and misattribution of symptoms could explain the reduced prevalence of mental health disorders. Currently there is more work and study required to better understand why the comorbid link between physical and mental illnesses appears to decrease with age and whether there is sufficient evidence to support an age-based risk factor for mental health. Following further research, more nuanced underwriting approaches that consider mental health comorbidities by age could be incorporated.

Frequency and duration of relapses

There could be potential to augment further data that may be available which captures time off work or disruption to social interactions. Understanding how an individual is managing their mental health could give a more nuanced reflection of their risk. It is recognised that, as with most new risk factors, gathering more granular reliable data on the biopsychosocial context can be challenging. As a near-term way to augment data, the number and duration of in-patient hospital stays for mental health related conditions could be used as a proxy.

Individual's support network

As with physical health conditions, an individual's personal support network can be crucial in treatment and management of mental health conditions. This factor is very difficult to objectively quantify and measure for use in research studies or day-to-day underwriting. It may be possible to gain insights from a dedicated research study designed specifically to obtain more details in this area.

Proactive engagement in managing mental health

This can be somewhat broad and loosely defined and therefore similarly difficult to measure. Attendance rates at counselling appointments and other mental health outpatient treatment sessions could be one measurable factor to consider.

Lifestyle factors

Protective factors such as engagement in physical activity and good quality sleep and nutrition could be assessed via self-reported surveys. Wearables' data could be a more objective way to measure sleep and activity, provided the wearable device captures accurate data.

4. Enhancing risk assessment for mental health

The current mainstream approach to reflect increased mortality risk at point of underwriting usually uses bucketed underwriting adjustments. Typically, underwriting adjustments are applied in +25 increments (i.e. 25%, 50%, 75%, 100% etc. increases are applied to the standard insurance risk premium.) There could be opportunities to review the current bucketed approach to underwriting classification to enhance the granularity of risk assessment. As discussed in section 3, by considering newer risk factors in underwriting, there is potential to better distinguish ratings for those who actively engage in managing their mental health and it could perhaps open up the opportunity to underwrite individuals on a more dynamic basis. Using self-reported questionnaires or insights from wearables could allow these factors to be quantified and linked to underwriting decisions.

In terms of measuring severity, there are rating scales for depression in use by the medical profession to assess patients. These include Generalised Anxiety Disorder Assessment ("GAD-7"), Beck Depression Inventory ("BDI") and the Patient Health Questionnaire-9 ("PHQ-9"). The results from these surveys can be used by underwriters to enhance risk assessment by providing additional medical context when an underwriter is assessing the case. However, these surveys tend to be condition-specific and are developed for clinical usage. It may therefore be challenging to align these for direct use in insurance underwriting ratings. Further consideration, data analysis and modelling would be needed to use these rating scales to directly and automatically set underwriting ratings.

In practice, insurers consider a broad range of factors as part of their underwriting decision for applicants with mental health conditions. In addition to severity of the mental health condition, these factors typically include date of diagnosis, previous episodes of self-harm or suicide attempts, previous hospitalisations, comorbid mental and physical health conditions, and management of the mental health condition. If a more automated calculator for more nuanced mental health loadings is to be adopted, it would need to encompass a range of biopsychosocial factors. As discussed in the previous section, more detailed data and research would be needed to assess the link between these biopsychosocial factors and mortality risk.

As set out in the introduction to this paper, underwriting ratings typically apply for the duration of the life insurance contract even if an individual subsequently recovers. Mortality studies that take place over many years are used to obtain a standardised mortality ratio. For most mental health conditions, these longitudinal studies do not typically provide time-varying assessments of elevated mortality to support duration-based underwriting loadings. One option for individuals would be to lapse their policy and reapply if they believe their condition has improved, however this would require significant awareness from the individual or any advisor involved[1]. In addition, premiums schedules tend to be level rather than age-based. Consequently, those on level premium policies may face higher base premiums if they lapse and re-enter. Additional product and underwriting designs that support temporary, reviewable or continuous underwriting decisions could be an alternative way to enhance risk assessment for individuals with certain mental health conditions. This is explored in detail in the next section.

