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Institute and Faculty of Actuaries

SESSIONAL MEETING DISCUSSION

Data and modelling considerations for mental health in life insurance

[Institute and Faculty of Actuaries, Sessional Webinar, Monday 11 July 2022]

Moderator (Miss S. Soong, F.I.A.): Good afternoon, everyone. A very warm welcome to today's sessional meeting on Data and Modelling Considerations for Mental Health in Life Insurance presented by the Data and Modelling workstream of the IFoA Mental Health Working Party. Today's session is being recorded and a recording will be made available for review and streaming later.

I am Serena Soong. I am head of risk and solvency planning at Legal & General and I will be introducing and chairing today's session. I have with me my fellow co-authors of the discussion paper accompanying this presentation. Lisa Balboa is a business development actuary at Hannover Re, working across the UK Life Branch and the Global Life & Health Digital Business Accelerator. She is also deputy chair of the Mental Health Working Party. Fraser Ballantine is the underwriting quality and risk manager at Zurich UK with over 20 years of experience in the protection industry. He is the chair of the industry group Action for Suicide Prevention in Insurance. Maryse Nashime is a senior actuary at PartnerRe. She has worked in the life industry for over 10 years and is a qualified actuary from both the Society of Actuaries and the Canadian Institute of Actuaries. She currently works as a pricing and product development actuary, supporting pricing functions across Europe and Latin America, and prior to that, as a dedicated pricing actuary for Canada and the USA. Joe Wilson is a pricing actuary at RGA UK working across the EMEA in the global financial solutions team.

I would like to provide our usual disclaimer. We are all speaking here on behalf of the working party as individuals, so the views are our own and do not represent the views of the IFoA or our employers.

I will start today's session by telling you a bit about the Working Party and what their work reviews, and then we will move onto the key elements of the discussion paper. The discussion paper covers how mental health conditions are underwritten for life insurance products. It then explains some of the complexity associated with mental health risk assessment, in particular from co-morbidities. It then looks at risk factors that could be of increased importance and could enhance our understanding of mental health risk. Finally, it considers the opportunities that improved data availability could open up in terms of additional products and underwriting designs, which could further expand the access to insurance for those with mental health conditions. We will then wrap up with a Q&A.

The Mental Health Working Party was set up 2 years ago in 2020 with the aims of raising the level of understanding of mental health among actuaries, promoting the consideration of mental health in designs of products and processes and exploring data and modelling for mental health risk factors. To meet these aims the Working Party has to date worked through the consideration of mental health issues in the SA1 and SA2 subject syllabuses (Healthcare and Life – see the core reading from July 2022).

We have also been focussed on facilitating cross-industry conversations around mental health and insurance. We held a Mental Health in Life Insurance Week earlier this year where we created a series of blogs, podcasts and webinars themed around different mental health touchpoints or considerations of the customer journey. So, starting from triggers for seeking insurance in the first place and proceeding to the different channels available when purchasing insurance, the underwriting journey and the claim process. Then there is this discussion paper and the presentation. All of the Working Party's work can be found on the IFoA website. Now, I will hand over to Fraser (Ballantine) to begin discussion of our paper by talking about how mental health conditions are underwritten here in the UK.

Mr. F. Ballantine: Mental health covers a very wide spectrum of conditions. These vary from short-lived grief or bereavement reactions all the way through to longer-term severe conditions, such as psychosis, bipolar or schizophrenia. They vary in severity and the impact on an individual will also vary depending on those individual's circumstances. I think it is very positive that the focus on mental health within our industry and the general population has increased over recent years. We would all agree that it is good to see more openness and the stigma being removed around these discussions. It is also well documented that approximately one in four people will experience a mental health problem of some kind each year in England. This is a really high number, and in addition to this, it is reported that one in six people experience a common mental health problem, such as anxiety or depression, in any given week in England. Given these statistics, it should come as no surprise that mental health disclosures are very common in the onboarding process of writing protection business. It is an area that we need to be able to accurately assess.

These disclosures for mental health or underlying histories are like any other medical condition or risk. Either we choose to ignore them because they are of little or no significance to the risk or we act upon them. It is not always a diagnosis of a condition that warrants an increased premium or rating, but rather how a customer copes or responds to the symptoms that come along with that condition and how they experience it. We do know that symptoms will fluctuate significantly for mental health conditions, from simply a low mood, to being unable to work, or worse. How frequent the symptoms are, whether they are managed alone or with medication, and whether they require GP or with specialist input are all scenarios that need to be considered. The overall situation will have to be reviewed and a holistic approach taken by the underwriters. The human underwriter or the electronic underwriting rules engine will use the answers provided by a customer during the onboarding journey to establish the nature of the condition along with its severity, treatment and frequency of symptoms. Then, using evidence-based research, a decision will be made. That decision can range from obtaining additional information, due to a lack of sufficient information on the application being provided or requiring more in-depth details on a more moderate to severe condition; to accepting the customer at standard terms or with a loading; to postponing or declining to accept the policy. There are such varied outcomes that we need to take a long and a hard view when we are looking at these.

