~ Asia Care Group ~

Cigna®

CHRONIC STRESS:
ARE WE REACHING HEALTH SYSTEM BURN OUT?

NOVEMBER 2019

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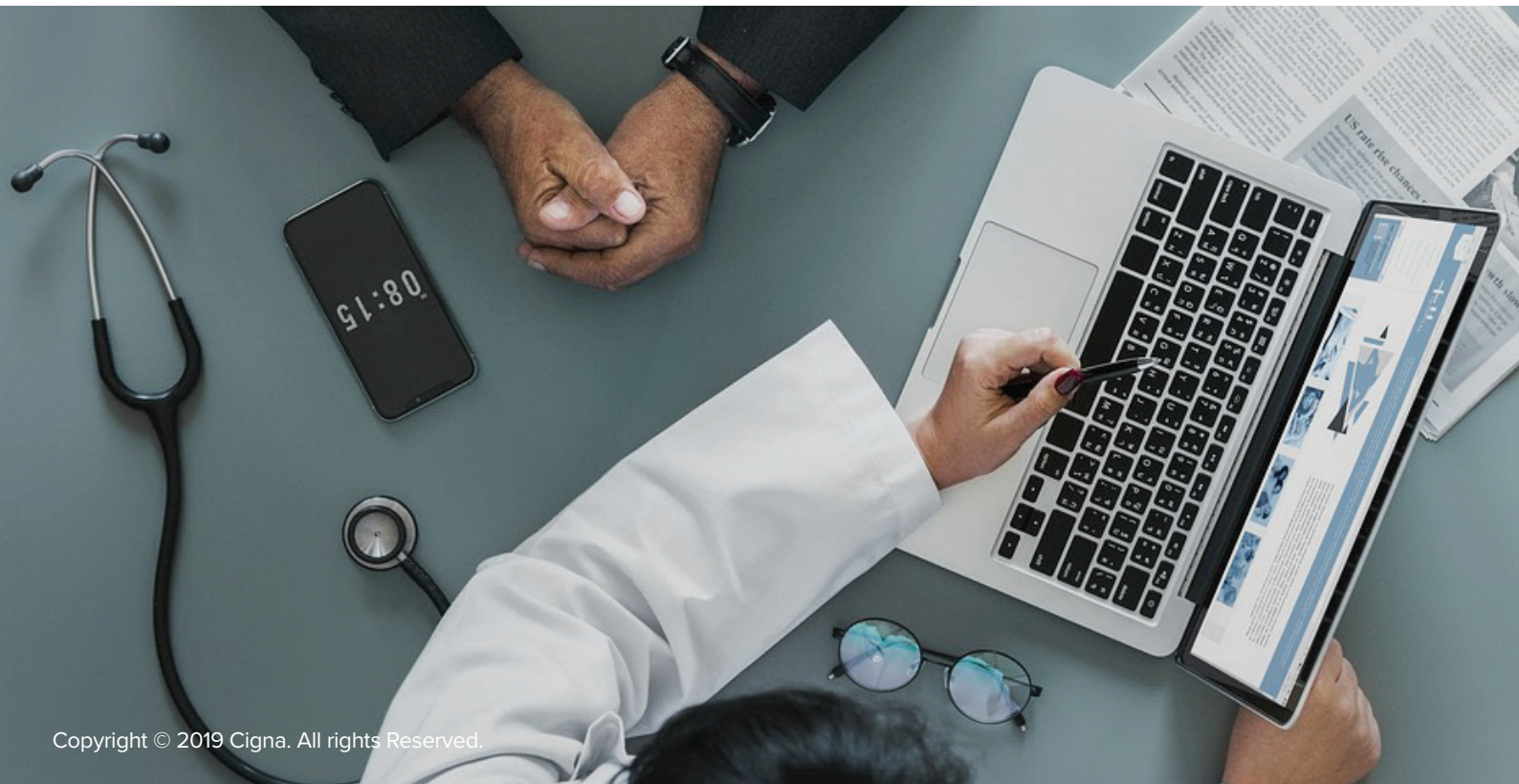

FOREWORD

Jason Sadler

President, Cigna International Markets

Cigna's research* has found that 84% of people around the world say they are stressed, with 13 % finding it unmanageable, and 64% saying that they work in an 'always on' environment. In Asia, the findings are even more alarming, with 91% reporting they are stressed and as many as eight out of 10 people saying they operate in an 'always on' culture.

While many people recognise the immediate symptoms of stress, what is less understood is how it can manifest itself physically including chest pains, circulatory problems, gastrointestinal problems, musculoskeletal pain, and women's health issues. In many instances, people are trying to find cures for the symptoms of chronic stress, without recognising the root cause.

This report highlights the huge financial burden that stress-related illness is putting on health systems around the world. According to our research, stress-related illness accounts for up to 19% of annual global healthcare expenditure.

Although stress will always exist, we believe that through better awareness, response and diagnosis we can help people to live happier, more productive lives, reduce physical illnesses and avoid these significant misdirected costs on our health systems worldwide.

I hope you find this report useful and inspiring. We care deeply about the work we do to increase awareness about stress because it helps provide insights and guides us in our mission - to improve the health, well-being and peace of mind of those we serve.

If you, or your organization would like more information on the survey or our employer, individual and supplemental health benefit solutions and services that take into account whole person health, please contact us at imbusinesscommunications@cigna.com.

*Cigna 2019 360 Well-being Survey (http://wellbeing.cigna.com/)

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01 EXECUTIVE SUMMARY

Chronic stress is a widespread issue affecting people's physical and mental health globally. It also impacts business productivity and, therefore, the economy. This study used novel methods to establish the scale and impact that stress-related illness has on health system usage globally. Our research concluded that between 4% and 19% of health expenditure is attributable to stress-related illness (see Fig 1).

We assessed the impact of stress on health systems in the United Kingdom, the United States, Australia, Singapore, Taiwan, Thailand, Hong Kong, United Arab Emirates and South Korea to obtain a global picture. There was considerable variability across different markets, but this proportion of expenditure translates to one of the largest single areas of spend facing health systems today. The impact of stress is placing an added burden on health systems at a time when they are already overstretched, and costs are expected to continue to rise.

Not only is chronic stress strongly associated with mental health issues like anxiety, panic attacks and depression, but it can manifest in physical symptoms. The five most common physical manifestations of chronic stress in the body include chest pain, circulatory problems, gastrointestinal problems, musculoskeletal pain (MSK), and women's health issues.

FIG 1 - ANNUAL COSTS OF STRESS-RELATED ILLNESS IN USD AND AS A PERCENTAGE OF TOTAL HEALTH EXPENDITURE

WE EXAMINED THREE PATIENT COHORTS

This research was informed by an extensive body of research (500 peer-reviewed journal articles) about the impact of stress on health systems and people's health. This was used to analyse patient data in markets with extensive patient data, which provided benchmarks for other markets. We examined three patient cohorts – 1) patients seeking care for stress-related mental illness; 2) patients suffering from stress which manifests as 'medically unexplained conditions'; and 3) a proportion of patients suffering from stress which manifests as physical symptoms that are commonly associated with stress, such as irritable bowel syndrome (IBS) or lower-back pain, but also had underlying mental ill-health associated with stress. Each cohort accounted for a considerable percentage of health expenditure.

Hospital-led health systems were observed to spend considerably more on stress-related illness than systems in which strong primary care is in place. This emphasises the need to consider how preventative, community-based services could be better used to manage-down the clinical and financial risks posed by stress-related illness.

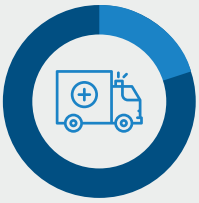
As much as 25% of hospital admissions, 19% of emergency department attendances, 35% of primary care visits, and 12% of outpatient attendances are likely to be the result of stress-related illness (see Fig 2).

Across markets, we estimate that between 4-19% of total health expenditure is attributable to stress-related illness.

FIG 2 - AN OVERVIEW OF KEY FINDINGS

Percentage of hospital admission with underlying stress driver

25%

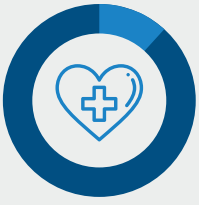


Percentage of emergency department attendances with underlying stress driver

19%

Percentage of primary care attendances with underlying stress driver

35%



Percentage of outpatient attendances with underlying stress driver

12%

There are several reasons why people will seek help for physical illness rather than for stress. In many countries mental health is still taboo, and seeking help for physical symptoms has more cultural acceptability. Breaking taboos are likely to mean that people seek help earlier, potentially reducing the impact and related costs of stress. Other factors can influence how and when a person seeks help for a stress-related illness, including the health literacy levels of the individual, other cultural norms, service availability and insurance coverage.

The findings of this study clearly indicate a need for urgent action to address the causes of stress, support people to manage stress better and to ensure systems are in place to identify and treat stress-related illness and its causes.

There is opportunity and need to equip societies with a better understanding of how stress can manifest and be reduced. There are strategies that employers can adopt to create healthier workplaces. There are also policies that governments and healthcare systems can introduce to help ensure better protection of our physical and mental wellbeing.

A summary of the recommendations can be found overleaf:

There is a need for urgent action to address the causes of stress, support people to manage stress better and to ensure systems are in place to identify and treat stress-related illness and its causes.

Helping to prevent stress-related illness

- **Healthcare leaders** should develop social marketing campaigns to help populations recognise the signs and symptoms of stress-related illness.
- **Payors** – both public and private – should develop predictive analytic tools to help identify patients that show a pattern of health-seeking behaviour that may indicate underlying stress.
- **Employers** should examine their work practices, environment and culture and take steps to reduce sources of employee stress in the workplace.
- **Employers** should provide mental health first-aid courses for employees, so that they can better identify staff who may need help.

Ensuring effective treatment and recovery for those who do suffer from stress-related illness

- **Healthcare leaders** should encourage more training of physicians in detecting, diagnosing and managing stress-related illness – particularly for those working in primary care and emergency care.
- **Government** or **healthcare leaders** should provide better access for patients to psychiatrists and associated therapists to meet the rising demand for care.
- **Payors** should consider enhancing cover for stress-related illnesses, which is likely to be highly cost-effective as well as improve clinical outcomes.
- Large or medium-sized **acute hospitals** should ensure a psychiatrist is on-duty at all times. This would support the upskilling of emergency staff and provide critical access to help patients who need it.
- **Healthcare leaders** should review protocols and clinical pathways to ensure that patients with stress-related illnesses are referred to a psychiatrist or therapist that can properly evaluate and help the patient.

Monitoring and evaluating the health system

- **Healthcare leaders** should ensure there are robust mechanisms to record a patient's diagnosis across care settings based on international norms. This would allow greater transparency on the use of health systems by those suffering from stress-related illness.
- **Healthcare leaders** should encourage more research into the causes, symptomology and methods of prevention for stress-related illness by providing grants to relevant bodies and/or incentives to employers.

02 THE RELATIONSHIP BETWEEN STRESS AND MENTAL AND PHYSICAL HEALTH

STRESS IS A COMPLEX PHENOMENON

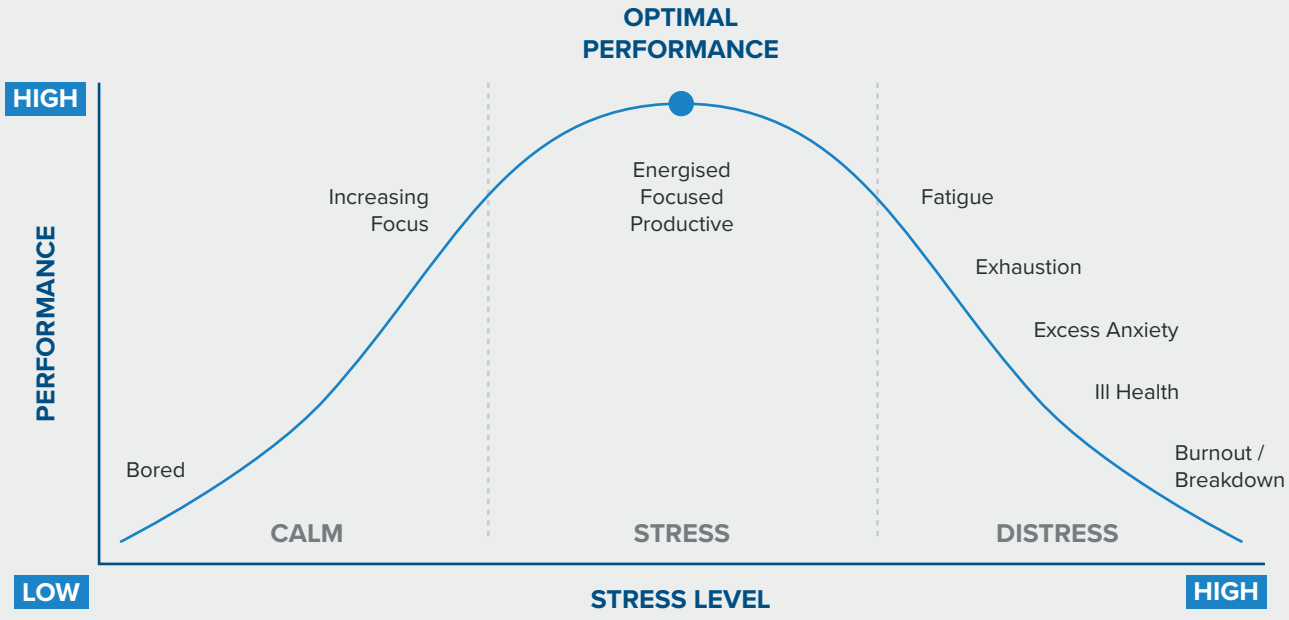
Stress is something everyone experiences; and in moderate doses, it actually helps us perform. A growing body of research suggests that the relationship between stress level and human performance can be represented as a curve.

In this curve, there are three main phases, known as Calm, Stress, and Distress. In the Calm phase, when we are not under enough stress, we can be bored or unmotivated, leading to reduced productivity. In the Stress phase, an increasing level of stress can help with focus, motivation, and attention, up to a certain point. At the point of optimal performance, which occurs within this phase, we have a healthy level of stress, and can be energised, focused, and productive.

Excessive demand, however, can lead to the phase of Distress. At this point in the curve, we may experience symptoms spanning fatigue, exhaustion, excess anxiety, ill health, and psychological distress with reduced productivity. In order to maintain a healthy relationship between stress and performance, finding a state of equilibrium is important to overall physical and mental health.

We require a degree of stress to perform at our best, but too much or too little can lead to an array of challenges.

FIG 3 - HUMAN PERFORMANCE CURVE



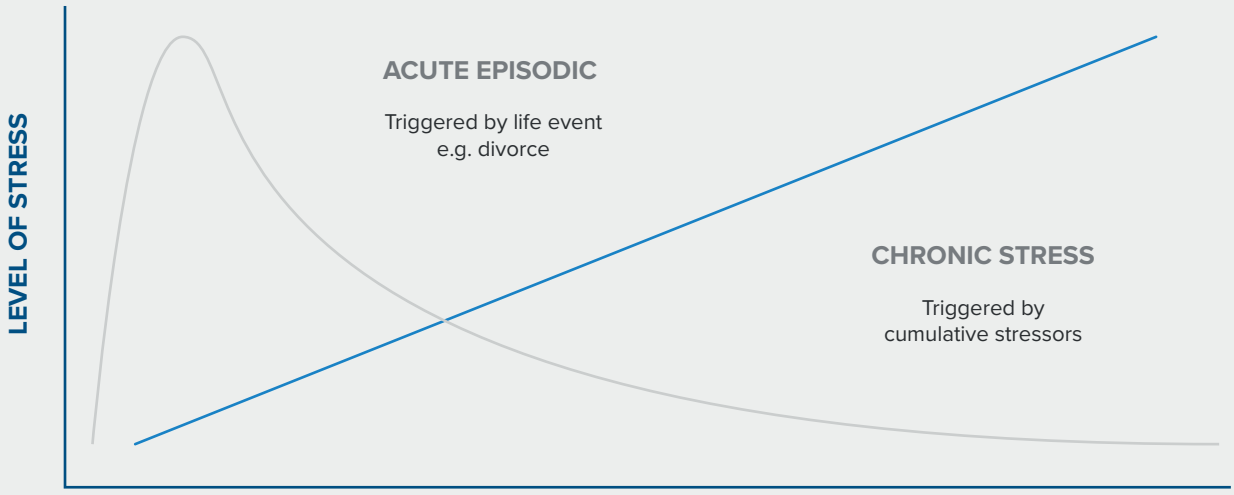
NOT ALL STRESS IS EQUAL

We typically classify stress into two categories: acute and chronic. Each classification has different effects on the mind and the body. Acute stress is short-term, resulting from a triggering event that involves surprise, threat, or unpredictability. Many issues or events could lead to acute stress; common life events such as moving to a new city or managing a divorce could be sources of acute stress. During acute stress, we may feel a rise in heartrate, be more aware of our surroundings, or feel agitated or excited. These are signs that our stress hormones are at work. Acute stress triggers a “fight or flight” response in the body. Once the period of stress passes, stress hormone levels usually return to normal. So whilst the symptoms of acute stress may be uncomfortable, there are not usually long-term health impacts.

Unlike acute stress, chronic stress is not episodic; it is triggered by long-term exposure to stressful situations or events. Physically, our bodies are ill-equipped to cope with long-term stress, and this can cause wear and tear on the mind and the body. We may experience pronounced effects on both our physical and mental health, and chronic stress is associated with poorer health outcomes and greater health service utilisation – meaning, we need to see the doctor more frequently as a result of the stress on our bodies.