[1] Under the principle of Treating Customers Fairly, the customer could also request the insurer to revisit the original underwriting decision if they believe it is no longer warranted. In such cases, a detailed medical underwriting investigation would be carried out by the insurer to assess the medical evidence as to whether the original underwriting decision is still valid.

5. Supporting additional underwriting structures

More detailed data and analysis for enhanced risk assessment of mental health conditions will take time to develop. As enhanced data begins to be collected, there is the opportunity to explore how insights from this data could lead to additional underwriting and product designs that further support the needs of customers with mental health conditions.

This section discusses three different underwriting and product structures that could benefit both insurers and customers by building long-lasting and supportive relationships between these two groups. These are:

- Temporary ratings
- Continuous underwriting
- Policyholder-triggered reviewability

Our aim is for this section to be used as a starting point for further consideration in exploring additional underwriting designs. As such, when presenting each alternative underwriting design, some of the considerations to be made, along with the potential benefits and challenges are explored.

From an actuarial perspective, current underwriting approaches are a static snapshot of the applicant's risk as assessed at policy outset. Underwriting loadings are typically used to price for those mortality risks that are not captured in the standard mortality assumptions used to set the base premium of the product. Where the additional mortality risk is too large to be affordable, or where the extra mortality risk is unquantifiable, then there may be exclusions for claims triggered by those specific health conditions or the applicant may be declined insurance coverage or coverage may be postponed.

When an applicant declares some past or current mental health conditions at point of purchase for life insurance cover, the current approach to underwriting can reduce affordability and restrict insurance coverage. For these applicants, there is potentially more insurers could do to explain steps the applicant could take to manage their risk profile to improve their access to insurance in future. Rethink Mental Illness, a mental health charity based in England, has shared with the Institute and Faculty of Actuaries Mental Health Working Group that it would be helpful to have more clarity on the application process, along with further details on what access is available to individuals. Where an applicant is declined coverage, signposting towards specialist insurers that may be able to provide coverage can be valuable. The ABI's Mental Health and Insurance Standards are prompting member insurers to further improve their processes around communicating coverage decisions to those with mental health conditions, with an increased focus on clarity and empathy of communications (ABI, 2020).

As data and modelling for risk assessment of mental health conditions are enhanced, new product designs could be developed to increase access to and affordability of insurance and to improve choice for customers with mental health conditions. As with any insurance product, these should be developed in line with the Financial Conduct Authority's (FCA) fairness framework including fair treatment of customers, meeting customer needs and clear information (FCA, 2021). The FCA's core consumer outcomes are detailed in box 2.

Box 2: FCA core consumer outcomes

The FCA defines six core consumer outcomes that firms should strive to achieve to ensure fair treatment of customers.

1. *Consumers can be confident they are dealing with firms where the fair treatment of customers is central to the corporate culture.*
2. *Products and services marketed and sold in the retail market are designed to meet the needs of identified consumer groups and are targeted accordingly.*
3. *Consumers are provided with clear information and are kept appropriately informed before, during and after the point of sale.*
4. *Where consumers receive advice, the advice is suitable and takes account of their circumstances.*
5. *Consumers are provided with products that perform as firms have led them to expect, and the associated service is of an acceptable standard and as they have been led to expect.*
6. *Consumers do not face unreasonable post-sale barriers imposed by firms to change product, switch provider, submit a claim or make a complaint.*

To illustrate the potential of additional underwriting designs, the example of depression in the context of life insurance will be used.

Many studies have shown that depression increases mortality risk. These studies underpin current industry practices to underwrite for this condition. However, more recent studies suggest a far more complex relationship between this health condition and mortality risk.

A 2017 study published in the Canadian Medical Association Journal investigated the duration of time over which depression is associated with increased risk of mortality, trends in the association between depression and mortality, and sex differences in the association between depression and mortality (Gilman, et al., 2017). A key finding from this study is that the association between depression and mortality weakens within an individual over time unless there is a recurrent episode. More importantly, this conclusion opens for further investigation the topic of remission from depression and whether it could reverse extra mortality risk otherwise associated with depression.