For lives with an additional mortality risk (that is a risk that exceeds base insurance pricing) underwriters apply a load into the policy. Population and NHS data is used to inform underwriting philosophies to ensure we are treating clients fairly. Insurers will also look at their own experience of books and portfolios in order to build the philosophies whilst ensuring fairness to our customers.

We attempt to bring these ideas to life with a couple of examples. Firstly, you could have a customer who has a history of grief reaction due to family bereavement in mid-2021. The customer has no lifestyle-habit criticism, missed a few weeks of work, did not receive treatment but did attend some counselling and is doing well now. Realistically, these are situations that came with the base rate, and we would expect those to be accepted at standard rates.

If we look at a more significant one, we could have a customer with a long history of depression, taking medication and attended some counselling for the last 12 months. They have also had an

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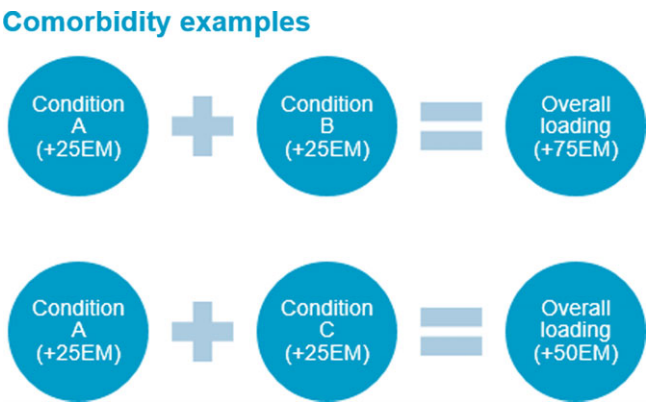
increase in the treatment dose size in the past year, drinking slightly more than the UK Government's recommended alcohol limits, intermittently has some time off work but really only a few days at a time with no chronic absences. Then we would be looking to have those with a modest rate of around plus 50 to plus 75 within the market (i.e. an underwriting loading of 50% to 75% increase to the base rate premium). I will now pass over to Joe (Wilson).

Mr. J. Wilson, F.I.A.: I am going to touch on co-morbidities as they form an important part of underwriting any life, let alone one with mental health conditions. A comorbidity is the presence of two or more separate medical conditions at the same time. These could be mental health conditions, physical health conditions or a combination of both. It is not uncommon for someone to have more than one medical condition at any given time, particularly if you consider that some physical conditions could predispose an individual to mental health conditions and vice versa. For example, if I received a bad physical medical diagnosis, that could trigger some level of depression.

What makes them more complicated? Firstly, as it is the presence of two or more medical conditions at the same time, you can very quickly get many different combinations that an underwriter could see. Therefore, it would be practically impossible to get studies done for all of these combinations, so an underwriter's judgement is required to rate them appropriately. This is complicated further because a lot of these interactions could be unique. In the case of mental health, personal circumstances should also be considered. A lot of these difficulties are applicable to physical health conditions as well as mental health. However, the complexities become more pronounced in the context of mental health. Understanding how conditions interact is very important as not all risk is strictly additive.



In some cases, where there are two conditions, there could be a synergistic effect on the risk. It could end up that the final rating is deemed greater than the sum of the two. In the top example, Condition A and Condition B would both independently lead to a plus 25 extra mortality loading. But if these conditions were, say, high blood pressure and high cholesterol, there could be a compounding effect on the risk. Therefore, instead of having a one plus one equals two approach, it would result in a higher loading, such as a plus 75 here in this example. That is not the only possible outcome though. There are cases where it is correct to treat conditions separately, as in the bottom example, as doing anything else would be not appropriate. Then, as Fraser mentioned, a final option could be a postponement, or a decline if there are just too many interacting comorbidity conditions present.

This illustrates why an underwriter's expert judgement requires a proper assessment of comorbidity risk. It is, therefore, only through continued research into underwriting philosophies that we can refine and incorporate risks for formidable conditions in the context of mental health.