Chronic stress has a significantly different impact on the body compared with acute or time-limited stress.

FIG 4 - ACUTE VS. CHRONIC STRESS



Our bodies perceive acute stress as an immediate threat to the internal environment, but some degree of acute stress can be a normal part of a healthy lifestyle to drive performance in the short-term. The acute stress response in the body can be explained in 5 steps (see Fig 5):

1 - The neuroendocrine system initiates the stress response. The amygdala detects things that are scary or dangerous in the environment.

2 - A region at the front of the brain called the prefrontal cortex plays a role in the regulation of the stress response. The pre-frontal cortex is reciprocally connected to the hypothalamus which is a small but essential region in the brain, responsible for keeping the body in balance.

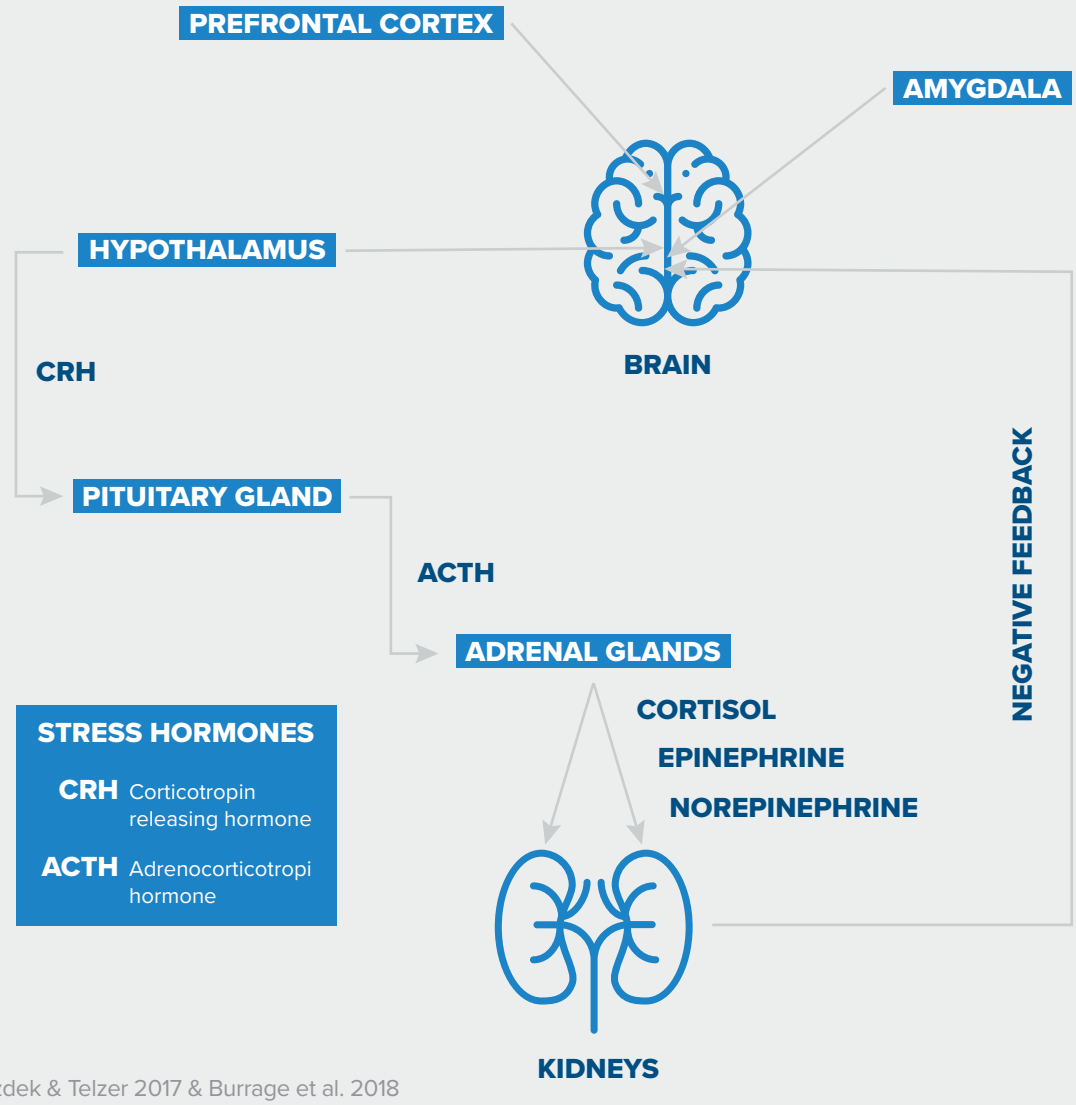
3 - Under stress, the hypothalamus releases stress hormones and the adrenal gland releases the stress hormone cortisol. The adrenal gland also releases neurotransmitters epinephrine (also known as adrenaline) and norepinephrine via the medulla.

4 - These travel through the bloodstream, detected by the hypothalamus, causing the body to react.

5 - Cortisol can increase brain function, send energy to muscles and increase heart rate. Epinephrine and norepinephrine cause blood sugar levels to increase and heart rate to increase. All prepare vital organs for the ‘fight or flight’ response.

The body perceives acute stress as an immediate threat to its internal environment and initiates the “fight or flight” response. This can be a normal part of a healthy performance short-term.

FIG 5 - ACUTE STRESS RESPONSE SYSTEM



Source: Bezdek & Telzer 2017 & Burrage et al. 2018

Our stress response system was not designed to be constantly activated. Overuse of the stress response system occurs during chronic stress when we are repeatedly exposed to situations leading to release of stress hormones, which may contribute to the breakdown of our bodily systems over time.

Chronic stress, alongside other risk factors, is linked to the onset of conditions such as diabetes, heart disease and obesity. The risks and causes of mental and physical illnesses are complex, and evidence in this area continues to expand. However, it is well-documented that chronic stress is an environmental risk factor for mental and physical illness, particularly in individuals who are already susceptible due to other genetic and psychological risk factors. Alongside other predispositions (e.g. lifestyle and genetics), chronic stress can result in a bulldozer effect of ill-health in our lives.

Overuse of the stress response system may contribute to the breakdown of many bodily systems.

Chronic stress increases the risk of developing common mental health disorders, such as depression and anxiety. The exact physiological reasons for this are still being uncovered, but there is general consensus that the continual activation of the “fight or flight” response overwhelms the body, deregulating the production of key neurotransmitters such as serotonin and dopamine. There is also considerable evidence that the stress response activates the immune system, which plays an integral role in promoting the circulation of neurotransmitters and managing inflammation. Individuals suffering from chronic stress often have high levels of inflammation in their system, which is associated with both mental illnesses and physical disturbances – such as gastrointestinal or musculoskeletal issues.

FIG 6 - CHRONIC STRESS IS AN ENVIRONMENTAL RISK FACTOR FOR MENTAL AND PHYSICAL ILLNESS

Changes in the levels of neurotransmitters in the body can have a significant effect on a person's mood and behaviour. Over time, this can evolve into clinically diagnosable, common mental illnesses. These may include depressive disorders, anxiety disorders, panic disorders, and stress disorders. There is no single pathway; individuals' own genetics, their life experience and the level and type of stress exposure all play a role in defining both the types of mental illnesses developed and their severity. It is not uncommon for stress-related mental illness to be comorbid with physical symptoms.

Stress is correlated with a higher likelihood of developing common mental health disorders.

FIG 7 - TYPES OF STRESS-RELATED MENTAL ILLNESS

DEPRESSION

Depression is an complex mental illness and specific symptoms differ from person to person. However, in general, depression is characterised by a low mood that lasts for several weeks, months or even years.

- The mildest form of depression is a persistently lower mood than usual that does not interfere with functioning and everyday life. In its most severe form however, depression can significantly impact normal functioning and can even be life threatening should the person develop suicidal feelings.

- Depression can lead to behavioural changes such as avoiding events and social activities, increased use of alcohol, smoking cigarettes and other drugs and noticeable changes in weight due to loss of appetite or increased appetite.

- Depression, whilst commonly associated with feelings of sadness, can also manifest as anger, irritability and frustration. In some cases, additional mental symptoms can develop such as delusions, paranoia and hallucinations.

- It is common for individuals suffering from depression to experience physical symptoms. These include unexplained aches and pains, loss of libido, insomnia or oversleeping and for women, changes in menstruation. People with depression typically present to their GP either for depression itself or associated symptoms like bodily pain.

TYPES OF DEPRESSION

- Major depression
- Melancholia
- Psychotic depression
- Antenatal and postnatal depression
- Dysthymic depression
- Seasonal affective disorder (SAD)
- Depressive Episode
- Recurrent depressive disorder
- Cyclothymia

COMMON SYMPTOMS

- Persistent sadness and low mood
- Feeling hopeless or helpless
- Irritability and anger
- Loss of interest in activities that usuall bring joy
- Lack of energy
- Loss of concentration
- Fatigue
- Disturbed sleep
- Loss of appetite
- Low self-esteem

ANXIETY DISORDERS

- Anxiety disorders involve excessive worrying and fear, which interferes with everyday functioning. The anxiety may be acute and episodic, or generalised and persistent. People suffering from anxiety disorders often have intense, distressing fears about multiple aspects of their life or future. Typically, the level of worry is disproportionate to any real risk they face. For example, an individual with health anxiety may constantly worry about their health - even in the absence of any symptoms and after negative tests/consultations with physicians.

- Some anxiety sufferers may find their symptoms are triggered or exacerbated by certain situations; social situations and being in confined spaces are among the most common triggers. Over time, this can lead to avoidance behaviours or agoraphobia as the individual seeks to find ways to cope and minimise the distress. Obsessive Compulsive Disorder (OCD) is also a type of anxiety disorder. OCD sufferers have recurrent, uncontrollable anxious thoughts, which are often temporarily relieved by compulsive behaviour.

- Anxiety disorder includes a broad range of symptoms that can manifest individually or in combination. This means that patients may present with associated symptoms of anxiety such as headaches, heart palpitations and stomach aches, rather than seeking help for anxiety disorder itself.

TYPES OF ANXIETY DISORDERS

- Generalised anxiety disorder (GAD)
- Social anxiety
- Health anxiety
- Mixed anxiety and depression
- Acute anxiety, mixed with panic
- Obsessive compulsive disorder (OCD)

COMMON SYMPTOMS

- Persistent sense of dread
- Restlessness
- Difficulty concentrating
- Irritability
- Dizziness/ nausea
- Fast or irregular heartbeat
- Muscle aches and tension
- Headache
- Stomach ache

STRESS DISORDERS

- Stress disorders are a type of anxiety disorder triggered by specific life events. Diagnosable stress disorders are not usually caused by chronic stress though can coincide with and be worsened by chronic stress. Stress disorders can be highly disruptive to a person's life, causing behavioural changes and distressing flashbacks, with or without triggers.

- Due to the dissociative symptoms, self-reporting of stress disorders can be particularly challenging. Patients may report to their GP and later be referred to mental health specialists.

- Acute stress disorder (ASD) can occur when a person experiences or witnesses a disturbing event such as a school shooting or car crash. For a diagnosis of ASD, symptoms such as nightmares, intrusive disturbing memories and dissociation, must last for more than three days. People with acute stress disorder may go on to develop post-traumatic stress disorder.

- Post Traumatic Stress Disorder (PTSD) is also caused by exposure to trauma – which could be emotional or physical trauma. PTSD is traditionally associated with an atypical, fearful event – such as experiencing a violent robbery or experiences in military combat – but can equally be caused by stressful life events such as divorce or the unexpected loss of employment. Symptoms include flashbacks, derealisation and nightmares. The differentiating characteristic is that PTSD diagnosis is given only when symptoms have lasted more than one month.

- PTSD usually occurs soon after the traumatic event, although delayed onset subsets can develop months after the event.

TYPES OF DEPRESSION

- Post Traumatic Stress Disorder (PTSD)
- Delayed-onset PTSD
- Acute stress disorder
- Acute stress reaction
- Chronic stress
- Emotional stress with psychotic symptoms

COMMON SYMPTOMS

- Dissociative symptoms including feeling numb, detached, emotionally unresponsive ad being unable to remember details of the traumatic event
- Reduced awareness of one's surroundings
- Mentally reliving the traumatic event through thoughts, flashbacks and nightmares
- Avoidance of people, places or things that are associated with the incident
- Being constantly tense and on guard
- Difficulty falling or staying asleep
- Persistent depressive symptoms and suicidal thoughts

*Acute stress disorder and PTSD are excluded as these are not chronic stress

PANIC DISORDERS

- Panic Disorders involve repeated, unpredictable and acute attacks of intense fear and anxiety. Panic attacks may not have obvious triggers, they can occur at any time and in the absence of an immediately stressful or dangerous situation. This makes managing the condition particularly difficult for suffers; agoraphobia is sometimes co-occurring and often a way individuals seek to manage the fear that a panic attack may occur in public.

- Many of the symptoms of a panic attack mimic those of heart attacks, such as an acute sense of dread, shortness of breath, light-headedness and chest pain. Although these attacks are not physically dangerous, they can be very frightening or distressing, particularly when the person is unaware of what is happening to them.

- Panic attacks are most intense within the first 10 minutes, after which, uncomfortable symptoms may persist with less intensity for some time. However, some panic attacks are reported to last up to an hour.

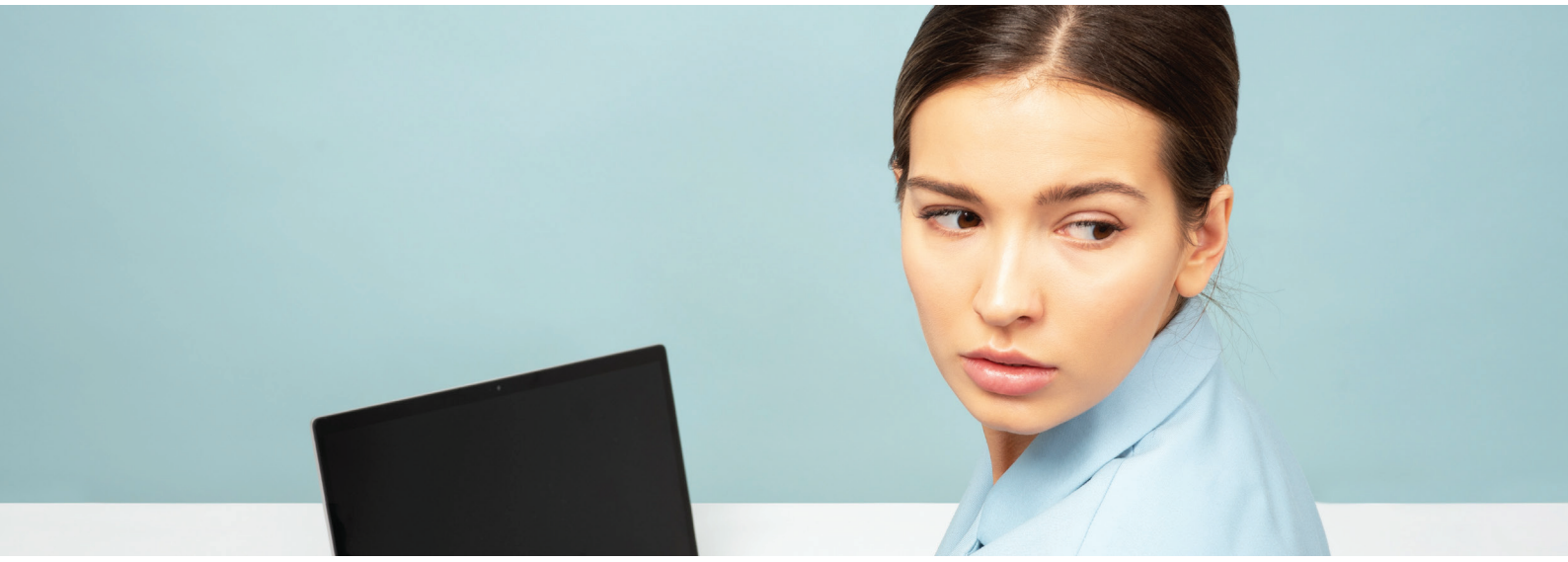
- Panic attacks frequently result in Emergency Department visits, as suffers genuinely believe, and physiologically perceive, that they are in immediate harm. Hospital physicians will typically rule out cardiac issues via diagnostic work-up, which may be done within Emergency Department (ED) or via admission. Patients are often discharged without a definitive diagnosis and it is not uncommon for panic disorders to go unmanaged for reasonably long periods of time.