At present, one-time point of entry underwriting does not consider those who go on to recover or demonstrate effective management of depression to have this more directly reflected in their life insurance premiums. This finding motivates the discussion for additional underwriting decisions designs.

5.1. Temporary ratings

Temporary underwriting ratings are underwriting premium adjustments applied at outset with an upfront decision on how long the premium adjustment will apply for. Note that temporary ratings are already used for some physical health conditions, this section sets out considerations for temporary ratings in relation to mental health conditions.

To use temporary ratings, underwriters must be able to assess whether and how the additional risk attributable to the health condition is likely to decrease and define a corresponding schedule for how the underwriting rating will be decreased over time. From an insurer's perspective, if a suitable duration-based risk schedule can be defined then temporary ratings for mental health condition could be readily incorporated into insurance products as it is already in use for some physical health

conditions. Moreover, there is no need for post-sale servicing and it offers a more positive message to the applicant as the underwriting rating does not last for the full duration of the policy. For mild to moderate mental health conditions, risk is predominantly heightened at outset so this need to be reflected by a larger underwriting rating earlier on in the policy lifetime.

There are a number of considerations for an insurer to think through before implementing temporary underwriting loadings for mental health and more granular data would help fast track implementation:

- Firstly, insurers will need to identify which conditions would be suitable for temporary ratings**.** Mild-to-moderate mental health conditions encompass a wide spectrum. This even more so when considering factors such as time since diagnosis at point of application and the impact of the condition since diagnosis. For example, a mild depression that has been ongoing over several years may not be the best candidate for temporary rating as the condition may have persisted without record of hospitalization or medical interaction for many years. So in this example, medical data to define and apply a duration-based temporary rating would be challenging for an insurer to obtain.
- The risk reduction period and pattern will likely differ by condition; and even within a condition due to differing severities, co-morbidities and biopsychosocial contexts. The insurer may therefore need to maintain many different schedules based on a particular applicant's risk profile. With this complexity in mind, insurers would have to carefully consider the conditions that are suitable for temporary rating and develop a conversion table to calculate an appropriate underwriting loading schedule. More granular data on mental health conditions, including risk factors suggested in section 3, may be needed to set these properly.
- Temporary ratings are unlikely to be suitable for complex mental health conditions where the long-term prognosis is uncertain. For example, physical comorbidities can make it challenging to accurately separate and quantify impacts on future mortality risk over time.

5.2. Continuous underwriting

A continuous underwriting approach would provide the opportunity for automatic reviews and for underwriting to reflect risk on a more dynamic and ongoing basis. Introducing this additional underwriting approach could provide a way for insurers to offer expanded cover for applicants with mental health conditions over time. There are some examples within the insurance industry of products that make provision for continuous underwriting. Section 3 highlighted the continuous underwriting approach of a product previously provided by The Exeter. An example in the context of mental health is Gen Re's prototype and framework for a managed mental health product with continuous underwriting (Gen Re, 2020). The product requires pre-defined criteria to be met to enable the review, with the timing of these periodic reviews set according to different management categories. Milder mental health conditions that have a short duration with relatively little impact on functioning may be reviewed after 12 months, while severe conditions that require prolonged rehabilitation with an increased likelihood of prolonged impairment in functioning, may be reviewed after 3 or more years. This allows customers to obtain increased levels of cover or a reduction in extra mortality underwriting loadings in the presence of a stable and well-managed mental health condition. It is important to highlight though, that under a continuous underwriting approach, reviews may be two-sided so this could lead to increased premiums where a condition worsens.