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When we incorporate population-based research, allowances should, of course, be made between general and insured populations and that is the case for co-morbidities too.

To assist with that, insurance internal data on co-morbidities can be helpful, but it can be challenging in the context of mental health conditions due to historic under-disclosure. We were not as good in the past as we are today in talking about mental health. It is important that we continue to encourage the discussion. To sum up current approaches, there is potential for newer risk factors and data sets to move us forward. Lisa will talk us through that now.

Mrs. L. K. A. Balboa, F.I.A.: An interesting area that we have been looking into in addition to co-morbidities is the newer risk factors and how these might be related to mental health risks, and the potential to use these to enhance risk assessment and evolve product design. AIA Australia (2020) carried out a population-based piece of research that found that 30% of depression risk is linked to lifestyle factors, such as diet, sleep and exercise. That was quite a striking finding. We looked into the literature in some further detail to look at each of these factors and the evidence behind their findings. For example, in the case of physical activity there was a comprehensive meta-analysis done that was discussed in Dishman et al. (2021). They looked at 111 different studies and found that increased physical activity is associated with reduced risk of depression. More vigorous activity also confers additional benefits.

In terms of sleep, again we looked at some of the literature and research finds that both more sleep and a better quality of sleep are associated with a reduced risk of depression.

Thirdly, on the dietary side, there is also supporting evidence for dietary interventions being effective in the treatment and management of moderate to severe depression.

There is quite a significant body of literature out there and it is interesting to consider how these lifestyle risk factors, such as sleep, diet and exercise, could be measured for use in insurance. Customers could be encouraged, for example, to self-report on information about protective factors. In the case of nutrition, that is probably the only way at the moment that it could be measured. Then, of course, there are wearable devices. Some of you may have wearable devices yourselves and you might be aware that you can measure things like physical activity and sleep duration through wearables. But if you have ever happened to wear two wearables at once you might notice that at the moment some of these wearable devices are not consistent between different brands. Improving accuracy of the devices would be an important next step if we were going to link some of these factors into more robust pricing and underwriting.

Even with all that in mind, self-reporting and wearables could still be useful for designing products to support in-force policyholders with managing and preventing mental health conditions. By rolling out assessment of protective lifestyle factors, in a way that supports existing customers, insurers can start to build up useful data that might in future be used to help expand coverage at the underwriting stage.

As part of our work, we also considered a number of other risk factors that could enhance an insurer's understanding of mental health risks. First, we consider age at diagnosis. Of course, age itself is not a new risk factor in actuarial work, but there is a growing field of research exploring the link between age at diagnosis and mental health. We found a number of studies in this area which are detailed in the paper (e.g. Kessler et al. (2010) and AIA Australia (2020)) and they really link back to what Joe was saying around co-morbidities. So, particularly as co-morbidities tend to increase with age, it is important in any data set or study looking at age at diagnosis and its links to mental health risk to start to think about how the different health conditions, age at diagnosis and the risk interact. It could be very interesting to further explore this link between age at diagnosis, co-morbidities and mental health and population-based primary care records databases, similar to the ones used in the AIA Australia study.

The next factor in the table is clinical severity. Clinical rating scales such as PHQ-9 and GAD-7 are used by medical professionals to capture the severity of mental health conditions. These scales are very specific to particular mental health conditions. GAD-7 has been developed for generalised anxiety disorder. It is also worth highlighting that these scales are designed with medical uses in

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mind. This can make it challenging to directly integrate these scales into an automated underwriting rules engine process. Integrating some of the clinical severity measures into a turn-the-handle process could be quite challenging. It is important then to have expert underwriters when assessing risk. That is simply because these clinical risk factors are used by the medical profession, so they are not directly calibrated to long-term mortality and morbidity risks that a life insurer would be interested in assessing. It is therefore important to combine these with other measures and assess each case on its own merits.

The third factor in the table is an individual's support network, which could be very important in the treatment and management of some mental health conditions. But this biopsychosocial context of an individual can be really challenging to assess quantitatively. It can be hard to measure the support network a person has around them. This again emphasises the importance of underwriters in assessing cases. In future, with more dedicated research, it could be possible to propose ways to measure an individual's support network in a more objective way that could open up the possibility of integrating this into underwriting and pricing. Resources like digital mental health tools could perhaps provide a way to build some data on this factor as well.