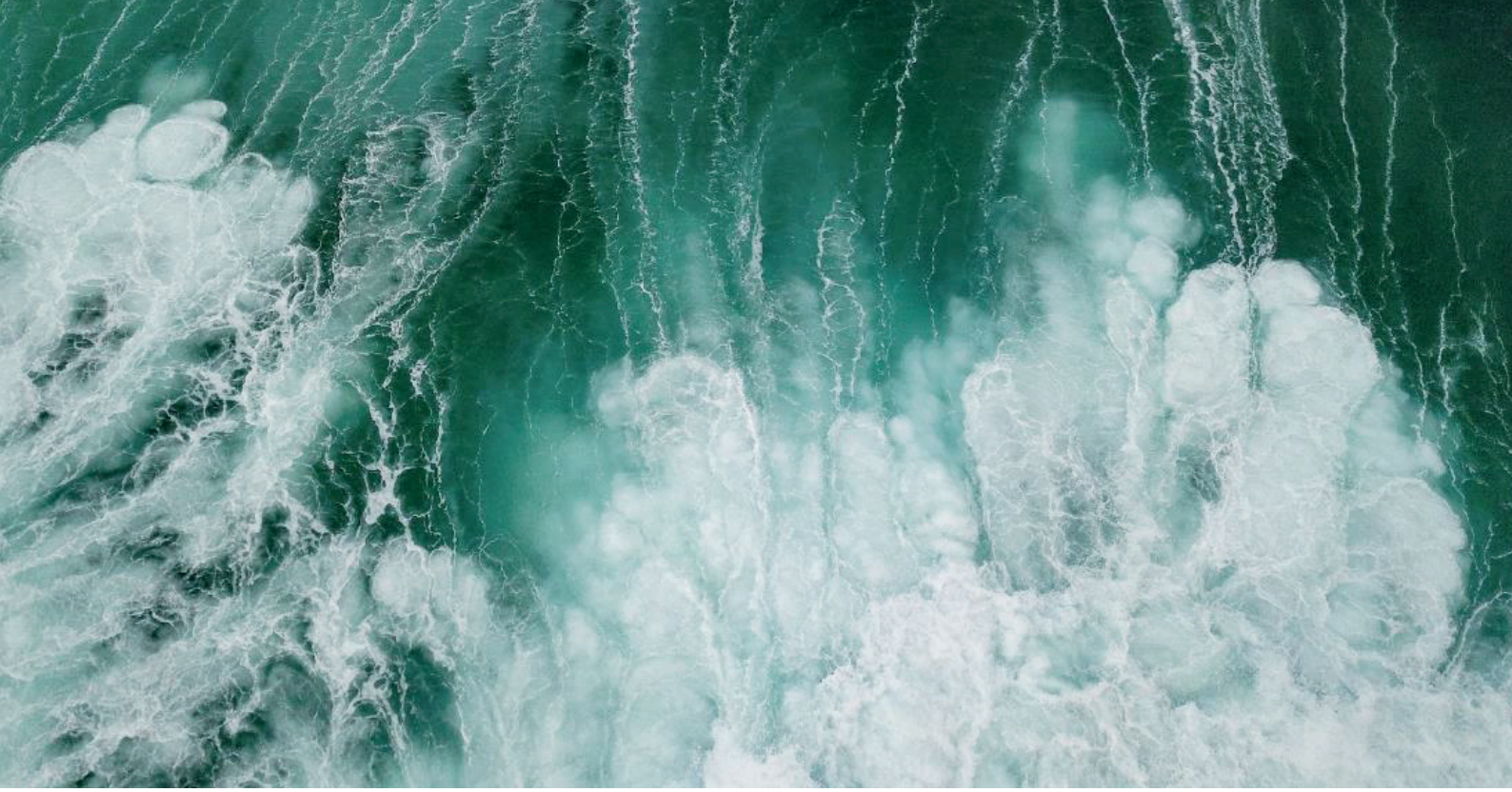
TYPES OF PANIC DISORDERS

- Panic disorder with agoraphobia
- Panic disorder with avoidance behaviour
- Panic disorder with un-cued attacks
- Panic disorder with situational attacks

COMMON SYMPTOMS

- Racing heartbeat
- Feeling faint
- Dizziness
- Shortness of breath
- Trembling
- Hot flushes
- Feeling of choking
- Churning stomach
- Sudden need to go to the toilet
- Feeling disconnected from the body
- Ringing in the ears
- Tingling fingers
- Chest pain
- Sudden fear of death





IN ADDITION TO COMMON MENTAL DISORDERS, CHRONIC STRESS HAS MAJOR IMPACTS ON THE PHYSICAL BODY

Aside from being a risk factor for clinically diagnosable and common mental disorders, chronic stress also has major impacts on the physical body. Chronic stress causes persistent imbalances in the system that can have a range of detrimental effects. There is compelling evidence that chronic stress, over a period of time, can diminish the immune system, exacerbate the affects of pre-existing conditions, and reduce cognitive function.

Stress has been shown to cause changes in the brain, similar to those observed in subjects with clinical depression. Additionally, chronic stress can lead to the development of other conditions, such as cardiovascular dysfunction, IBS, and thyroid problems related to obesity.

Chronic stress causes persistent imbalances in the system that can have a range of detrimental effects on the body.

FIG 8 - EFFECT OF STRESS ON VARIOUS ORGANS

Stress can cause shortness of breath as the airways in the lungs constrict. Those with underlying respiratory problems e.g. Chronic Obstructive Pulmonary Disease(COPD) can have symptoms exacerbated

Prolonged muscle tension can cause MSK pain and trigger tension in the head and neck associated with migraines

Via the neuroimmune mechanism and inflammatory mechanisms, stress has been associated with long term cardiovascular dysfunction

Excess stress hormones – often produced in the gut – can lead to a range of Gastrointestinal (GI) issues such as IBS, acid reflux, heartburn, diarrhoea constipation and stomach ulcers

Increases in blood sugar levels can stimulate appetite, particularly evenings leading to weight gain and other risk factors for atherosclerosis and stroke

Chronic stress has impacts across a range of bodily systems for complex physiological reasons. There are abundant examples. The five most common physical manifestations of chronic stress in the body include chest pain, circulatory problems, gastrointestinal problems, musculoskeletal pain (MSK), and women's health issues.

CHEST PAIN AND CHRONIC STRESS

Chronic stress is a risk factor for several cardiac and non-cardiac illnesses for which chest pain is a symptom. Chronic stress has been associated with poorly localised and widespread chest pain. Chest pain can originate from dysfunction in different organs in the upper body. Stress is, to varying degrees, a risk factor for conditions like non-cardiac chest pain, panic disorders, and respiratory issues such as breathing problems, COPD, and asthma attacks. The pathophysiology for these diseases and symptoms vary and is not yet fully understood.

Chronic stress is a risk factor for several cardiac and non-cardiac illnesses for which chest pain is a symptom.

FIG 10 - CHEST PAIN AND CHRONIC STRESS

PANIC DISORDER

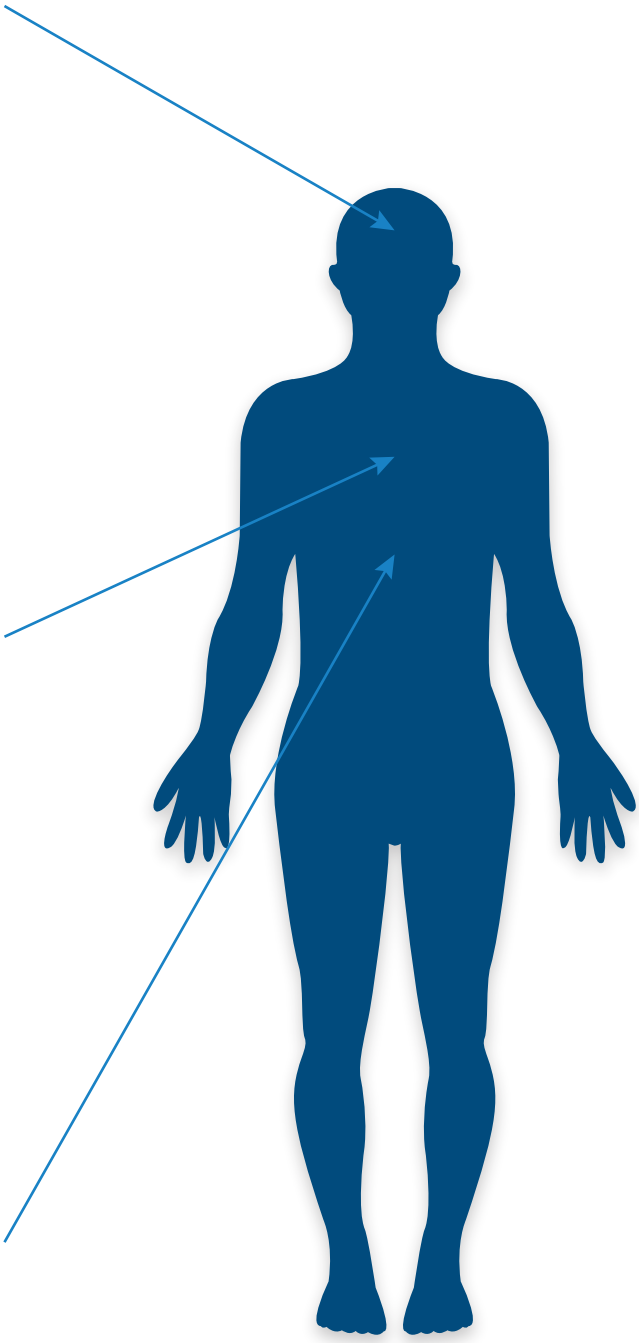
Panic attacks may lead to chest pain through a variety of mechanisms, both cardiac and noncardiac in nature, and multiple processes may cause chest pain in the same patient. Panic disorder is associated with higher rates of cardiovascular diseases, including hypertension and cardiomyopathy.

RESPIRATORY ISSUES

Acute stress can lead to rapid, shallow breathing. Chronic stress or repeated episodes or acute stress over time, is evident that it can exacerbate the chronic inflammatory responses of the airways in Asthma.

NON-CARDIAC CHEST PAIN

Recurrent chest pain can be indistinguishable from ischemic heart disease. Despite being a chronic condition, non-cardiac chest pain (NCCP) has no impact on patient mortality, though results in high healthcare utilisation. Underlying mechanisms include Gastroesophageal reflux disease (GERD) and oesophageal issues. GERD is likely the most common cause of NCCP.



Source: Fass & Achem 2011, Huffmen et al. 2002, Forsythe et al. 2004

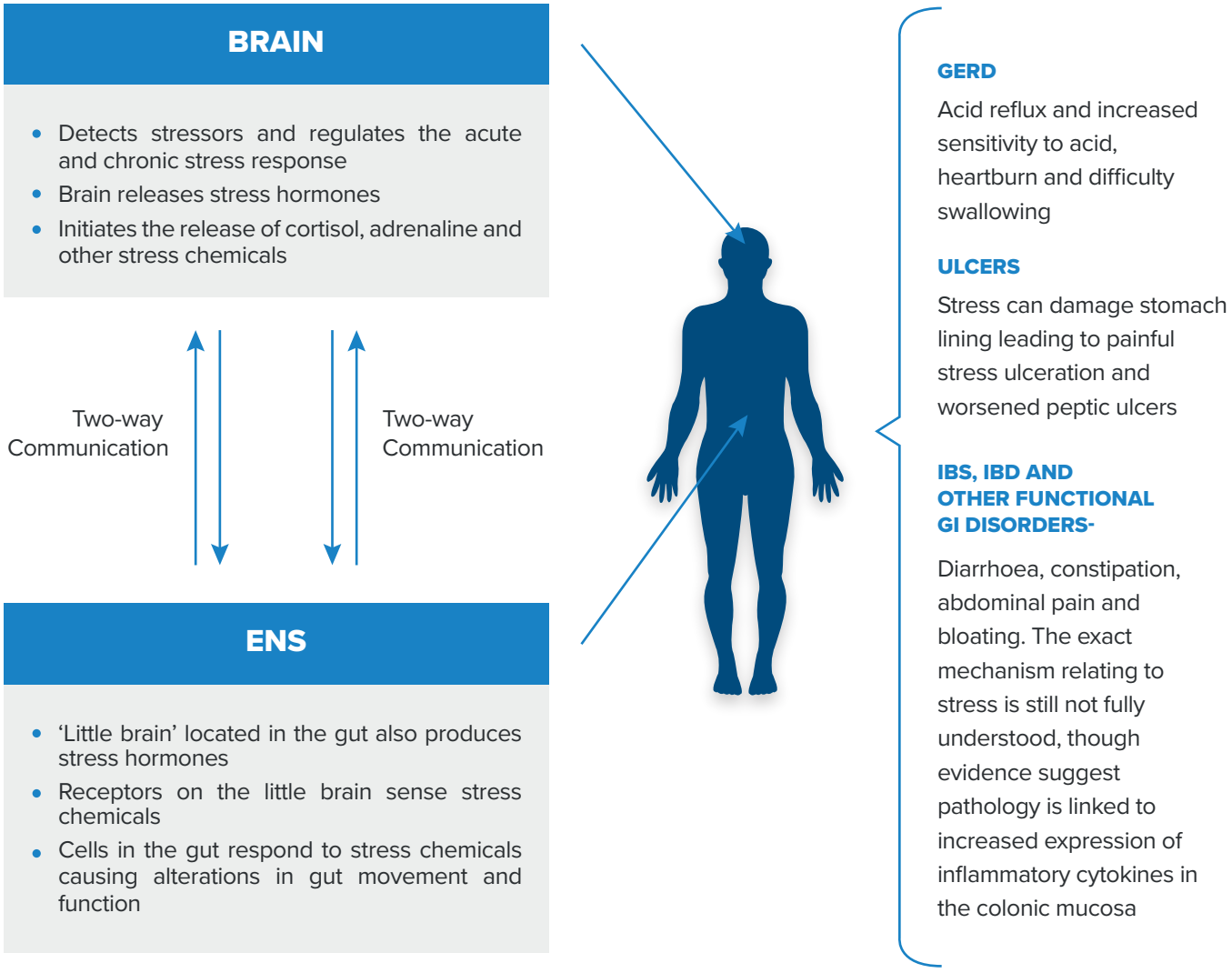
CHRONIC STRESS, GI DISORDERS, AND THE BRAIN-GUT AXIS

If you have ever experienced the sensation of butterflies in your stomach, you have unknowingly stumbled upon the complex communication pathway that exists between your brain and your gut. Known as the Brain-Gut Axis, these are biochemical signals that occur between the GI tract and the brain; the axis links the emotional and cognitive centres of the brain with peripheral functions of the intestines. Communication occurs between the brain and the Enteric Nervous System (ENS), which is known as the “little brain” within our gut.

Stress chemicals can alter interaction along the Brain-Gut Axis. Specifically, prolonged exposure to stress chemicals as a result of chronic stress can damage blood flow to gastrointestinal organs and have negative effects on gut bacteria. Chronic stress can lead to gastroesophageal reflex disease (GERD), stress ulcers, and irritable bowel syndrome (IBS).

Chronic stress is a risk factor for a number of gastrointestinal diseases

FIG 11 - THE BRAIN GUT AXIS: HOW CHRONIC STRESS CAUSES GASTROINTESTINAL DYSFUNCTION

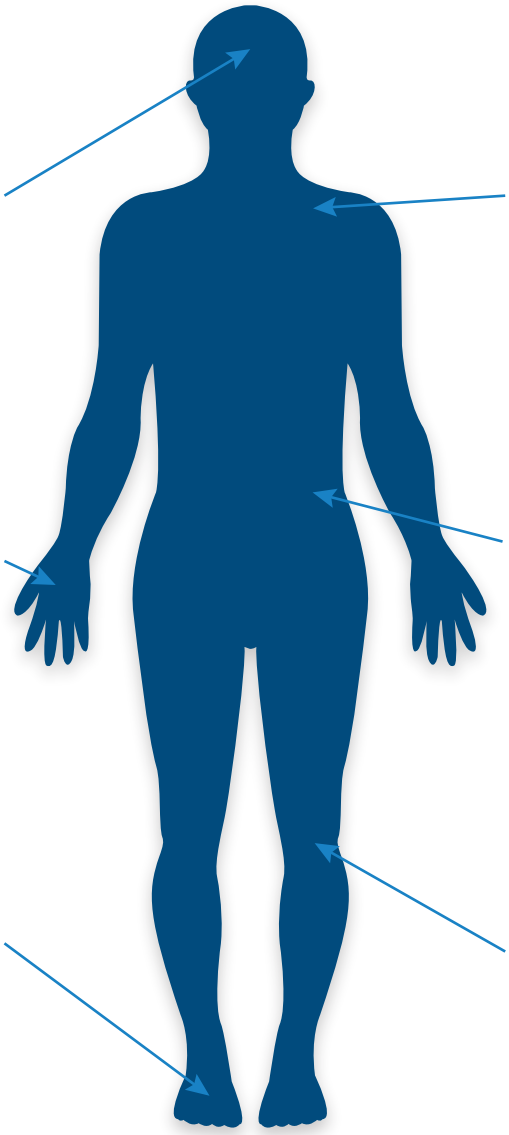


Source: Konturek et al. 2011; Costa et al 2000

FIG 12 - COMMON STRESS-INDUCED MSK PAIN

HEADACHE/MIGRAINE
Linked to tension in head and neck muscles

UPPER BACK
and shoulder pain



Exacerbation of (pre-existing) **RHEUMATIC PAIN** due to increased inflammation

LOWER BACK pain is common and linked to deregulation of cortisol

Hypercortisolism has been associated with increased **LEG PAIN** intensity

GENERAL JOINT pain linked to inflammation

Source: Hannibal & Bishop 2014

STRESS AND MSK PAIN

The body of research on MSK pain is vast, but some areas are conflicting. On the link between stress, the subsequent chemical release of hormones, and physical pain, there is much research underway, however, the exact pathophysiology for stress and MSK pain is not fully understood.

In acute stress, cortisol is produced and acts as a potent anti-inflammatory agent. Muscles tense up to guard against injury and pain. In chronic stress, muscles are tense for prolonged periods of time. Cortisol, epinephrine and norepinephrine release is deregulated. This can impact sensitivity to cortisol and disturb regulation of inflammation in our bodies. Over time, chronic inflammation in muscle tissue may result in chronic muscle pain throughout our bodies.