To implement continuous underwriting on an even more frequent basis, there are a number of considerations for an insurer to think through:

- More granular time series data for mental health conditions would be helpful in facilitating a more dynamic continuous underwriting approach where underwriting loadings can be reviewed regularly based on the latest evidence available for the policyholder.
- Ongoing access to electronic health records would ideally be available to enable a more streamlined and lower cost review process. It would likely be necessary for the insurer to obtain regular consent from policyholders to allow the insurer to access NHS medical records on an ongoing basis for the explicit purpose of continuous underwriting.
- For a fully embedded continuous underwriting system where underwriting adjusts dynamically with risk over the policy lifetime, some customers may see premium increases if their condition worsens as compared to those customers who benefit from premium reductions if their condition improves. This two-sided change in premiums may be undesirable as it reduces certainty for customers and if not implemented sensitively, could in the extreme lead to some policyholders not seeking the help and support they need for their mental health condition in case it could lead to an increase in premiums.
- It may be possible to improve persistency of lives that may otherwise lapse and seek cover elsewhere on more favorable terms following an improvement in their condition.
- It is recognized that many insurers' existing administration and underwriting systems may not be set up for continuous underwriting and there may be increased administration costs to facilitate continuous underwriting. This could lead to increased base premiums for all insurance customers. Moreover, if implementation and ongoing policy servicing costs are prohibitively expensive it could make this sort of insurance structure unviable for insurers to implement from a product sustainability point of view. This barrier could make creation of continuously underwritten insurance products unachievable in some markets.

5.3. Policyholder-triggered reviewability

Policyholder-triggered reviewability could be considered as a middle ground between traditional underwriting ratings, temporary ratings and continuous underwriting. Under policyholder-triggered reviewability, a premium underwriting review could be initiated by the policyholder after a pre-set period. The need for a change in underwriting rating would then be assessed on an individual basis. The revised premium would reflect past and current medical evidence on condition management. A possible variation could be for a trigger for review based on the amount of premiums paid-to-date having reached a set percentage amount of total expected premiums.

Policyholder-triggered reviewable products could be suitable for those with mild-to-moderate mental health conditions or mild mental health conditions with comorbidities, in cases where flat underwriting loadings are currently applied at outset. After a pre-set period, the policyholder could apply to have their underwriting decision reviewed. This one-off, one-sided reviewability clause could also be appropriate for mental health conditions triggered by a one-time event, for instance post-partum or bereavement. It should be noted that while mild post-partum or bereavement mental health conditions is not typically rated, it could be rated in certain circumstances such as a more severe mental health condition due to a specific event or with the presence of comorbidities.

If the policyholder could evidence that their condition no longer exists or has been steadily managed over a number of years (and that no new unrelated conditions had emerged in the meantime), they could apply for a review of their premium schedule. The optimal period for re-evaluation would need to be considered carefully.

Although this concept could in theory be extended to other health conditions including somatic diseases, the key is that it fits well for mental health conditions as the uncertainty at outset is often not as straightforward to measure as for some somatic diseases. Mental health is in many aspects very personal, affects everyone differently and is highly influenced by an individual's environment and biopsychosocial context. Given that many of these factors are challenging to objectively measure and assess, extending the risk assessment period via reviewable premiums could be an additional underwriting approach to consider when it comes to mental health conditions.

The policyholder-triggered reviewable underwriting concept presented here is distinct from the premium reviews undertaken for reviewable premium products which adjust premium rates for all policyholders based on aggregate portfolio experience. This underwriting concept could, however, be applied to both reviewable and guaranteed premium products as the change will be to the underwriting rating while the base premium schedule remains unchanged. Background on reviewable versus guaranteed life insurance premium products is provided in the section titled "Appendix: Reviewable and guaranteed premium life insurance".

The following are potential benefits of policyholder-triggered reviewable underwriting:

- Where there is initial uncertainty over the risk attributable to the mental health condition, the reviewable underwriting point allows individual customer data to be used to close that gap over time. Cover is provided up front and underwriting can be reviewed to improve affordability for the customer in future where the policyholder has recovered or can demonstrate their condition is well-managed.
- Changes are one-sided – products are priced at a baseline level and a well-managed condition triggers a decrease in premiums.
- The approach encourages policyholders to manage their mental health and shows the insurer's commitment to supporting its policyholders in management and recovery of their health condition, with the opportunity for insurance premium underwriting adjustments to be reduced to reflect this.
- Over time, the additional touchpoint between the customer and the insurer at the underwriting review can help the insurer to build up more granular data on mental health conditions and recovery post-issuance. Analysis of this data on an anonymised, aggregated basis could perhaps be used to further refine underwriting and risk assessment for new cohorts of customers in future. Although note that this data needs to be analysed with caution as it could form a biased self-selecting pool over time.