Another factor is the engagement in managing mental health and of course adherence to treatment is important for all health conditions, both mental and physical. Variables like attendance rates at counselling, cognitive behavioural therapy (CBT) attendance, or healthcare appointment attendance could be some factors to consider here. It might be possible to capture engagement with the medical profession from a data point of view. Some of you might have seen recently that the UK government announced that the NHS app is aimed to be rolled out over the next few years, so that more people can access their medical records. Also, using data from these services as well as telehealth services that insurers have started to offer, can help to provide new insights on insurance customers' regular engagement in managing their mental health. If an insurer is looking to use this data, we need to be mindful of consent and policyholder data protection also. It is very important for an insurer to explain exactly what the data is going to be used for as part of building out this process.

All of these considerations around data protection are also true of the lifestyle factors previously mentioned. There exists the possibility of using wearable tech and health apps to measure lifestyle factors. The importance of accuracy and data protection and being mindful around data privacy rights would apply in that context also.

To sum up this section, new research in digital health data, coupled with a growing awareness of mental health issues, could advance our understanding of mental health risks. In the short term, the biggest opportunities are likely to be the use of data and insights to support policyholders in managing their mental health by adapting in force product design. Then, in time, some of these newer risk factors could allow insurers to advance portfolio-level risk assessment and also feed into some of the additional underwriting structures that Maryse and Fraser are about to talk about.

Ms. M. R. Nashime: Why did we start looking at alternative underwriting structures? It is quite simple. Joe and Lisa touched on data and the complexity of the relationship with newer data that we would like to introduce. But this data needs to be organised. It needs to be reliable. We need to be able to come back to it on a regular basis and that will take time to build. In the meantime, we can look at it differently. Underwriting is one aspect where we can make a potential immediate change. The thing that we are trying to move away from with this discussion is permanent loadings that are disconnected with the expected duration of the underwriting risk and automatic exclusion or reduction in coverage such that the applicant's full needs may not be met. In our paper, we introduce three structures: temporary ratings; continuous underwriting and one-sided policyholder triggered reviewability. The key idea to keep in mind is that with mental health the risk is often heightened at issue. Recovery is possible and we should promote that.

Temporary ratings are underwriting premium adjustments applied at outset with an upfront decision on how long the premium adjustment will apply for. The key here is that the underwriter needs to be able to assess whether and how the additional risk attributable to the specific health

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condition is likely to decrease and then come up with a schedule for how the rating should decrease over time. One of the key advantages of this structure is that it makes for quick implementation because it is already being used on physical health condition. There is no post-sale servicing as per the other structures we are going to discuss, and it is appropriate for mild to moderate mental health conditions where we know there is a risk at outset or at the time of application.

The second structure concerns underwriting. Here we are looking at periodic continuous reviews, which are a way for insurers to offer extended cover for applicants over time. For those customers that would have a stable or well-managed condition, this could allow for additional coverage or reduced ratings or costs. There are examples in the industry that already illustrate this. The Exeter (2021) has released a product focussed on diabetes and GenRe (2020) recently published a framework around more dynamic underwriting.

Contrasting the underwriting approach with temporary ratings, you are obviously looking at a longer implementation for the former because it is a fuller philosophy to do that: there is post-sale servicing, so you need to re-open your contract or review your underwriting post-issue. But at the same time, since you are possibly getting fresh evidence, you may be able to assess a broader range of mental health conditions.

The last structure is the one-sided policyholder triggered reviewability. Here, we are between the temporary rating and the continuous underwriting approaches. After a pre-set period, the policyholder could apply to have their mental health underwriting decision reviewed. By reviewed, we mean that it can be reduced or removed. If the policyholder can produce evidence that their condition no longer exists or has been steadily managed over several years, and that no new unrelated conditions have emerged in the meantime, they could apply for a review of their premium schedule. This is a one-off, one-sided clause. It would be appropriate for a mental health condition or co-morbidity where we are currently using flat adjustment over the lifetime of the policy, especially for mental health conditions triggered by one-time events like postpartum or bereavement. In contrast to the other two structures, it is a much longer implementation. You would have to establish the optimal period of re-evaluation for a range of conditions. There is post-sale servicing. But I do think that this structure is more in line with this desire that we should encourage people to manage their health and update us on their health status. If you see the updates that we get to review the ratings, they are backed by fresh evidence. I think one thing that is important to think about when you are implementing any of these structures where there is a duration involved is that you would want your distribution channels to be aligned. By this I mean that when you come up with a commission schedule, you do not want it to clash with some of the conditions such as pre-set review time and allowance for additional anti-selection risk. I now pass to Fraser for a few examples of this.