In chronic stress, cortisol, epinephrine and norepinephrine release is deregulated. This can cause prolonged muscle tension, leading to the onset of musculoskeletal pain.

CHRONIC STRESS AND THE CIRCULATORY SYSTEM

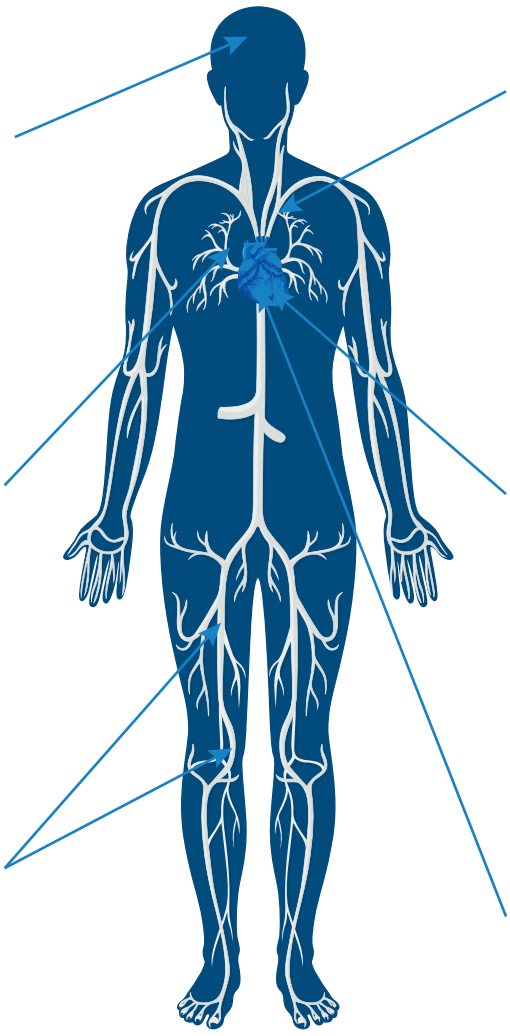
During chronic stress, the brain sends signals to the bone marrow to produce additional white blood cells. This causes inflammation of the arteries. Additionally, persistent exposure to stress hormones can lead to elevated hearted rate, stronger contractions of heart muscles, and high blood pressure.

Over time, these changes can lead to serious health problems. Repeated blood pressure elevations during chronic stress (known as high blood pressure) can cause long-term hypertension. Symptoms include severe headache and sleep problems.

Blockage of the coronary arteries that supply the heart with blood can lead to heart attack, which can be fatal. Blockage or swelling of arteries in the brain brought on by chronic stress can increase the risk of stroke, which may be debilitating and even fatal. Reduced blood flow due to chronic stress inflammation reduces oxygen availability to the heart and may cause discomfort in a condition known as angina.

Chronic stress can cause problems with the heart and blood vessels that are associated with cardiac illness, including high blood pressure and issues of heart rate.

FIG 13 - IMPACT OF STRESS ON CIRCULATORY SYSTEM



STROKE
Increased risk due to inflammation of arteries leading to the brain

PULMONARY VEINS

PULMONARY ARTERIES

HEARTR ATTACK
Increased risk of heart attack linked to swelling of pulmonary arteries

HYPERTENSION
High blood pressure can cause headaches, sweating and sleep problems and is linked to a range of chronic condition

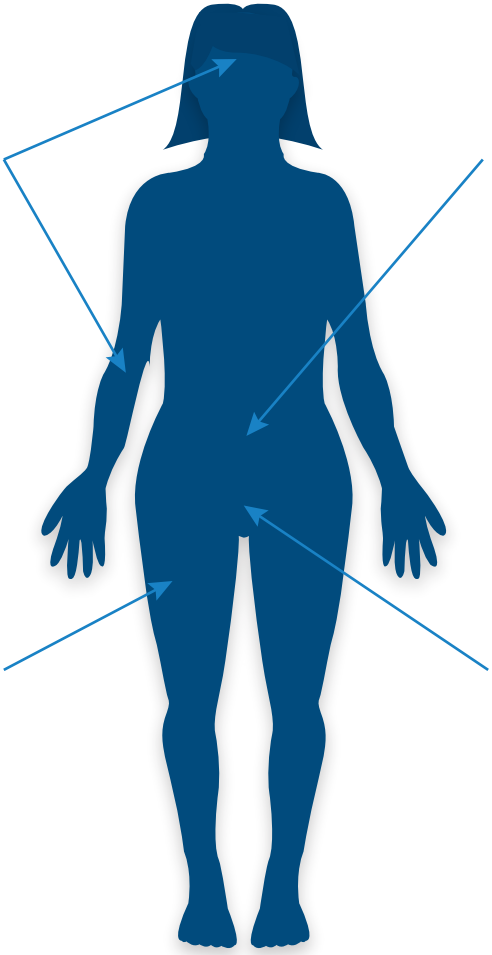
ANGINA
Restricted blood flow to the heart reduces oxygen available to heart muscles

Source: American Psychological Association 2019, British Heart Foundation

FIG 14 - IMPACT OF STRESS ON WOMEN'S HEALTH

MENOPAUSE SYMPTOMS
Hot flashes and other hormonal/ bodily transition symptoms worsened

PREGNANCY
Problems getting pregnant and possible problems during pregnancy



SEXUAL DESIRE
Reduced arousal and disinterest in sex

MENSTRUATION PROBLEMS
Irregular cycles, missed periods, painful periods and worsened Premenstrual Syndrome(PMS) symptoms

Source: Kalantaridou et al. 2004, American Psychological Association 2019, US Department of Health 2019

CHRONIC STRESS AND WOMEN'S HEALTH

Hormones released throughout chronic stress can inhibit the production of female reproductive hormones and lead to obstetric and gynaecological dysfunction. High-levels of stress have been linked to irregular menstrual cycles and absent cycles. Women with chronic stress may have more severe PMS symptoms and more painful menstruation overall. Stress may also impact length of cycle.

During fertility years, stress can also significantly impact a woman's ability to get pregnant, as well as have an ongoing, negative effect on foetal and childhood development.

At all adult life stages, stress and associated changes in energy levels can lead to disinterest in sex and problems with arousal. At later stages in adult life, external stress has been found to worsen symptoms of menopause.

The persistent release of stress hormones during chronic stress can have a damaging effect on female reproductive health.

03 ASSESSING THE COST OF STRESS TO HEALTH SYSTEMS

CAPTURING THE BURDEN OF STRESS ON HEALTH SYSTEMS

Capturing health system usage by patients suffering with stress-related illness is complex. Stress manifests to different degrees and in different ways from one individual to another, making the way they experience care – and their patient journeys – multifaceted. For some individuals, the impact of stress on their mental health is obvious – they are able to detect that they are suffering from mental illness and seek care for this. For many others, the impact of stress on their mental health is not intuitive. For this group of individuals, physical manifestations of stress – gastrointestinal issues, muscle tension, chest pain – may be the first detectable symptoms. Both the individuals and their doctors, may not diagnose the underlying stress-related mental-health issues until much later in the patient journey.

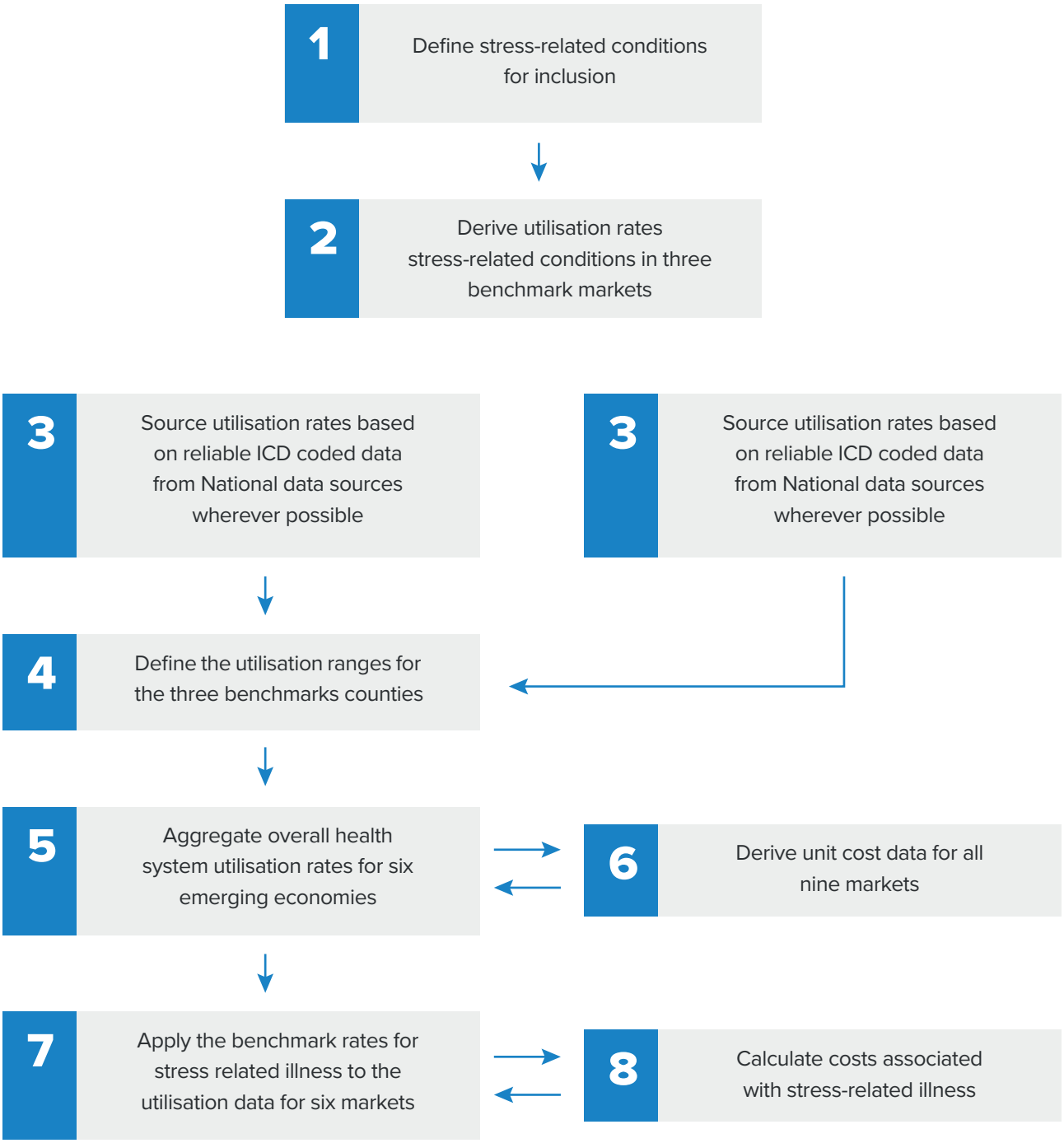
In this study, we sought to assess the utilisation of healthcare services by patients with stress-related conditions in three benchmark markets –the United Kingdom, the United States and Australia. In capturing health system usage, we looked across all provider settings, and have grouped findings into four categories: inpatient admissions, hospital outpatient visits, emergency department visits and primary care visits. Wherever possible, health system utilisation has been based on International Classification of Disease (ICD)-coded data, provided by the Governments or National Agencies. In estimating the burden of health system utilisation for patients presenting with physical symptoms who have underlying stress-related mental illness, we appealed to reputable, peer-reviewed academic literature.

After deriving the benchmarks, we aggregated overall health system utilisation and unit cost data for six additional markets – Hong Kong, Taiwan, Singapore, South Korea, Thailand and the UAE. We then applied the benchmarks to these markets in order to derive estimated direct-costs of stress-related conditions. Our approach, looking only at direct costs, where symptoms could directly be linked to stress, is inherently conservative. This means, the costs are likely to be a fraction of the total healthcare costs – direct and indirect – caused by stress.

In this section, we outline the methodology that guided this study, and the assumptions made. An overview of the approach is outlined in figure overleaf.

Stress manifests to different degrees and in different ways from one individual to another, making the way they experience care – and their patient journeys – multifaceted.

FIG 15 - STEP-BY-STEP OVERVIEW OF THE METHODOLOGY

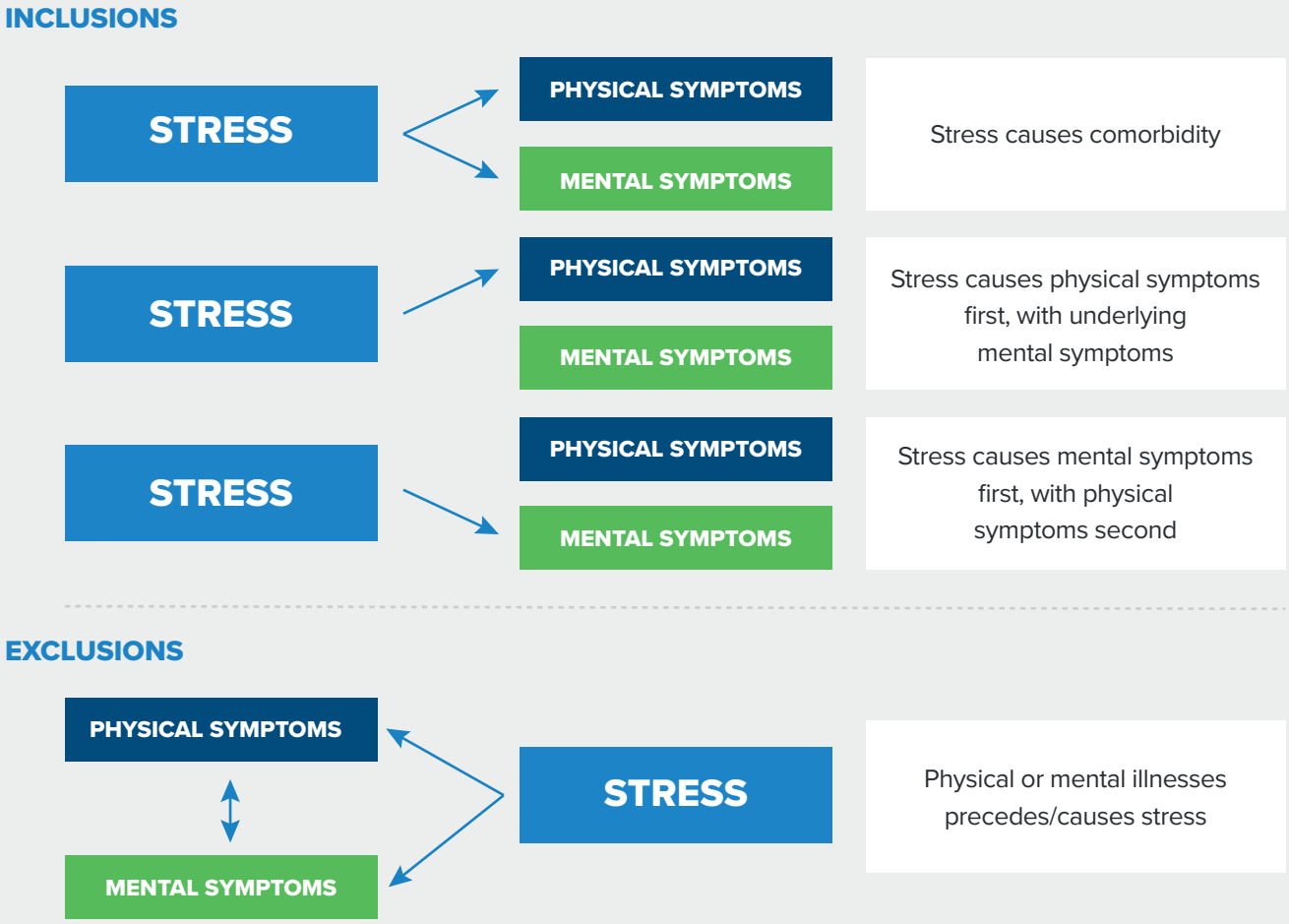


STEP 1:DEFINE STRESS-RELATED CONDITIONS FOR INCLUSION

Stress has a complex relationship to both physical and mental health. The precise sequence of events that leads a person suffering from unmanageable stress to seek help varies dramatically. A person may first experience physical or mental symptoms – or these may occur together. Many factors can influence this pattern of causation, including the health literacy levels of the individual, cultural norms, service availability and insurance coverage. For example, in markets where mental health is still seen as taboo, individuals may seek care for physical symptoms first due to greater cultural acceptability. For the purposes of this study, we have included all three variants (comorbidities, physical then mental symptomology and mental then physical symptomology). However, we have excluded cases in which physical or mental symptoms were the primary cause of stress. An example of this may be a patient who receives a diagnosis of cancer, and subsequently develops stress-related illnesses. This was also to help ensure the scope of the study remained focused on avoidable health system utilisation that was driven by stress as the primary cause.

In markets where mental health is still seen as taboo, individuals may seek care for physical symptoms first due to greater cultural acceptability.