As with the other two underwriting structures described earlier, there are challenges to overcome and as a starting point, more detailed data and analysis is likely to be needed.

- Insurers will need data to identify which conditions are suitable candidates for policyholder-triggered reviewability. To ensure customers' reasonable expectations are met and due to cost implications (as outlined below), it will be important to identify, ahead of implementation, whether there are sufficient numbers of conditions that are likely to be suitable candidates for this underwriting approach, and whether sufficient numbers of customers are likely to benefit from a premium reduction at the one-sided one-time review.
- Business aspects must be considered. There will be a cost to carry out the underwriting review and administration systems need to be able to accommodate changes in premium schedules. Administration cost to carry out the review may also be prohibitive as administration of the review may result in higher base premiums to ensure the insurer's expenses can be met. This

could make policyholder-triggered reviewability impractical to implement from a product viability and sustainability perspective.

- The commission schedule for advisors needs to be carefully designed to consider how the commission clawback period (whereby the insurer recoups some of the advisors' commission if a policyholder lapses at early policy durations) would interact with the timing of the review. Positioning the review to take place after the clawback period could be a simple solution to this.
- Although the cost is likely to be lower for a one-off, one-sided review compared to continuous underwriting, there is a risk that the reduction in total premiums due to the one-sided review will outweigh the cohort's average experience improvement, and as a result the insurer's overall standard base premium may need to be increased to accommodate this underwriting structure. To minimise this risk, insurers could limit the underwriting review to be carried out only if there is no other general deterioration in health status compared to inception and ensure that this is clearly communicated to policyholders.
- A long pilot period will likely be needed as the underwriting review may not take place for some time e.g. until 3 years' post-issue. Claims experience following the review will take even longer to emerge.

It is crucial when implementing any type of reviewable product, that policyholders' reasonable expectations are considered and met at review. The insurer will need to clearly outline the parameters for reviews and ensure that policyholders are well-informed when selecting this product. For instance, without the required elements to assess the policyholder's current health status, a review will not take place; and at the point of review, a reduction in premium may not be guaranteed as it would depend upon an improved prognosis relative to expectations when the upfront underwriting rating was given at outset. In addition, while the underwritten mental health condition may have improved, new conditions may have developed in the meantime so the insurer will need to be clear on how this would be considered at point of review.

It is worth noting the concepts of one-sided reviewability and temporary rating could be complementary to one another. This could provide the opportunity to the underwriter to decide which is most suitable to apply based on the application information available. It could be useful for handling more complex cases, particularly where comorbidities make it hard to accurately separate and quantify effects.

To better illustrate this, consider the following applicant:

- 18-months ago, this individual received a cancer diagnosis and has now fully recovered.
- 12-months ago, they were off work over a 6-month period to treat a reactive depression[2] triggered by the diagnosis.
- At the time of underwriting, the potential underwriting outcomes for the depression could be:
    - Currently – a flat extra loading of x% on premiums for all durations or,
    - Reviewability – the right to review the initial loading of x% on premiums after n years or,
    - Temporary rating – a temporary additional loading of y per £1000 sum assured for m years.

[2] It is recognised that reactive depressions are not typically rated, however these could be rated in certain circumstances such as high severity or in the presence of comorbidities.

5.4. What do we need to move forward?

Underwriting is the area where a lot of changes must first take place for these alternative product structures to be successful. It is important to clearly define the following three components, namely conditions, severity post-issue and clear targets for reduction.

In terms of the conditions, as a starting point new underwriting structures could be limited to mild-moderate conditions where the excess mortality risk reduces over time. This may be suitable for anxiety or stress-related conditions linked to specific situations or exposures and depressions categorised as reactive or due to a life event such as post-partum, grief, divorce and employment loss. If properly managed, the excess mortality risk from these conditions can decrease to nil. More severe and long-term conditions (e.g. personality disorders or schizophrenia) may be less suitable for these underwriting concepts as the policyholder may be more likely to have a long-term elevated mortality risk so temporary, continuous or reviewable underwriting would be less likely to lead to a change in premium. Nevertheless, a pragmatic approach is needed as mental health conditions is a spectrum rather than clear-cut. For some conditions it is hard to differentiate if they are acute or chronic. For instance, using the example of obsessive-compulsive disorder[3] (OCD) for illustration purposes. It may be that although OCD is typically considered a chronic mental health condition, OCD could be considered for these alternative underwriting structures if the individual is able to work, study and function. Once the main triggers have been identified and managed appropriately, the excess mortality risk becomes very low[4].