Mr. Ballantine: What we want is to view these additional underwriting structures through the lens of potential real-life examples, so we can show you potentially how they could work. We will go through some current outcomes and some potential new outcomes. I will just highlight that these outcomes are purely for illustrative purposes, so do not necessarily accurately reflect any specific underwriting philosophy.

Let's begin with the temporary ratings. Envisage a customer who has had a grief reaction with fairly recent onset within the last 6 months, was on treatment for 3 months, had a fairly lengthy period off work (roughly two-and-a-half months) and last had symptoms 2 weeks ago but now feels okay. In current underwriting, we would be looking at an extra mortality loading somewhere around 50% and that would be for the entire duration of the product and protection, and that would be due to the recent nature of the grief reaction and the fairly long period off work. If we were adopting our potential temporary rating situation, then we may be able to say that we know that grief reactions are usually short-lived, and they are less likely to lead to a long-term, serious, depressive episode. We may be able to adopt an approach along the lines of a plus 50% rating that might just be applied temporarily for 2 years; or we may go for a per mile life rating and we could do, for example, two per mile for 2 years (i.e. an additional £2 of premium for every

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£1,000 sum assured for 2 years). This takes away the upfront potential risk, but then does give the customer the benefit after a couple of years where the rating falls off because the expectation is that the grief episode will have been short-lived. Hopefully, that puts it into context where we are talking in terms of temporary ratings.

When it comes to continuous underwriting, envisage an individual who has depression, onset was 4 years ago with ongoing treatment, had 5 months off work approximately 18 months ago, and at the same time was admitted to hospital for just over a week. This does indicate a severe episode of depression, requiring admission, and a fairly long period off work. In this situation, we may be rating 100% on a mortality risk for the duration of the policy. If we were to adopt a continuous underwriting approach, we may review the policy in 3 years. We would be roughly four-and-a-half years from the time of the admission, and 3 years into policy inception with additional information. If we knew the customer was stable on treatment since that admission, had four weeks off work 10 months ago, but nothing since and no further admissions to hospital, then there is a potential that you could reduce those ratings down from plus 100% to plus 50% after the 3 years. I think that would show there is some stability from the customer and it is not as severe now as it was at the time when we were initially assessing the case. The logic is that there has been no further admissions and this is a positive in this situation, but there has still been some time off work and that is one of the factors to be considered.

In terms of policyholder triggered reviewability, envisage a customer who had depression, onset a few years ago, no ongoing treatment, had 12 months off work and had returned to work 9 months ago. What this indicates is significant time off work and a severe episode of depression in terms of mental health. At the moment, you may have an outcome such as 150% rating on that policy from a mortality aspect. In future, if it had policyholder triggered reviewability, the customer would be able to ask us to review that decision in 4 years. If we were at the point 4 years down the line, we may see that they have been stable on treatment for 4 years but had another long period off work recently – 5 months off work 6 months ago. They were also admitted to hospital 6 months ago at the same time, for two weeks, and at the same time as that admission they were having suicidal ideations. I think then what happens is that we are in the position where there is a policy that triggered reviewability, but their situation has not improved. The position looks similar or worse to that at the outset. We have a very recent admission and having suicidal ideations so actually the outcome after the 4-year review period, triggered by the policyholder, is there would be no change to the original decision. You can implement it such that it is not exclusively going to produce an improvement in the policyholder's terms. Reviewability means that we can choose not to change our decision as well. I think these examples highlight and bring to life the views we have been looking at and hopefully that brings to life some of the ideas we spoke about earlier. On that note, I will pass back to Serena.

Moderator: Thank you, Fraser. We are now in the Q&A session. The first one is: 'I take antidepressants for mild depression and anxiety for the last 6 years. I had counselling for a year but now only speak to a doctor to get medicine. My physical health is very good. On a life policy I have recently been declined waiver of premium claims due to psychological disorders without a reduction in the waiver of premium charge. I feel I have been treated unfairly. What are your thoughts on it?'

I think it is worth highlighting that in our paper we are focussed on the life insurance product because of the additional morbidity complexities and the additional work still needed on the topic. If possible, Fraser, are you able to also comment on this please?

Mr. Ballantine: Yes, I can discuss it. I will probably be clear at the outset that I am not looking to get into specific discussion about someone's individual policy conditions that have happened. In a generic sense, it is fairly common practice that, if you are still on treatment for a mental health condition (and by this I mean this individual has been allowed Waiver of Premium but has an exclusion on the policy for mental health) not having been declined outright for Waiver of Premium, then generally, in the UK market, the cost of Waiver of Premium is fairly small in

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relation to the whole policy charges. So, when you are looking at this, there should be a premium reduction if you are applying a solution to Waiver of Premium. That premium reduction would be very small in the grand scheme of the cost. There are other products, for example, Income Protection, where many providers do discount the premium when you apply that solution. But the costs of the benefits are significantly more than the cost of the Waiver of Premium. I would say that the logic here would be that the saving, or the premium reduction, would be negligible. We could be talking a matter of pence here on that product, so I think that's why there's been no reduction in that case.