FIG 16 - INCLUSION AND EXCLUSION APPROACH USED IN THE STUDY

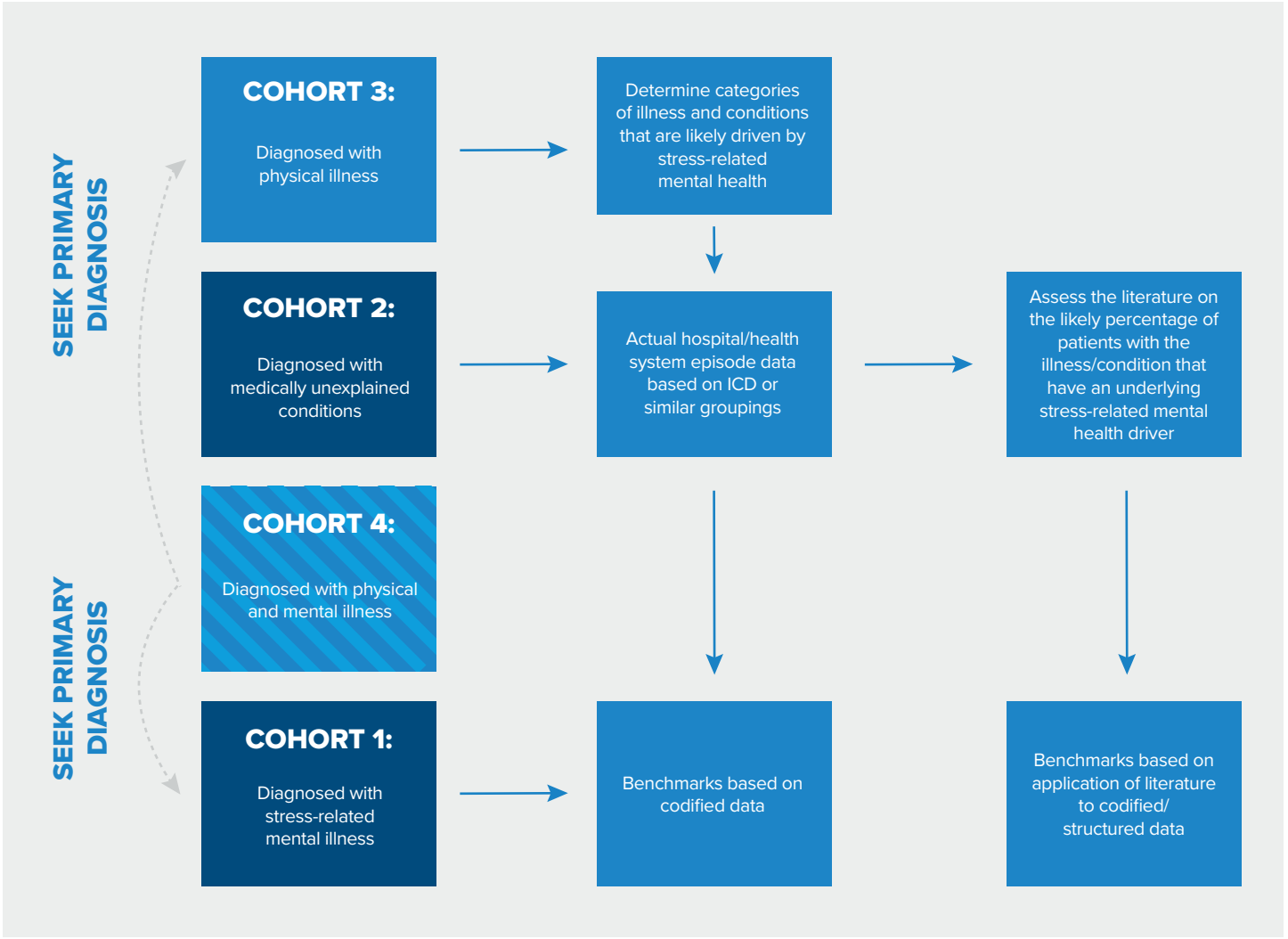


WE ALSO EXCLUDED A NUMBER OF OTHER CATEGORIES OF PATIENTS, INCLUDING:

- Patients who received a major diagnosis (e.g. cancer) which could be the reason for stress
- Patients who have complex behavioural needs or underlying severe mental illness (e.g. schizophrenia, bipolar disorder, dementia)
- All paediatrics (for the purposes of this study, we looked at 18+ as the target patient population)
- Patients who believed they had mental illness, but were subsequently diagnosed with physical issues (e.g. believed panic attack but actually having heart attack)

In defining the patient cohorts for inclusion, we gave considerable thought to patients suffering from co-morbidities; often a common mental health disorder alongside a physical illness such as hypertension. In these instances, we were guided by a patient's principal diagnosis at the point of seeking care. If the patient's principal diagnosis fell within the scope of the cohorts we included the patient's episode in the analysis. An overview of the approach is in Fig 17.

FIG 17 - AN OVERVIEW OF THE APPROACH TO PATIENTS WITH COMORBIDITIES



STEP 2:DERIVE UTILISATION RATES STRESS-RELATED CONDITIONS IN THREE BENCHMARK MARKETS

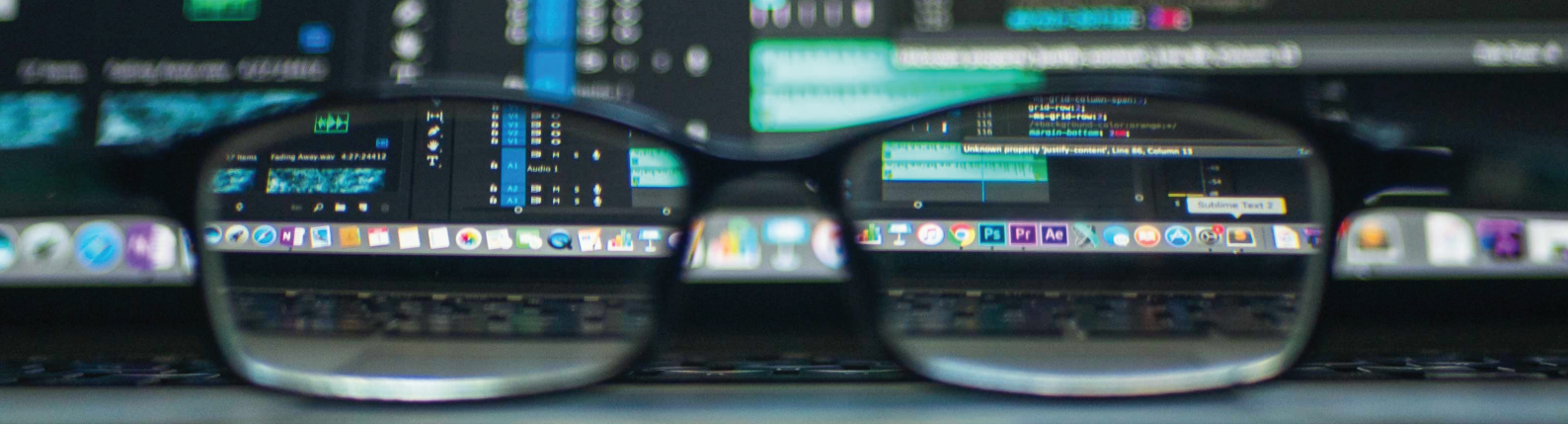
Having defined the patient cohorts for inclusion in the study, we then selected three markets to act as "benchmarks" – ultimately allowing us to gain a view of likely rates of stress-related healthcare utilisation across systems. We selected the benchmark counties based on three criteria:

- The markets had a comprehensive and robust dataset across care-settings, which provided aggregate, anonymised data. The data has to be coded using the International Classification of Disease (ICD) system
- The markets had to have a strong culture of clinical research, with significant focus on stress and mental/physical health
- The markets had to have some differences from one another (e.g. they could not all be single state-payor systems) in order to ensure that ranges were not adversely impacted by one type of health system design

We then classified the data that we would gather from actual utilisation versus data that we would need to gather from academic literature (Fig 18).

FIG 18 - THE DATA COLLECTION STRATEGY FOR EACH COHORT OF PATIENTS

	COHORT 1: PATIENTS SEEKING CARE FOR STRESS-RELATED MENTAL ILLNESS	COHORT 2: PATIENTS SUFFERING FROM STRESS WHICH MANIFESTS AS MEDICALLY UNEXPLAINED CONDITIONS	COHORT 3: PATIENTS SUFFERING FROM STRESS WHICH MANIFESTS AS PHYSICAL SYMPTOMS
Inpatient admissions	Based on actual episode data	Based on actuals	Based on literature review
Hospital outpatient admissions	Based on actuals	Based on actuals	Based on literature review
GP attendances	Based on actuals and some Govt-led survey work	Based on actuals and some Govt-led survey work	Based on literature review
Emergency Department visits	Based on actuals	Based on actuals	Based on literature review



STEP 3: SOURCE UTILISATION RATES BASED ON RELIABLE ICD CODED DATA FROM NATIONAL DATA SOURCES WHEREVER POSSIBLE.

We utilised Government-level databases to determine benchmarks based on actual utilisation wherever possible. Government-level data provides a large population size, making the reliability of the findings higher. Across the three markets, hospital-level data was more readily available and typically better coded using a recognised ICD schema. This allowed a meaningful breakdown to be made. GP level data across all markets tend not to have considerable granularity, offering only a high-level view on diagnosis category.

FIG 19 - UTILISATION DATA SOURCES OF BENCHMARK MARKETS

	AUSTRALIA	UNITED KINGDOM (ENGLAND)	UNITED STATES
Inpatient admissions	(Australian Institute for Health and Welfare , Principal Diagnosis Data Cube 2017/18)	NHS Hospital Episode Statistics for England, Hospitals Admissions 2017/18	Healthcare Cost and Utilisation Project, Nationwide Inpatient Sample and State Inpatient Database, 2016
Hospital outpatient admissions	(Australian Institute for Health and Welfare , Principal Diagnosis Data Cube 2017/18)	NHS Digital, Hospital Episode Statistics for England. Outpatient statistics, 2017/18	Centre for Disease Control, State Ambulatory Surgery Database 2016
GP attendances	University of Sydney - Bettering the Evaluation of Care and Health 2012/16	ISD Scotland- GP Consultations 2012/13, Kings Fund- Pilot of advanced management of patients with unexplained symptoms 2013/14	National Ambulatory Medical Care Survey 2016, Graham Centre-The State of Primary Care in the United States (NEPS 2017)
Emergency Department visits	Australian Institute for Health and Welfare, Mental health services in Australia: Services provided in public hospital emergency departments , Emergency department care 2017–18: Australian hospital statistics.	NHS Hospital Episode Statistics for England, Hospitals Admissions 2017/18	Healthcare Cost and Utilisation Project, Nationwide Emergency Department Sample and State Emergency Department databases

STEP 3 (PART 2): UNDERTAKE A LITERATURE REVIEW TO ASSESS THE PERCENTAGE OF PATIENTS WITH PHYSICAL SYMPTOMS WHO HAD AN UNDERLYING STRESS-RELATED ILLNESS

A review of literature was conducted to assess the likely percentages of patients with physical illness/conditions that had an underlying stress-related mental health driver. Broad, systematic and critical review of scholarly peer-reviewed articles published in high impact journals were screened to identify relevant data based on inclusion and exclusion criteria (Fig 20)

Studies conducted in United States, United Kingdom and Australia for participants aged 18 or above, with presentation of physical symptoms in the presence of underlying mental illness were included. Studies reporting physical symptoms for chest pain, gastrointestinal conditions, musculoskeletal conditions, cardiac issues or women's health with a common mental-health disorder were screened for inclusion. Studies were included if physical symptoms occurred with presence of underlying mental conditions (anxiety or depression or stress or panic disorder). Studies were excluded if mental health conditions occurred as a result of physical symptoms. Also, studies reporting complex or severe mental illnesses or major diagnosis such as cancer or cardiac arrest were excluded.

Our search was conducted using search engines PubMed and Google Scholar to identify peer reviewed academic journals based on inclusion and exclusion criteria. Over 500 articles were screened for different physical symptoms categories and 94 studies were included. The data for the 94 studies was extracted to calculate percentage of avoidable activity for each physical symptom category.

Some of the challenges for literature review included heterogeneity in the way data was reported in different studies. Some studies did not report the absolute numbers but different ratios (odds or hazards) to define the associations between physical symptoms and underlying mental illness. Others reported scores of scales used to identify mental health conditions but did not report the actual number of patients. These studies were excluded as avoidable activity could not be calculated without the actual numbers.

FIG 20 - AN OVERVIEW OF THE LITERATURE REVIEW PARAMETERS

SEARCH ENGINES USED

- Peer reviewed academic journals accessed online on PubMed and Google Scholar

SEARCH TERMS USED

- (Physical conditions) AND (Depression OR Anxiety OR Panic disorder OR Stress) AND (United States of America OR United Kingdom OR England OR Great Britain OR Australia)

INCLUSION CRITERIA

- Physical symptoms in presence of underlying mental health illness
- Studies reporting the unit of activity either within primary care setting or hospital admissions or emergency departments or clinics or with general practitioners

EXCLUSION CRITERIA

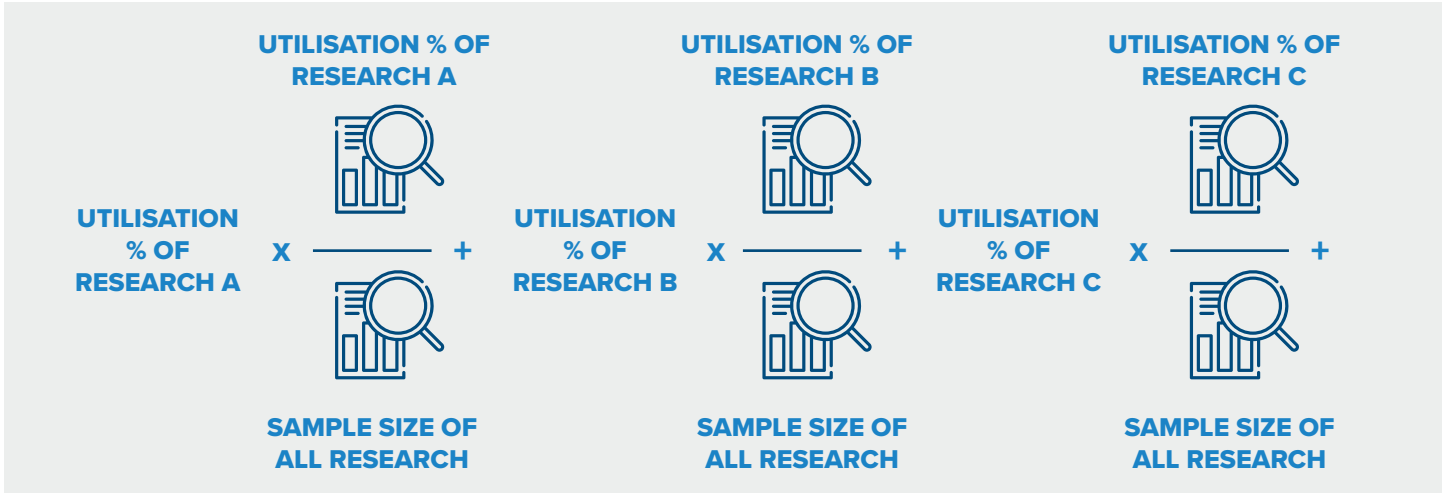
- Comorbidity of physical symptoms with the mental health illness
- Mental health conditions arising as a result of physical symptoms
- Patients with Complex or severe mental illness

STEP 4: DEFINE THE UTILISATION RANGES FOR THE THREE BENCHMARK MARKETS

Defining the estimated healthcare utilisation ranges for stress-related illness across the three markets involved a two step-approach. For Cohorts 1 and 2, for which we had been able to source actual utilisation data, we simply applied a mean average to arrive at the utilisation benchmark percentages that we would adopt in the later analysis.

For Cohort 3, for which academic literature had been used to identify a range of utilisation that could be associated with stress-related illness, we applied a system of weighted averages (Fig 21). This method allowed us to treat the entire cohort of patients across multiple thematically similar studies as one group; deriving the mean average accordingly. So whilst the absolute ranges were sometimes wide, the weighted average allowed us to statistically correct for outlier findings from small samples.