Once eligible conditions have been identified, particularly for reviewable and continuous underwriting structures, clear methods to assess severity post-sale needs to be set up and linked to clear targets for premium reductions. As all mental health conditions are different and no two individuals are the same, there will need to be a range of methods and benchmarks involved. To meet customers' reasonable expectations, it is key to have clear and transparent processes and parameters in place to assess whether there is a reduction in underwriting risk post-sale. In addition to medical evidence**,** the assessment could perhaps include a questionnaire from which the underwriter evaluates the overall level of improvement (if any) from policy inception date. The parameters or questions considered could also include whether the policyholder is still undergoing treatment, any recent medication changes and whether the agreed treatment schedule has been followed. Questions on the policyholder's daily living situation could also provide insights into management and recovery. The

[3] OCD is defined in The International Classification of Disease, tenth revision as follows: "The essential feature of OCD is recurrent obsessional thoughts or compulsive acts. Obsessional thoughts are ideas, images, or impulses that enter the patient's mind again and again in a stereotyped form. They are almost invariably distressing and the patient often tries, unsuccessfully, to resist them" (WHO, 2019). The ensuing compulsive acts or rituals are repeated in order to prevent the individual from experiencing a situation they fear might occur. For example, excessive hand-washing due to fear of germ or contamination (of self or others) would constitute a ritual if it were to take priority over completing work or school tasks, or leaving for an appointment. As repeated attempts are made to resist obsessive thoughts or compulsive acts, anxiety, which may be present, grows and can further interfere with aspects of the individual's life (WHO, 2019). In terms of treatment, The National Institute of Mental Health says "OCD is typically treated with medication, psychotherapy, or a combination of the two. Although most patients with OCD respond to treatment, some patients continue to experience symptoms." (National Institute of Mental Health, 2022).

[4] The example of OCD is for illustration purposes only. The changing nature of the individual's mortality risk depends on the individual circumstances of the case.

questionnaire used should be consistent with the underwriting questions used at point of issue and only questions that are part of the decision-making process should be asked.

Whilst this paper presents three examples of different underwriting structures that could be considered, these are presented with the intention of promoting discussion around different underwriting approaches that could support insurers in expanding access, affordability and assistance for customers with mental health conditions. With that in mind, insurers should have the flexibility to design their own underwriting processes and draw on medical research to design these processes. The processes designed by the insurer will need to facilitate easy administration to avoid a general increase in base premiums to support these new structures. Moreover, processes should remain flexible enough to evolve over time, taking into account latest research.

If an insurer is looking to conduct a pilot, distribution via advisors specialising in complex risks (ideally with a background in supporting insurance coverage for more complicated mental health risks) could be a good place to start. Advisors from these channels should have experience in pre- and post-sales customer servicing to help the customer understand whether a policy with an alternative underwriting structure is more suitable for their needs as compared to traditional upfront underwriting. Advisors and customers should be encouraged to provide regular feedback to insurers so products can evolve in response to customer needs.

There are potential benefits for both insurers and customers in implementing these additional underwriting approaches. Policyholders have increased choice. Although they may have a need to take out insurance at a particular time in their lives, with one of these designs there is the possibility to reduce their premiums in future if their condition improves. Those insurers adopting newer underwriting structures can benefit reputationally from being proactive and forward-thinking in supporting access to insurance. The reviewable underwriting and continuous underwriting designs support long-term customer engagement, with insurers actively incentivising policyholders to seek treatment and manage their mental health. Insurers also benefit from insights into customers' health beyond the snapshot taken at point of entry underwriting. Analysis of this data on an anonymised, aggregated basis could pave the way for deeper and more granular data-driven understanding of mental health and other comorbid conditions to support additional product development in future.