Mrs. Balboa: I was thinking the same when I saw the question come in – the Waiver of Premium is a small additional charge to the policy. I think it speaks to some of the points we mentioned in the paper. It is important to discuss how to implement this and think about the administration costs of implementing some of the proposals we have outlined as well because we need to build sustainable insurance products and the administration costs of administering something like that could offset any potential benefit. But starting with the pure life insurance policy and then opening up the discussion in time to consider morbidity risks is the direction we have gone down as a working party. If we can align a discussion around the term insurance policies and life insurance policies then it could pave the way for additional structures for morbidity products, and income protection in future as well.

Moderator: The next question is for Fraser: are there any additional loadings? Fraser mentioned the increased risk of suicide. Would you expect different loadings due to gender or age?

Mr. Ballantine: It is an interesting question. I think when we talk about severe mental health conditions, particularly when we look at individuals who may have bipolar or schizophrenia, there is a lot of data out there that suggests that the risk of suicide for these individuals is significantly higher than those with generalised stress, anxiety or depression. I think also it is not just the suicide risk that comes into play. There is a lot of data that people with severe mental illness have a significantly higher risk of cardiovascular disease. That is documented within the NHS long-term plan. Public Health England (2019) reports up to a 53% increased risk of cardiovascular disease within individuals with severe mental health conditions. Whilst suicide is one of the things that is a real concern for those with significant mental health conditions, we do have those co-morbidities that Joe spoke about earlier where they may not have them yet, but we know there is a strong risk of individuals developing these conditions and also observed in the data.

Moderator: Thank you. The next question is one we have seen many times: in the new underwriting case studies they all suggest a reduction in ratings in due course – could ratings also go up or even lead to declining cover? If reviewability is always downward, does that mean we are overcharging on ratings currently?

Ms. Nashime: We talked about the three structures: temporary ratings, continuous underwriting and reviewability. For continuous underwriting, this can go up or down. It is more to align the price with the risk. But at the same time, if you look at policies that would come in at a standard rate, when we did our research approximately 80% of the policies passed with standard rates. So, it is just to help people in the 20%, the ones that do not have a heightened risk for the lifetime of their policy. You could argue both ways. On the reviewability option, we are saying there is one direction. When you come and have your rating reviewed, you are typically coming with a lot of evidence e.g. medical records, psychiatrist reports etc. It would show up if your health had worsened in another way. If your health had worsened, the policyholder would be unlikely to trigger the review. The clauses in the policy would need to be clearly set out to reflect this. But, at the same time, the goal is to reduce the loadings for policyholders that are now stable.

Mr. Ballantine: I think it is a fair point. I would say that I don't think we are overcharging on ratings currently. I think what we are saying here is, realistically, are there are areas where the long-term risk is not as significant, and could we adopt new approaches that are more in line with that risk? In terms of continuous underwriting, that has the option to go up or down. That has to be a fairly two-way street, I think. We would say that if it is going to be continuous

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underwriting, it has to also mirror the fact that there will be a subsection where the mental health does not improve and can worsen over time. The policyholder triggered reviewability is ultimately asking the question of whether we can do something better? And we can say yes, or no. Temporary ones are very much a case of whether we think the situation will be short-lived? So overall I don't think we are overcharging at the moment.

Moderator: Has there been research carried out on possible future trends, say availability or effectiveness of treatment of mental health conditions, or wider environmental, economic or social economy factors to determine longer term mortality ratings?