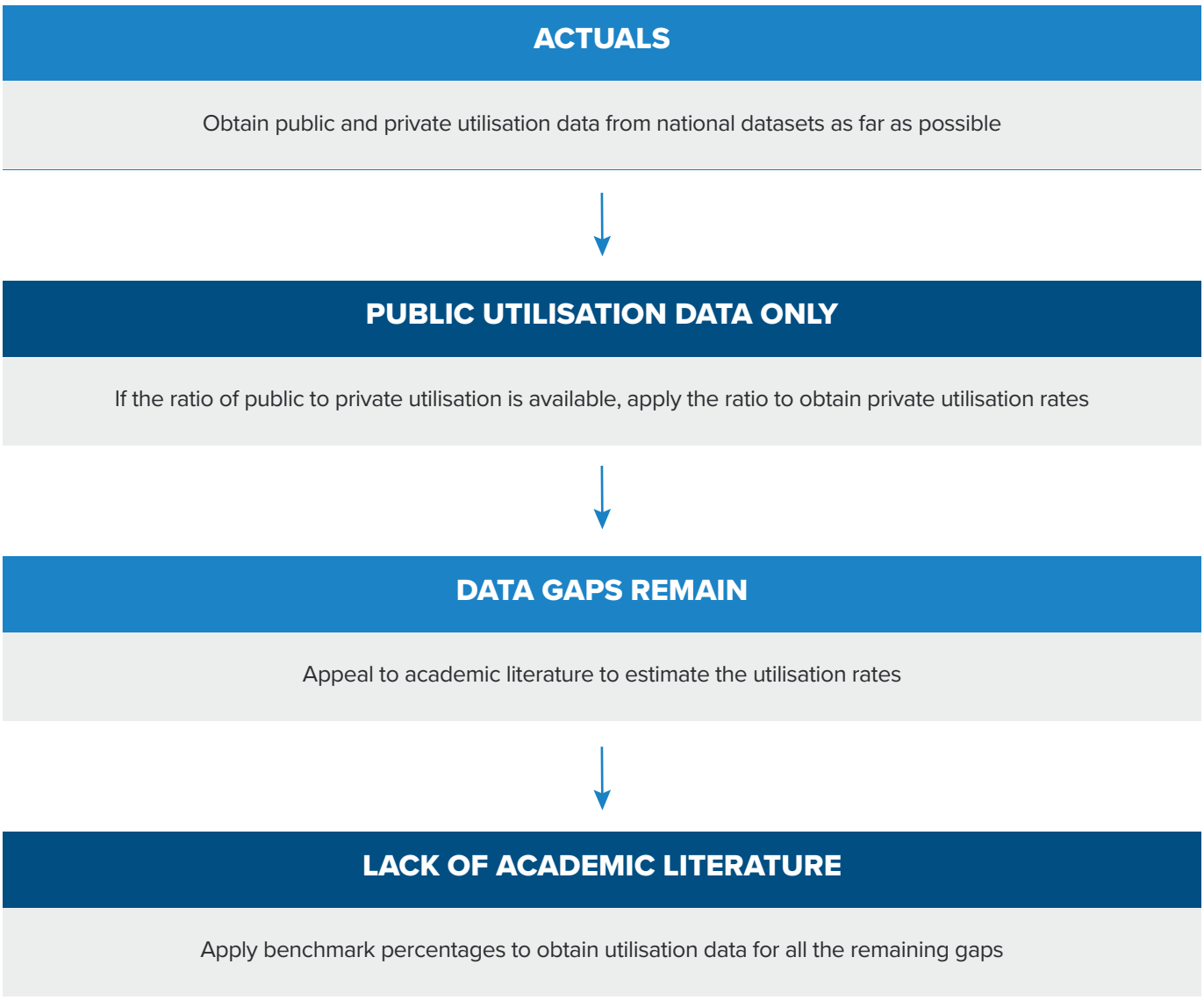
FIG 21 - AN OVERVIEW TO OUR APPROACH TO WEIGHTED AVERAGING



STEP 5: AGGREGATE OVERALL HEALTH SYSTEM UTILISATION RATES FOR SIX EMERGING ECONOMIES

We sourced data from six Asian and Middle East markets, principally from national datasets and supplemented where necessary from academic literature. For all markets, hospital-level data was readily available, allowing us to accurately record inpatient, outpatient and emergency care. GP data was harder to source, and in some markets, assumptions had to be drawn based on academic journals. This reflects the less evolved electronic health systems in community care settings, and the data paucity this creates. In many of the markets, private care comprises a significant proportion of activity and has different cost implications. Wherever possible we sourced both public and private data from actuals, however in some cases we adopted ratios if public data was available but not private figures. Using these methods, we were able to capture overall health system utilisation data across markets.

FIG 22 - AN OVERVIEW OF OUR APPROACH TO SOURCING UTILISATON DATA



STEP 6: DERIVE UNIT COST DATA FOR ALL NINE MARKETS

Sourcing reliable unit cost data for average episodes of care was achieved by drawing on nationally published health accounts and supplementing this with credible industry reports. For the majority of markets, unit cost data on public sector treatment was relatively easy to source. In markets with social health insurance systems, we obtained both the amount billed to providers from the insurance scheme and supplemented this with any co-pays borne by individuals to obtain a rounded view of cost.

Whilst some markets published average private sector rates, this area proved to have the least reliable data. In many markets – notably the Asian economies – the unregulated nature of the markets meant that private sector treatment fees were often opaque. Within any individual country, a wide-range of private sector treatment costs were cited, so a number of assumptions had to be made. Wherever possible, we appealed to industry reports, such as publications by private insurers on the cost of care, or to academic literature in which significant importance had been given to health system financing and costs. On occasion, we supplemented this with primary research of a sample of providers, to obtain viable private sector unit costs.

STEP 7 AND 8: APPLY THE BENCHMARK RATES FOR STRESS-RELATED ILLNESS TO THE UTILISATION DATA FOR THE SIX ASIAN AND MIDDLE EAST MARKETS, AND CALCULATE THE COSTS ASSOCIATED WITH STRESS RELATED ILLNESS

Utilising the output from steps, 4, 5 and 6, we were able to ascertain the estimated level of healthcare utilisation driven by stress-related illness across the six Asian and Middle East markets, broken down by public and private sector provision. We then applied unit cost data to calculate the overall level of spend associated with stress-related illness. Having used a bottom-up method to calculate the utilisation rates, we were able to break the estimated costs down with a reasonable degree of granularity – showing both cost across care-setting and costs by different patient cohorts.

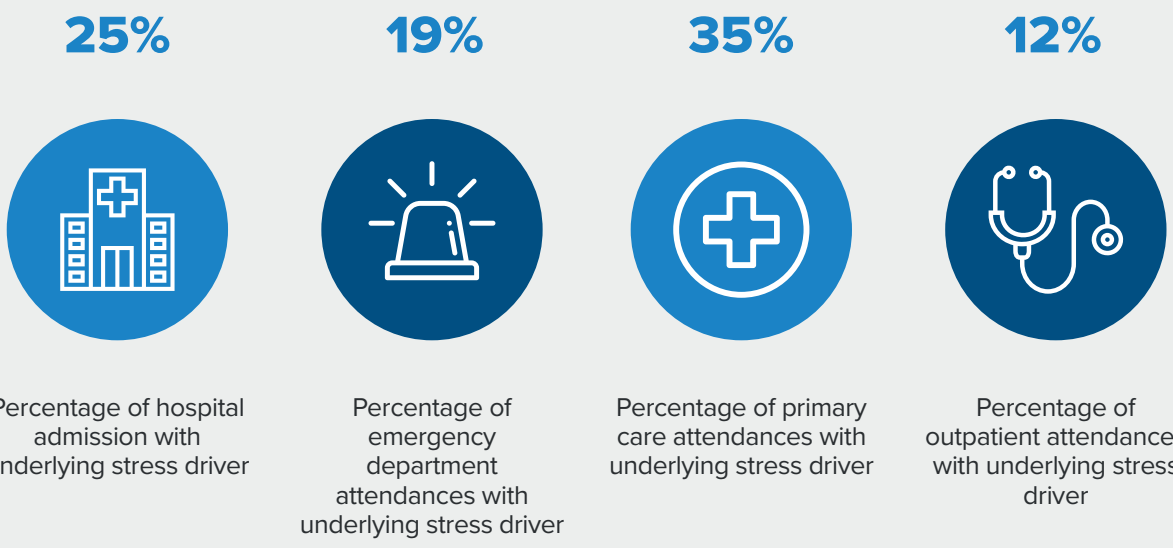
FINDINGS

The findings from our analysis indicate that stress-related illness is a significant – though undermanaged - challenge for health systems. The benchmarking analysis reveals that as much as 25% of hospital admissions, 19% of emergency department attendances, 35% of primary care visits, and 12% of outpatient attendances are likely to be the result of stress-related illness (see Fig 23). This translates to one of the largest single areas of spend facing health systems today.

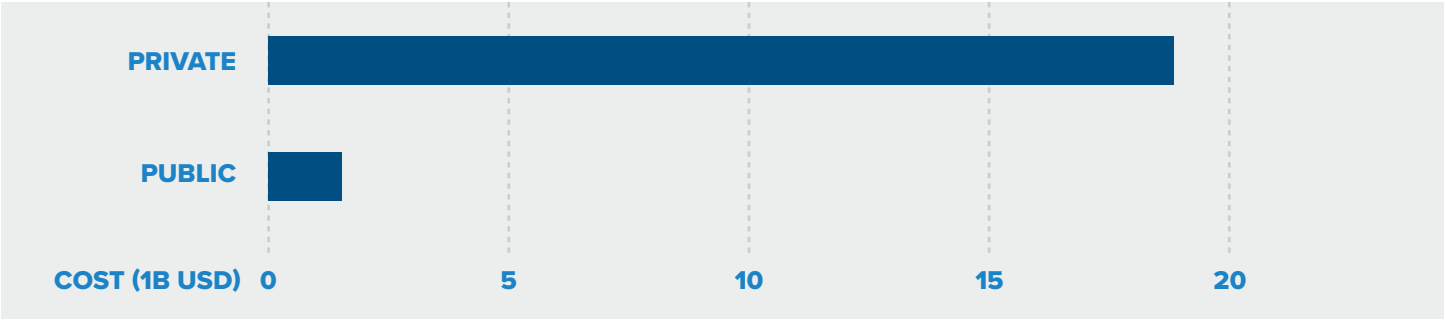
The benchmarks also revealed significant differences between markets, which are likely explained by the incentives and financing of each health system rather than the burden of disease. For example, insurance-based systems, in which a payor required a definitive diagnosis to release payment, were far less likely to record unexplained medical conditions – instead coding these patients as having physical conditions. The result was likely delayed diagnosis of stress, overtreatment or inappropriate treatment and increased health system wastage. Similarly, in systems with strong primary care or outpatient based care, hospital admissions for stress-related mental illness were significantly lower, indicating the clinical and economic benefit of enhanced community based provision. These findings have broad implications for Asia's health systems, perhaps most pronounced being that stress-related illness – and its correct diagnosis – is heavily influenced by access to care and the reimbursement models for that care.

Analysis reveals that as much as 25% of hospital admissions, 19% of emergency department attendances, 35% of primary care visits, and 12% of outpatient attendances are likely to be the result of stress-related illness.

FIG 23 - RATES OF STRESS-RELATED ILLNESS ACROSS CARE DOMAINS, BENCHMARK MARKETS

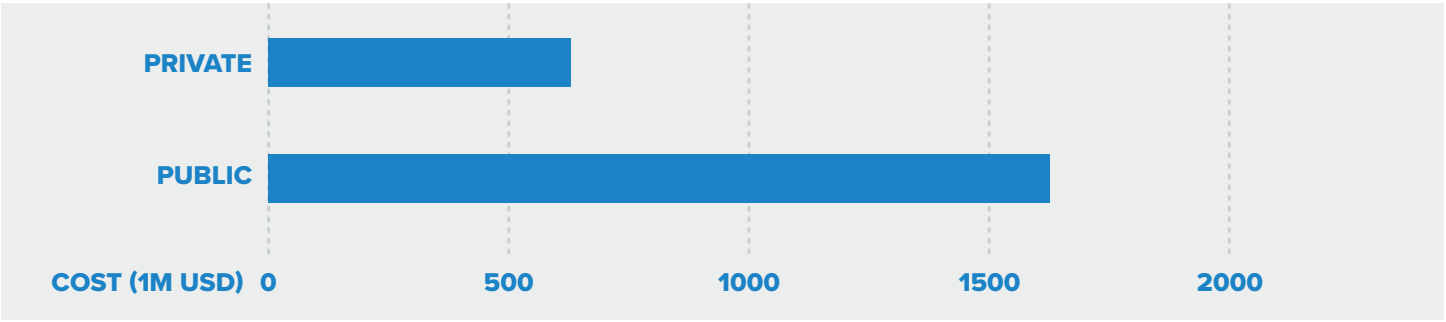


COST OF HOSPITAL ADMISSIONS IN USA, ANNUALISED (COHORT 3)



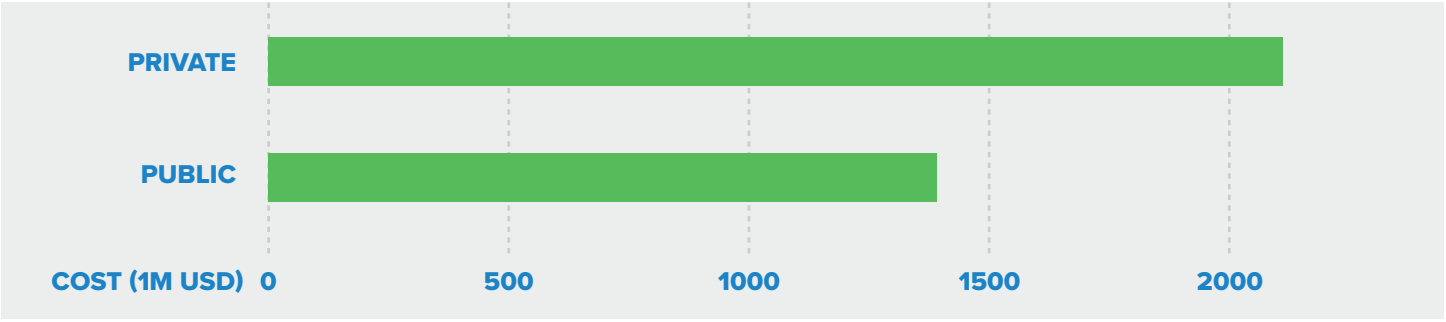
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES IN SOUTH KOREA, ANNUALISED (COHORT 3)



COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF HOSPITAL ADMISSIONS IN AUSTRALIA, ANNUALISED (COHORT 3)



COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COHORT 1: PATIENTS WITH STRESS-RELATED MENTAL ILLNESS

The benchmark derivations for stress-related mental illness indicate stark differences in the way in which healthcare systems are organised across country, and the provisions made for mental health. In Australia, for example, the rate of hospital admissions for stress-related mental illness is significantly lower than the UK and the US. However, outpatient rates are significantly higher in Australia indicating that, perhaps, the provision of greater community-based care reduces demand for hospital admissions.

Overall, the utilisation rates for direct stress-related mental health services are high. **GP attendances for mental illness now ranks as one of the top conditions observed in primary care across all benchmark markets**. Reasonably high-levels of hospital admissions for common disorders, such as depression, would indicate that the provisions made in primary care are inadequate to meet population needs, and prevent exacerbations of mental illness.

There is also a notable difference in the mode in which patients are treated for stress-related mental illness. In the US and Australia, there is a high degree of parity in the level of outpatient attendances (led by a specialist physician, most probably a physiatrist). This contrasts sharply with the UK, in which specialist-led care is extremely low; with patients likely treated for stress-related mental illness in a primary care setting, by a GP rather than a specialist.

It should be noted that the figures recorded will also be impacted by both the patient's willingness to seek care for mental illness, and the diagnostic capability of the treating physician. Different cultural and social norms will influence these issues across market, as will the level of training and support provided to physicians. Mental health, whilst rising on the medical curriculum in many quarters, is still a branch of medicine that is less familiar than common physical issues.

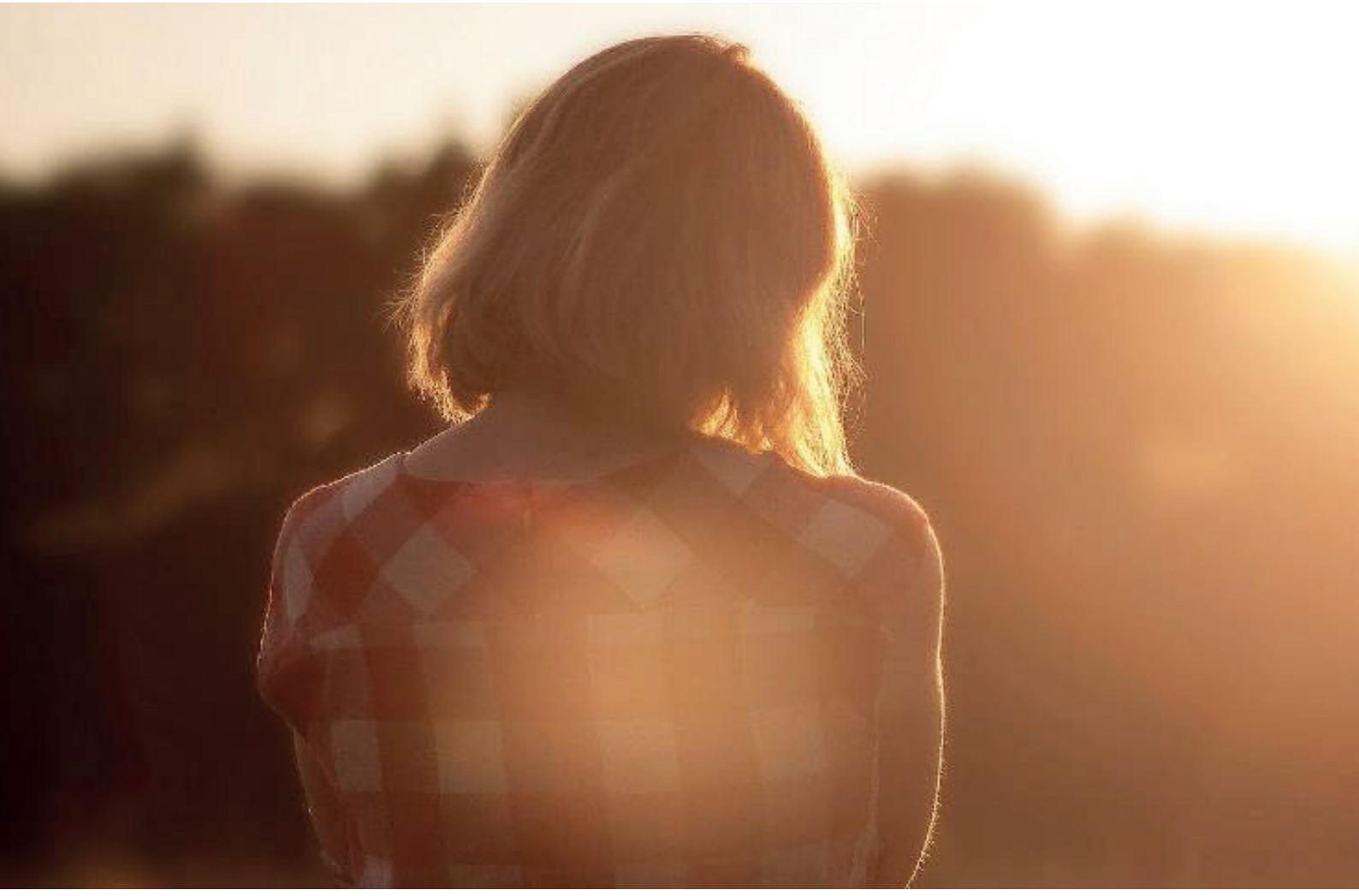
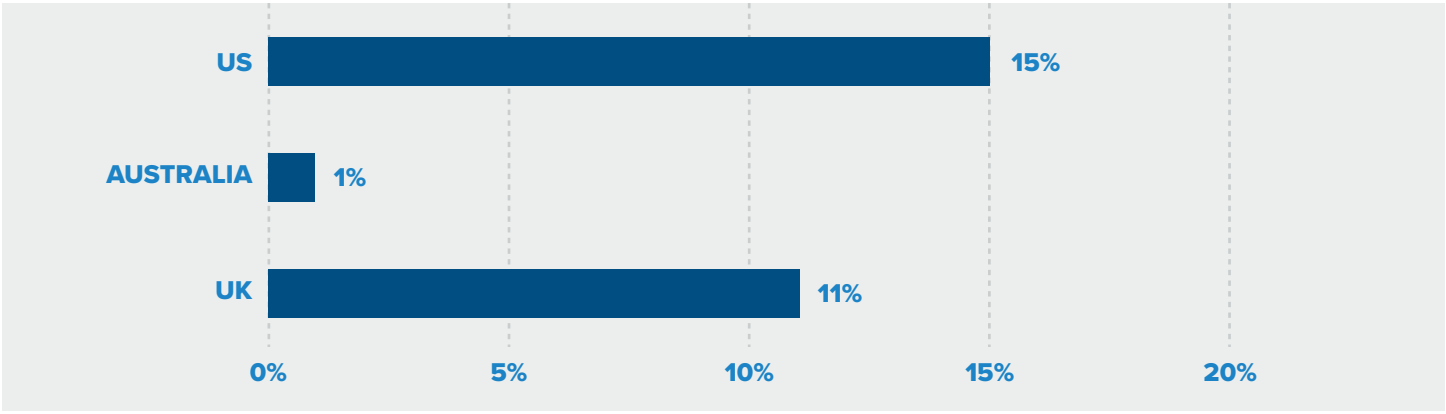