6. Conclusions

The considerations set out in this paper aim to support insurers in their continued efforts to improve availability and choice for customers with mental health conditions, including underwriting and product designs that proactively support customers with the treatment and management of mental health conditions.

To support this aim, we strongly encourage and recommend the following activities and developments in relation to data and modelling of mental health conditions for life insurance:

- The continued use and analysis of data to provide deeper insights into mental health, comorbidities and protective risk factors. This could support the development of models that provide refined risk assessment and allow for more dynamic underwriting that takes into account protective factors.
- The efforts to identify new data for analyses of mental health conditions, in line with ABI's Mental Health and Insurance Standards requiring decisions on all aspects of pricing and

underwriting to be evidence-based (ABI, 2020). Further sources of data, such as industry data on mental health conditions or specific data from the growing adoption of wearables and health apps by public, may offer more ways of establishing a deeper understanding of the excess mortality resulting from mental health and comorbid conditions. Alongside this we encourage insurers to consider, challenge and build upon the additional data fields or risk factors discussed in section 3.

- Open industry discussion on mental health. Continuing societal progress made in recent years to alleviate the stigma associated with mental ill-health improves the prospect of collecting more accurate and complete data on mental health conditions. We also encourage the support of research into how controllable risk factors and protective factors, such as sleep, diet and exercise impact excess mortality for those with mental health conditions.

We recognise that building up and analysing a more granular and comprehensive data in relation to mental health conditions is a medium-term goal for most insurers. This is because it will take time to increase data availability to obtain actuarially credible data, and to conduct appropriate longitudinal analyses. Alongside efforts to enhance data and modelling for mental health conditions, we encourage insurance professionals to consider the relative merits and drawbacks of the additional underwriting structures set out in this paper as part of their underwriting and product development work in this area. We also encourage cross-industry discussions of this paper. Discussion of the work presented in this paper could help to identify additional approaches to data, modelling and insurance risk assessment of mental health conditions that support further improvements in the availability and affordability of insurance for customers with mental health conditions.

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Glossary

ABI	*Association of British Insurers*
Biopsychosocial factors	*The biological (e.g. genetics, brain chemistry), psychological (e.g. beliefs, emotional intelligence and resilience) and social (e.g. life traumas and stresses, early life experiences and family relationships) factors that might affect mental health*
BMI	*Body mass index*
Chronic condition	*A condition or disease that is persistent or prolonged in duration that usually can be controlled but rarely cured completely*
Comorbidity	*The simultaneous presence of two or more separate diseases or medical conditions (physical health conditions or mental health conditions) in an individual.*
Continuous underwriting	*The use of regularly updated policyholder data to determine an individual's risk and adjusting the policy terms and premiums accordingly.*
FCA	*Financial Conduct Authority*
Mild-to-moderate depression	*The International Classification of Diseases, tenth revision (ICD-10) diagnostic criteria for depression uses an agreed list of depressive symptoms and depending upon the number and severity of the symptoms, a depressive episode may be specified as mild, moderate or severe:* • *not depressed (fewer than two symptoms)* • *mild depression (two or three symptoms)* • *moderate depression (four or more symptoms)* • *severe depression (several symptoms, with or without psychotic symptoms, ideas or worthiness, guilt and self-harm)* *In all cases, symptoms should be present for a month or more and every symptom should be present for most of every day.*
Neurological disorders	*Neurological disorders are medically defined as disorders affecting the brain as well as the nervous system.*
NHS	*National Health Service, publicly funded healthcare system in England and one of the four National Health Service systems in the United Kingdom*
NICE	*National Institute for Health and Care Excellence*
OCD	*Obsessive Compulsive Disorder. This is defined in The International Classification of Disease, tenth revision (ICD-10) as follows:* • *"The essential feature of OCD is recurrent obsessional thoughts or compulsive acts. Obsessional thoughts are ideas, images, or impulses that enter the patient's mind again and again in a stereotyped form. They are almost invariably distressing and the patient often tries, unsuccessfully, to resist them."*
Protective factors	*Factors that strengthen an individual's mental health and work to improve an individual's ability to cope with difficult circumstances; and therefore reduces the likelihood of problem outcomes.*
Reactive depression	*Depression triggered by difficult events in life or some situational stress, such as divorce or loss of one's job. This is also known as situational depression.*
Risk factors	*Factors about an individual used to underwriter a life insurance policy such as age, sex current health, medical history. These factors are statistically linked to an individual's life span. These factors may be controllable such as diet and activity or uncontrollable such as age and family history.*
Somatic diseases	*Somatic as an adjective refers to symptoms of the body, whereas psychosomatic pertains to a physical disorder that is caused or notably influenced by psychological or emotional factors.*