Mrs. Balboa: It is an interesting question about the trends, and I think we touched on it at the top of the webinar. The disclosure rates of mental health have changed over time. When looking back at historic data, that's one key trend to bear in mind. The past data might not be a good guide to the future in all situations. That does not necessarily mean that there is an increase in incidence of mental health conditions. It could be that people are being more open and there is more disclosure. That is one trend that I think we should have on our radar as we see the data and start to analyse it. At the same time, we have had the COVID-19 pandemic, so there has been a lot of relevant work done by the NHS and by mental health charities. This research says there has been a significant impact from the pandemic on mental health, particularly the mental health of young people i.e., the next generation of policy holders and the space in which our working party is striving to see what additional structures can be put in place. I think that is why we need to look at the impacts by age and the trends over time. Then, in terms of economic impact, there has been research at the time of the previous economic crisis in 2009. This showed that following the crisis, incidence of mental health problems rose. So, there is data available to look back at past economic impacts and start to look at, for example, various blocks of business and at the links between economic impacts and mental health. There is lots of data out there, but in terms of whether it would feed into the mortality rating specifically – I don't think the underwriting philosophies themselves would be linked by that. The underwriting philosophies are very much linked to the medical evidence. It would not be the fact that we are seeing generally high incidence of mental health, that is not going to affect the underwriting decision at the level of the individual customer. Underwriting philosophies are based on the actual medical evidence and the population-based research studies that have been done that show the link between, for example, a mental health condition and the hazard ratios in relation to that, in a mortality study or morbidity study.

Mr. Wilson: I would add that Lisa (Balboa) mentioned that during the COVID-19 pandemic, the government started an ongoing investigation to track mental health across the country and have continued that. Office for Health Improvement and Disparities (2022) breaks things down by age and geography, and that is something that might capture some of these trends going forward in the wider population.

Moderator: In a case of policyholder-triggered reviewability, how can a company control the risk of policyholders suffering again with such mental health conditions during the term of the policy?

Mr. Ballantine: This is one of the areas that would likely be a concern for insurers if you were going to implement this. Someone could have a mental health condition when you underwrite the case, you agree they can review in 3 years' time, and they have been entirely stable for the 3 years. You have to have enough data to be confident that by reviewing this case you are not skewing the portfolio because you have then got the run-off rate for the rating you would have applied. What we need to understand is that application questions also have tight limitations on them. We have to be careful that on our reviewability aspect we don't start to go too far back for information because that is also unfair, considering new business customers could have most of their mental health history available over the previous 5 years. More significant issues may be longer term. That is where the data comes in – we need high quality data for us to understand how many people are in that type of scenario, are stable for 3 years, then go on to re-develop a mental health condition further down the line. That is where the underwriting philosophies would apply in terms of how

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we review the decision. If you have done a 100% rating at outset and have been stable for 3 years, is it the right decision to go back to standard, or should we maintain +50% because we know that even though you have been stable, there might well be a period where the issue returns. I don't know if anyone else has any views, but I think that probably the biggest factor for us is data again.

Ms. Nashime: It is hard to assess whether someone who has a history of depression would be depressed by a future event? Where you can have an impact is in the design of this option internally. You have to be aware that the person could leave your portfolio and possibly get new rates. Do you prefer keeping a policy in force, or having another one issued. Overall we need good quality historic longitudinal data to be able to make a well-informed decision as to whether the policy is suitable for the reviewability clause.

Mrs. Balboa: I agree, it would need to be anchored in the data. With the population data sets, you can look at people with pre-existing depression versus those that did not have pre-existing depression and do a study that way. As Maryse and Fraser have said, it is possible for anyone to develop a mental health condition at any time. The point is, is it going to be more frequent and impact risk more significantly for someone who has the pre-existing condition? Population-based electronic health care records are creating opportunities to do these sorts of studies, most likely from an academic perspective. There could be opportunities to start to look at these research questions. This is a question that is probably of interest to the insurance industry but would not necessarily be a top priority for academic researchers. For example, the diabetes working party have commissioned research to investigate specific research questions that would be of interest for their purposes. As a next step, the mental health working party are hoping to speak to insurers to find what research questions would be helpful to support some of these structures. It is a very good discussion that we are having here about what we would need in order to put some of these different structures in place.

Moderator: Do we currently have regulatory restrictions on obtaining the information relating to mental health issues during underwriting? How about at a global level?

Mr. Ballantine: We genuinely only want to go back a limited duration because if you go beyond 5 to 10 years for mental health, you are in the realms of 'How far do we realistically need to go back to assess the long-term future risk?'. In that sense we opt for a fairly short duration. Policyholder consent is obtained by the insurer at the underwriting stage to request medical evidence. Regulatory restrictions vary globally depending on jurisdiction. And we also have to bear in mind that some other countries have lower levels of mental health disclosure because of the stigma that is attached to it in certain countries.

Moderator: Have we seen any impacts of mental health underwriting on group life products in the UK? For example, is there any credible data available on mental health varying by job category and occupation? Among providers of Group Life policies, are there any overarching loadings across cohorts?