FIG 24 - THE PERCENTAGE OF ACTIVITY RELATED TO STRESS-RELATED MENTAL ILLNESS (AS A PERCENTAGE OF ALL ACTIVITY)

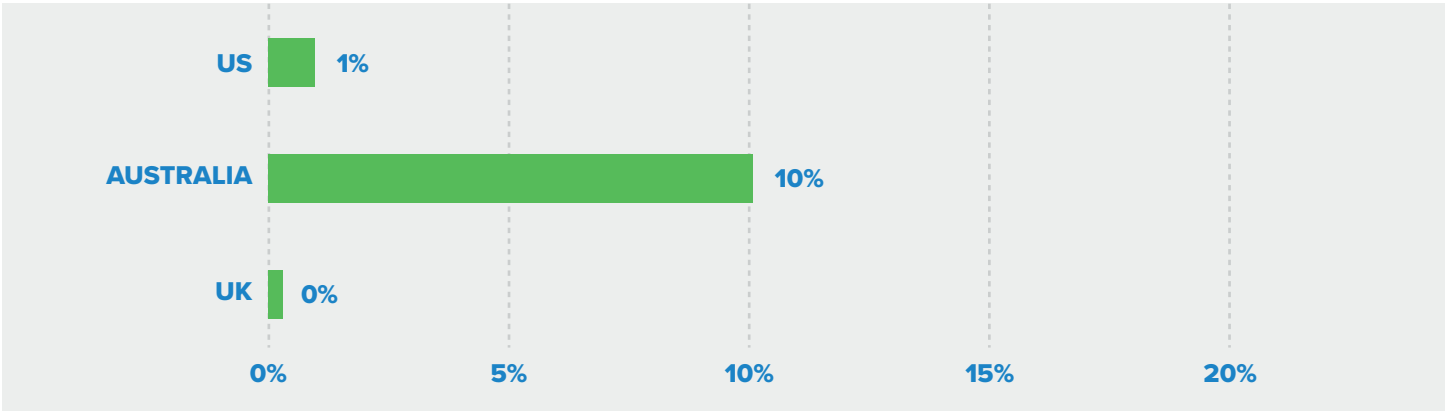
	UK (ENGLAND)	AUSTRALIA	UNITED STATES
Hospital Admissions	11%	1%	15%
Emergency Department Attendances	0.09%	2%*	1%
Outpatient Department Attendances	0.4%	10%	1%
GP Attendances	6%	4%	(depression only) 2%

*The classification system used in Australia's EDs differs from the coding system used in the UK and the US. We have sought to align the classifications, but some variance may have resulted from minor differences in terminology

PERCENTAGE OF HOSPITAL ADMISSION RELATED TO STRESS RELATED MENTAL ILLNESS



PERCENTAGE OF OUTPATIENT ATTENDANCES RELATED TO STRESS RELATED MENTAL ILLNESS



COHORT 2: PATIENTS SUFFERING FROM STRESS WHICH MANIFESTS AS MEDICALLY UNEXPLAINED CONDITIONS

Medically unexplained symptoms have no discernible physical cause. A treating physician can give a diagnosis of medically unexplained disease, either in relation to a physiological system – such as the an unexplained disease of the respiratory system – or as a general unexplained disease.

The study revealed significant differences between data from the benchmark markets. Notably, the UK has a significantly higher percentage of admissions for medically unexplained conditions compared to Australia and the US. As all datasets used in this analysis were nationwide, it is unlikely that the differences are solely the result of the patient's being served – the risk pool would reduce the likelihood of this occurring. Instead, it is likely that the renumeration model of hospitals plays a significant role in coding of these patients. In the U.S – an insurance-based reimbursement market – there is less likelihood of claims being paid if the patient does not have a defined clinical condition. The inverse is true in the UK; as a public-payor system, hospitals are paid irrespective of whether a definitive diagnosis can be given or not. In addition, given the cost of care in the US, there is a more litigious environment surrounding care delivery. There is therefore greater incentive for physicians to run extensive investigations to arrive at a definitive diagnosis (or, as a minimum to rule out all possible diagnosis – however remote) than to adopt a "wait and see" approach.

Interestingly, the level of outpatient attendances for unexplained medical conditions was significantly lower in the UK compared to the other two benchmark markets. This is likely to be the result of the structure of referral networks and the gate-keeping mechanisms in play in each country. In the UK, individuals can only access outpatient clinics if they are referred by a GP and/or if they referred after discharge from hospital. In both the US and Australia, there is still a pattern of patients going directly to specialists in outpatient clinics. There is therefore likely to be more ambiguities in symptomology in these cases.

It is likely that the renumeration model of hospitals plays a significant role in coding of these patients

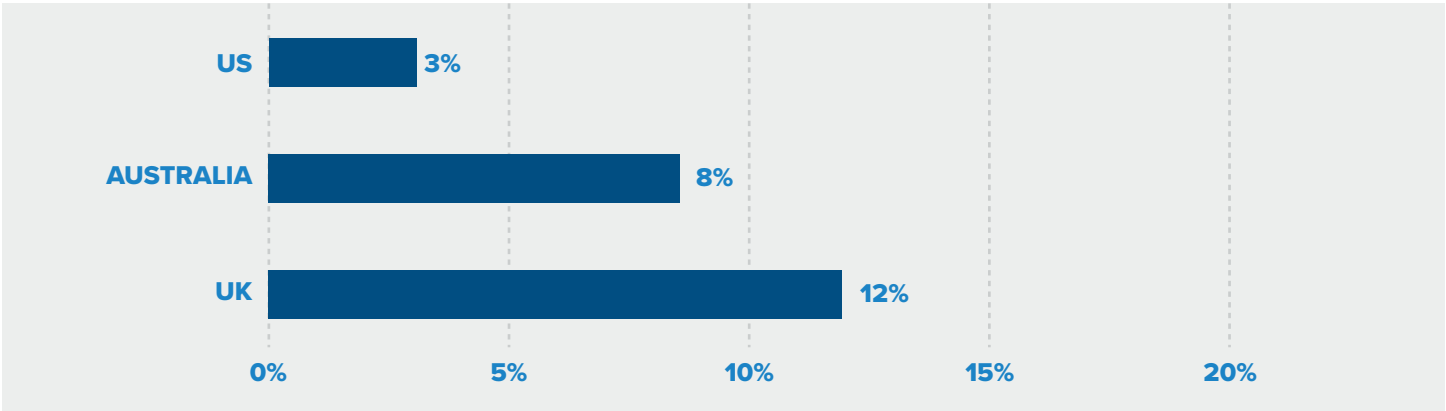
FIG 25 - CATERGORIES OF MEDICALLY UNEXPLAINED CONDITIONS

SPECIALITY	PHYSICAL PRESENTATION
Cardiology	• Unexplained chest pain • Cardiac neurosis
Gastroenterology	• Unexplained abdominal pain • Gastrointestinal dysfunction (chronic diarrhoea, bloating, constipation, acid reflux)
Neurology	• Conversion states • Pseudo-seizures (shakes, trembles, changes in eyesight) • Headaches
Diabetes	• Burden of self-perceived disorder
Orthopaedics and trauma	• Bodily pain (isolated or widespread)
Rheumatology	• Unexplained joint pain/swelling • Arthralgia
Pain clinic	• Somatoform pain disorder • Pain amplification
Respiratory	• Panic disorder in asthma and COPD
General medicine	• General malaise/anergia • Medically unexplained symptoms • Multiple pains

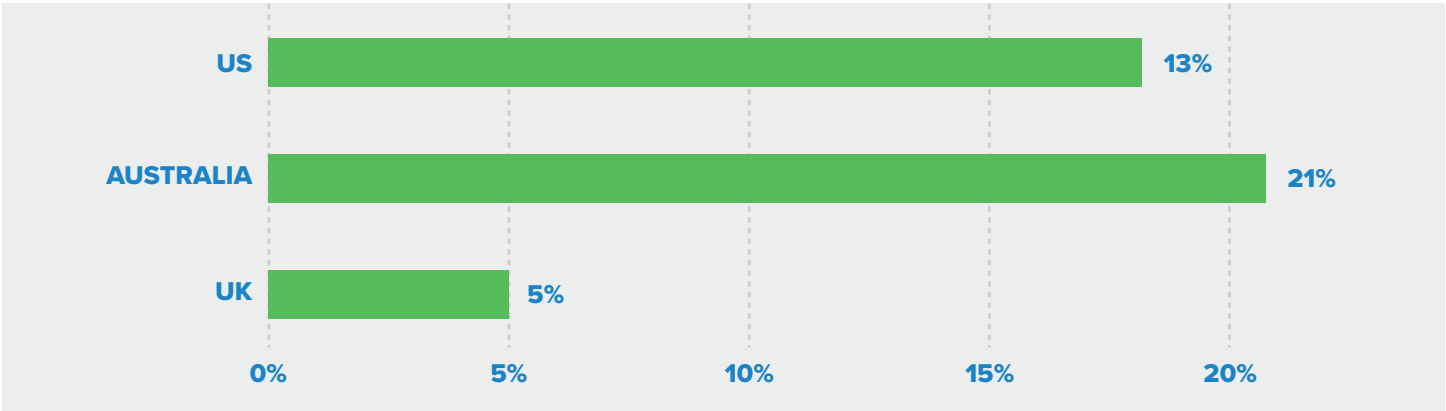
FIG 26 - THE PERCENTAGE OF ACTIVITY RELATED TO MEDICALLY UNEXPLAINED ILLNESS (AS A PERCENTAGE OF ALL ACTIVITY)

	UK (ENGLAND)	AUSTRALIA	UNITED STATES
Hospital Admissions	12%	8%	3%
Emergency Department Attendances	5%	21%	13%
Outpatient Department Attendances	1%	8%	8%
GP Attendances	15-19%	Not Available	15%

PERCENTAGE OF HOSPITAL ADMISSION RELATED TO MEDICALLY UNEXPLAINED ILLNESS



PERCENTAGE OF OUTPATIENT ATTENDANCES RELATED TO MEDICALLY UNEXPLAINED ILLNESS



COHORT 3: PATIENTS SUFFERING FROM STRESS WHICH MANIFESTS AS PHYSICAL SYMPTOMS

Our findings indicate that a considerable number of patients who present with common physical symptoms likely have stress as an underlying and predominant driver of their illness. Unlike medically unexplained conditions, this cohort have experienced stress to such a degree that they have developed – or had acute exacerbations of – physical illness. When looking across categories of disease, some conditions stand out. For example, we estimate that over 46% of all primary care attendance for chest pain and over 13% of all hospital admissions for cardiovascular complaints have stress as the root cause. These findings highlight the need for preventative approaches to tackle stress before it drives physical illness.

Our findings indicate that a considerable number of patients who present with common physical symptoms are likely have stress as an underlying and predominant driver of their illness.

FIG 27 - COMMON PHYSICAL SYMPTOMS DRIVEN BY STRESS

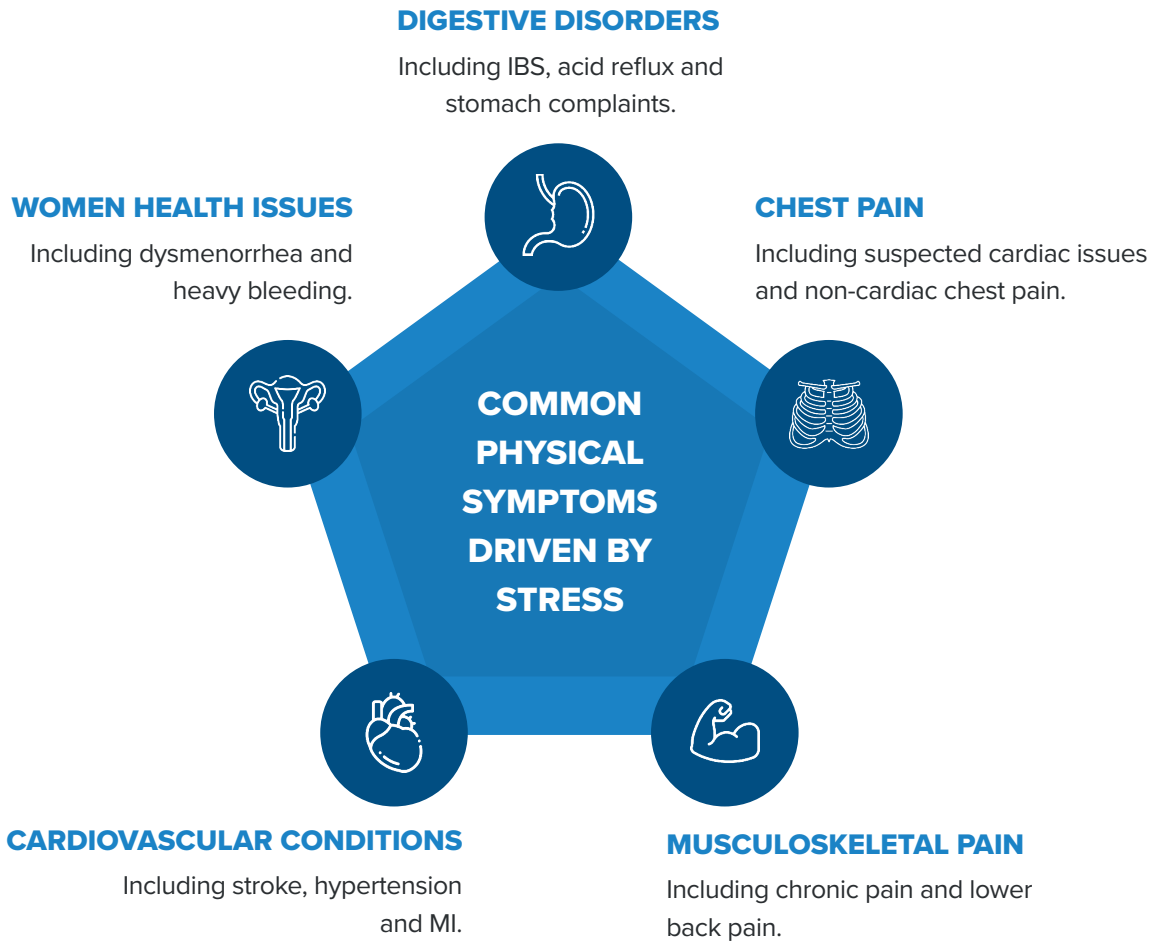
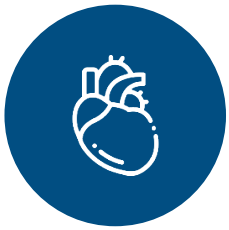


FIG 28 - THE PERCENTAGE OF ACTIVITY RELATED TO PHYSICAL SYMPTOMS DRIVEN BY UNDERLYING STRESS (AS A PERCENTAGE OF ALL ACTIVITY)

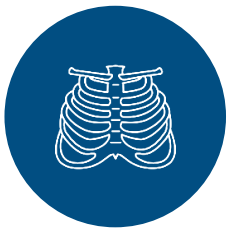
STRESS-RELATED PRIMARY CARE ATTENDANCES (AS A PERCENTAGE OF ALL GI CONDITIONS)	STRESS-RELATED OUTPATIENT ATTENDANCES (AS A PERCENTAGE OF ALL GI CONDITIONS)
Weighted average 37%	Weighted average 24%

STRESS-RELATED PRIMARY CARE ATTENDANCES (AS A PERCENTAGE OF ALL WOMEN HEALTH ISSUES)	STRESS-RELATED HOSPITAL ADMISSIONS (AS A PERCENTAGE OF ALL WOMEN HEALTH ISSUES)
Weighted average 35%	Weighted average 29%



STRESS-RELATED ED ATTENDANCES (AS A PERCENTAGE OF ALL CARDIOVASCULAR CONDITIONS)	STRESS-RELATED HOSPITAL ADMISSIONS (AS A PERCENTAGE OF ALL CARDIOVASCULAR CONDITIONS)
Weighted average 14%	Weighted average 13%

STRESS-RELATED ED ATTENDANCES (AS A PERCENTAGE OF ALL MSK PAIN)	STRESS-RELATED PRIMARY CARE ATTENDANCES (AS A PERCENTAGE OF ALL MSK PAIN ENDING PARENTHESIS
Weighted average 35%	Weighted average30%



STRESS-RELATED PRIMARY CARE ATTENDANCES (AS A PERCENTAGE OF ALL CHEST PAIN)	STRESS-RELATED ED ATTENDANCES (AS A PERCENTAGE OF ALL CHEST PAIN)
Weighted average 46%	Weighted average 6%

MUSCULOSKELETAL CONDITIONS

The benchmarks for avoidable healthcare utilisation for musculoskeletal pain primarily centre on the use of primary care appointments. For the study, our sample size was 56,840 patients for primary care and 1,075 emergency department patients. In academic literature and clinical audit, the majority of patients for whom stress was deemed to be a principal driver, had lower back pain or unexplained muscle tension. The benchmark findings point towards deep differences between health systems in the approach to treating musculoskeletal issues. The US has a significantly higher hospitalisation rate than the UK, even though primary care usage is also higher. This may be the result of treatment protocols which are inherently more conservative in public payor systems like the UK's NHS.