Standardised mortality ratio	*The ratio between the observed number of deaths in a study population and the number of deaths that would be expected from the general population.*
Temporary rating	*An underwriting loading applied for a set period of time determined at outset.*
Wearable technology	*Wearable technology (or wearables) here refers to small electronic devices that, when worn close to or on the surface of the skin, can measure and collect biometric health and lifestyle data, such as sleep, physical activity, body temperature, blood pressure, breathing rate.*
WHO	*World Health Organization*

Appendix: Reviewable and guaranteed premium life insurance

The ABI distinguishes between two main classes of policy premiums: guaranteed and reviewable. At the point of sale, the policyholder typically makes a choice between one or the other (ABI, 2006).

Fully guaranteed premiums are set for the term of the policy.

- They provide security to the customers who can see the exact amount to be paid to be insured and be confident that under quasi no circumstances the amounts written in the contract will change.
- The most likely reason for a change would be a change in cover, for instance where the direct policyholder requests an increase in face amount, a plan with indexation or failure to pay premiums.

Reviewable premiums can increase or decrease at review dates within the policy term.

- There are advantages to both the consumer and the insurer, for the most part for the customer this revolves around affordability.
- Guaranteed premiums may only be available with a significant extra cost, but for those customers willing to accept the risk of an increase in premium at review, then if the increase is less than the cost of the guarantee this can lead to savings.
- Some products may be unavailable if insurers are only able to offer long term contracts with guaranteed premiums. The ability of insurers to offer long term contracts with reviewable premiums increases consumer choice and encourages innovation.

How does the review work?

In the case of reviewable premium products, it works as follows:

- The review is triggered by the insurer only.
- The need for change is assessed on a group or portfolio basis, rather than at the level of each individual policy
- The change reflects future expected experience and costs for the group or cohort including claims, expenses, investment returns and reinsurance, and other costs related to the tax and regulatory environments.

To ensure fairness, the criteria for making changes is set prior to issue and is well-described in the policy literature. These include:

- A clear and transparent method for calculating changes – including limits if any
- The frequency of review within each financial year to assess continued fairness
- A statement referencing the variations to be calculated as fair to the policyholder
- Upon making a change, the insurer is subject to an external disclosure including explanations of the review process, justifications for making the changes and why it is occurring now, a statement that changes are in accordance with the established criteria and fair.

Institute and Faculty of Actuaries

Beijing

14F China World Office 1 · 1 Jianwai Avenue · Beijing · China 100004
Tel: +86 (10) 6535 0248

Edinburgh

Level 2 ·Exchange Crescent · 7 Conference Square · Edinburgh ·EH3 8RA
Tel: +44 (0) 131 240 1300 · Fax +44 (0) 131 240 1311

Hong Kong

1803 Tower One · Lippo Centre · 89 Queensway · Hong Kong
Tel: +852 2147 9418

London (registered office)

7th Floor · Holborn Gate · 326-330 High Holborn · London · WC1V 7PP
Tel: +44 (0) 20 7632 2100 · Fax: +44 (0) 20 7632 2111

Oxford

1st Floor · Park Central · 40/41 Park End Street · Oxford · OX1 1JD
Tel: +44 (0) 1865 268 200 · Fax: +44 (0) 1865 268 211

Singapore

163 Tras Street · #07-05 Lian Huat Building · Singapore 079024
Tel: +65 6717 2955

www.actuaries.org.uk