Mr. Ballantine: Group Life is not my area of expertise. I can however deal with mental health questions in the context of job category and occupation. There is a huge amount of data on socio-economic status and how that impacts mental health. If you go to mentalhealth.org.uk there are some useful statistics available. Children and adults living in households in the lowest 20% income bracket in Great Britain are two to three times more likely to develop mental health problems than those in the highest brackets. There is information and data out there showing us that there is some socio-economic status link to mental health. For underwriting, we know that there are heightened risks of this nature associated with lower income families in particular.

Mrs. Balboa: There is a difference between the base price and the underwriting. Particularly for Group Life, I think there only tends to be underwriting above a certain sum assured. There is a free cover limit so I don't think we would be as directly impacted in terms of the underwriting philosophy specifically on Group Life products. But what could be interesting is collective risk assessment as part of, for example, dealing with the pandemic or mental health prevalence as a growing trend and burden. That could feed into the base pricing by, for example, using socio-economic

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status on the individual side or occupation as a rating factor on the group side. We were more focussed on the underwriting side and trying to address the 20% of people that might not get standard rates today, but I think it is an interesting question that relates quite well to the trends question that we had earlier. There is quite a lot of data available on this. For example, Joe mentioned the NHS data that is coming through.

Moderator: Have you looked at the impact of mental health on other pricing parameters, for example lapse risk?

Mrs. Balboa: This question probably relates more to the base pricing and also some of the discussions we had earlier around the benefits of one-sided reviewability or a continuous underwriting structure that could improve persistency on the portfolio. We have not done a direct study. I think it would be challenging to do that study. I don't think we would have industry-wide data for mental health underwriting risks available. It could be one that an individual insurer could look at. In terms of the base price, it is possible that a lot of work could be done on in-force product design to support customers when it comes to their mental health needs. That could improve persistency as well. So, a lot of the protective risk factors that we were talking about, if they could be integrated into product design there could be an opportunity to improve lapse risk and build that relationship with the customer and support the customer when it comes to their changing mental health needs. That could be very beneficial in terms of lapse risks and can create a source of value that could perhaps even pay for the program itself.

Moderator: Controllable and protective risk factors like sleep and diet are hard to quantify and rate. Can we rely on self-reported information? How do you think we should get reliable reporting for policyholders on this?

Mrs. Balboa: We could start to roll out mental health support programs to in-force policyholders to build up evidence. That could be one way in which you can start to build up a data set. Also, when it comes to wearables and apps, technology is improving and is becoming more reliable over time. I think we need to start to build up the data and then have that evidence base available that we can use to support the development of new product designs.

References

AIA Australia (2020). World-leading Research on Predictive Depression Factors. AIA Insights Report, available at https://www.aia.com.au/content/dam/au/en/docs/reports/AIA-Quantium-mental-wellbeing-whitepapers-summary.pdf (accessed 6 March 2023)

Dishman, R., McDowell, C. & Herring, M.P. (2021). Customary physical activity and odds of depression: A systematic review and meta-analysis of 111 prospective cohort studies. *British Journal of Sports Medicine*, **55**(16), 926–934. http://dx.doi.org/10.1136/bjsports-2020-103140 (accessed 6 March 2023)

The Exeter (2021). The Exeter Simplifies its Life Cover Offering. 29 Sept, available at https://www.the-exeter.com/news/the-exeter-simplifies-its-life-cover-offering-4/ (accessed 6 March 2023)

GenRe (2020). Gen Re Unveils Prototype for Pioneering Managed Mental Health Insurance Product, December, available at https://de.genre.com/aboutus/press-media/gen-re-unveils-prototype-for-pioneering-managed-mental-health-insurance-product-en (accessed 6 March 2023)

Kessler, R., Birnbaum, H., Shahly, V., et al. (2010). Age differences in the prevalence and co-morbidity of DSM-IV major depressive episodes: Results from the WHO World Mental Health Survey Initiative. *Depression and Anxiety*, **27**(4), 351–364, available at https://doi.org/10.1002/da.20634 (accessed 6 March 2023)

Office for Health Improvement and Disparities (2022). COVID-19 mental health and wellbeing surveillance: report. April, available at https://www.gov.uk/government/publications/covid-19-mental-health-and-wellbeing-surveillance-report (accessed 6 March 2023)

Public Health England (2019). NHS RightCare Toolkit: Physical ill-health and CVD prevention in people with Severe Mental Illness (SMI). March, available at https://www.england.nhs.uk/rightcare/wp-content/uploads/sites/40/2019/03/nhs-rightcare-toolkit-cvd-prevention.pdf (accessed 6 March 2023)

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