The benchmark findings point towards deep differences between health systems in the approach to treating musculoskeletal issues.

	UK (ENGLAND)	AUSTRALIA	UNITED STATES
Avoidable outpatient attendances for all musculoskeletal pain (as a percentage of all attendances)	0.5%	3%	2%
Avoidable ED attendances for all musculoskeletal pain (as a percentage of all attendances)	1%	1%	2%
Avoidable primary care attendances for all musculoskeletal pain (as a percentage of all attendances)	1%	3%	5%

CHEST PAIN

The benchmarks for avoidable healthcare utilisation for chest pain primarily centre on the use of emergency department attendances and primary care appointments. For the study, our sample size was 64,106 emergency department patients and 1,239 primary care patients. In academic literature and clinical audit, the majority of patients for whom stress was deemed to be a principal driver, had non-cardiac chest pain without any underlying cause. Clinically, the likely explanation for much of this is anxiety and panic, causing individuals to hyperventilate or create muscle tension, mimicking serious cardiac conditions. Whilst not serious, the studies highlighted that it is common for non-cardiac chest pain patients to continue to seek care, in some cases having extensive cardiac work-ups before receiving an accurate diagnosis of stress-related metal illness.

	UK (ENGLAND)	AUSTRALIA	UNITED STATES
Avoidable hospital admissions for all chest pain (as a percentage of all admissions)	4%	9%	8%
Avoidable ED attendances for all chest pain (as a percentage of all attendances)	0.4%	0.8%	1%
Avoidable primary care attendances for all chest pain (as a percentage of all attendances)	4%	8%	N/A

CARDIOVASCULAR CONDITIONS

The benchmarks for stress-related healthcare utilisation for cardiovascular conditions primarily centre on hospital admissions and the use of primary care. In total, our sample size for hospital admissions was 3,300,194 patients, and for primary care utilisation our sample size was 1,409,834 patients.

The research indicates that many patients suffering from cardiovascular disease have co-existing stress-related mental health issues, such as anxiety or depression. To be conservative in our approach, we only included studies in which a stress-related illness was deemed to be root cause. Many of these cases involved low-grade, manageable cardiovascular conditions such as hypertension and blood pressure issues.

	UK (ENGLAND)	AUSTRALIA	UNITED STATES
Avoidable hospital admissions for selected cardiovascular conditions (as a percentage of all admissions)	0.1%	0.2%	0.2%
Avoidable ED attendances for selected cardiovascular conditions (as a percentage of all attendances)	0.01%	N/A	0.1%
Avoidable primary care attendances for selected cardiovascular conditions (as a percentage of all attendances)	1%	0.1%	2%

GASTROINTESTINAL CONDITIONS

The benchmarks for avoidable healthcare utilisation for gastrointestinal conditions focus on both hospital admissions, primary and outpatient attendances. In this study, our sample size was 349,731 primary care patients, 2,495 outpatients and 7,505 inpatients. Within the broad GI category, a number of conditions were shown to have considerable relationship to stress. These included IBS and acid reflux disease. Hospitalisation and diagnostic testing were common when these conditions presented, and patients were often only found to have an underlying stress-related mental illness after long periods of care. This indicates that GI patients are often underdiagnosed for mental illness and receive delayed care for their underlying condition, ultimately resulting in avoidable healthcare utilisation and cost.

Patients were often only found to have an underlying stress-related mental illness after long periods of care.

	UK (ENGLAND)	AUSTRALIA	UNITED STATES
Avoidable primary care visits for all GI symptoms (as a percentage of all attendances)	3%	2%	2%
Avoidable outpatient visits for all GI symptoms (as a percentage of all attendances)	0.7%	3%	0.6%
Avoidable hospital admissions for all GI symptoms (as a percentage of all admissions)	0.2%	0.3%	0.1%

WOMEN'S HEALTH CONDITIONS

The benchmarks for avoidable healthcare utilisation for women's health conditions centre primarily on the use of primary care appointments. In total, our sample size was 4,809 patients. Women's health has, perhaps, the most complex relationship to stress. While studies have shown that stress has a relationship to fertility and reproductive health, there are few compelling studies that show stress to be the principal cause of these conditions. For the purposes of this study, we therefore confined our analysis to conditions such as menstrual health, where academic literature and clinical audit were able to show a strong link between stress and women's health. The findings are therefore conservative, though still show a reasonably significant impact in hospital admissions given the limited scope of our focus in this area.

	UK (ENGLAND)	AUSTRALIA	UNITED STATES
Avoidable primary care visits for all women health issues (as a percentage of all attendances)	N/A	1%	N/A
Avoidable outpatients' visits for all women health issues (as a percentage of all attendances)	0.1%	0.5%	0.1%
Avoidable hospital admissions for all women health issues (as a percentage of all admissions)	0.4%	1%	0.1%

UNITED KINGDOM - THE COST OF STRESS: 14.8B USD

The UK's National Healthcare System (NHS) dominates the care delivery landscape. The comprehensive system covers both acute and primary care, and is free at the point of care to citizens. The private healthcare market accounts for only 5% of health expenditure, usually used for quick access and more comfortable facilities. The UK system – with few barriers to use – is overstretched in many parts.

The impact of stress-related illness on the UK's system is conservatively estimated at **USD 14.8 billion**, slightly over **6% of health expenditure**. In comparison to other markets the UK is managing the cost of stress to its health system more effectively.

The largest proportion of stress-related healthcare expenditure was in inpatient settings, accounting for 23% of all inpatient spend, costing the NHS USD 8.1 billion and the private sector USD 1.8 billion. This accounted for over 5.5 million inpatient admissions, a high burden for already overstretched inpatient system. Stress also accounted for a third of primary care expenditure, 33% with USD 2.4 billion and USD 308 million cost to government and private sector respectively.

As well as better models of care, public awareness of stress and its relationship with physical and mental illness will be vital in reducing the costs to the NHS and wider health system. Employers also have an important role to play.

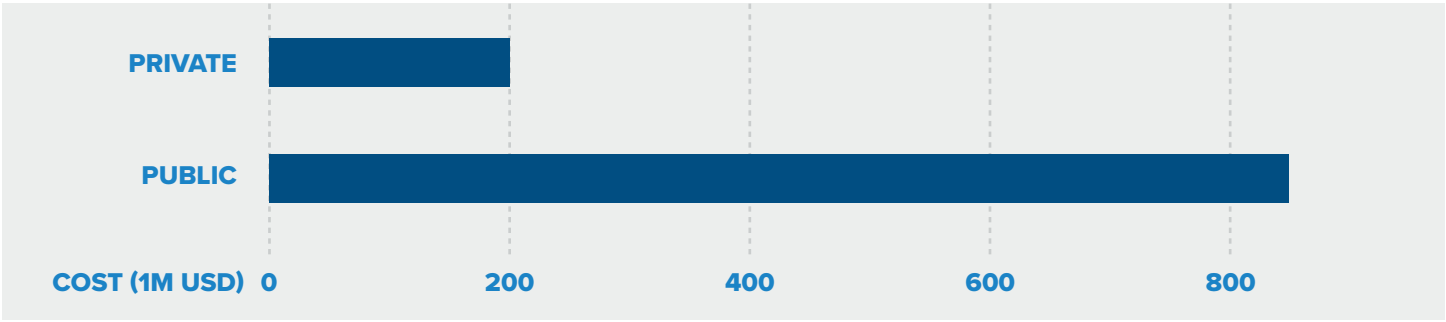
INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS	
5,541,424 PER YEAR	9.9B USD

ACCIDENT & EMERGENCY (A&E) ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
3,093,148 PER YEAR	657M USD

GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS	
68,897,490 PER YEAR	2.7B USD

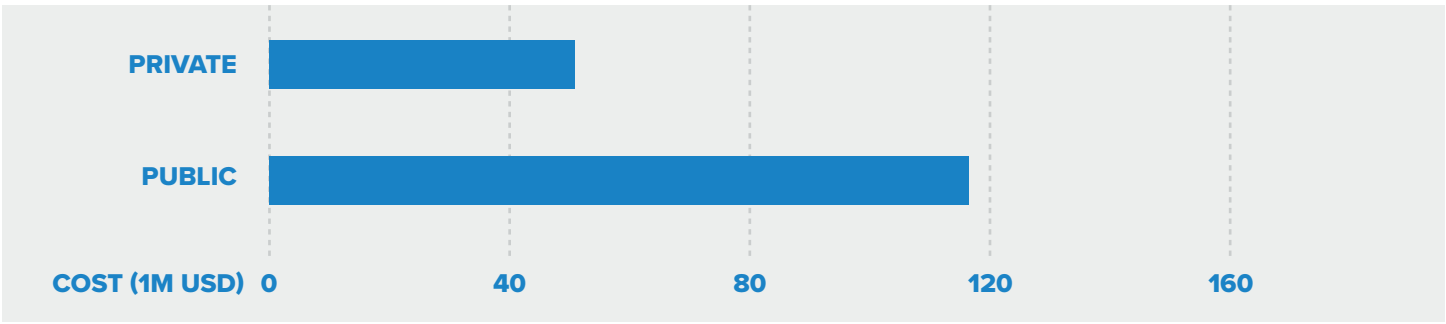
OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
9,243,754 PER YEAR	1.5B USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



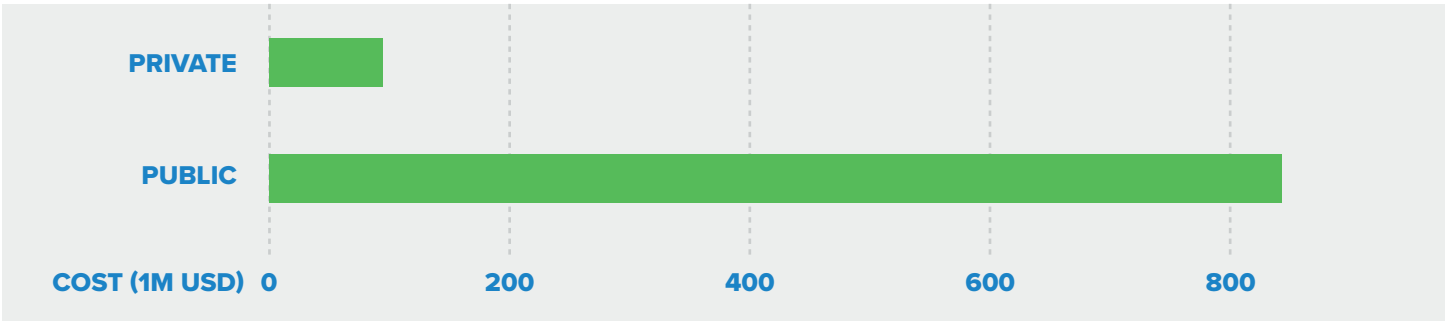
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF EMERGENCY DEPARTMENT ATTENDEANCES, ANNUALISED (COHORT 3)



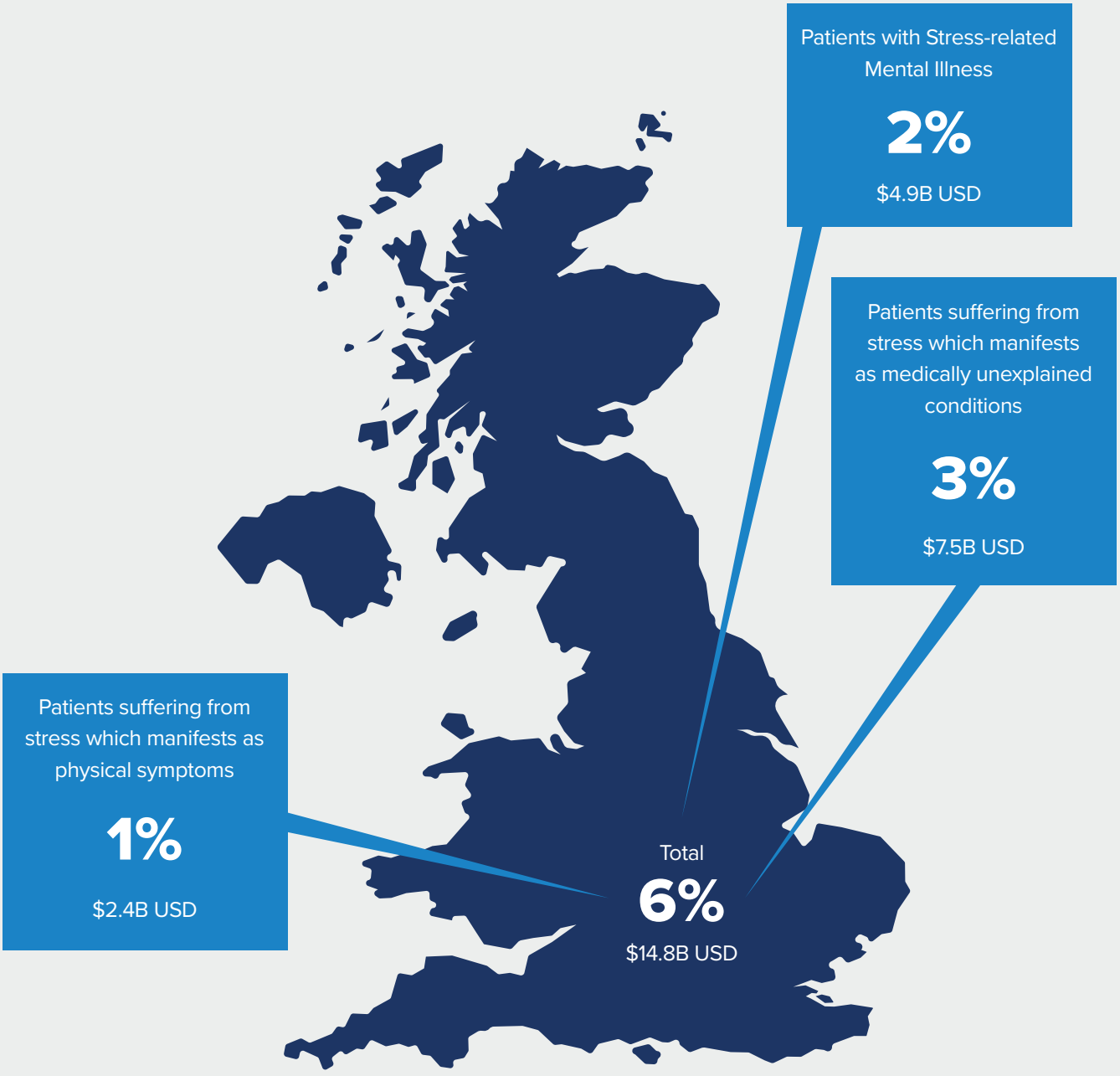
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 29 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF UNITED KINGDOM'S TOTAL HEALTH EXPENDITURE



UNITED STATES - THE COST OF STRESS: 133.2B USD

The US has a complex mix of financing; contributed by employers, individuals and (a relatively small amount) by the state contributes to a range of health insurance plans. Around 89% of Americans have some form of health insurance, although the coverage is highly variable. The vast majority of care is delivered in the private sector, often on a fee-for-service basis. This has led to extremely high levels of overall spend, with around 17% of GDP being spent on healthcare. For Inpatient care, private services account for around 88% of the market, for emergency department usage the picture is similar with private services accounting for 83% of all utilisation. It is therefore unsurprising that around 16% of the total cost of inpatient services, and over 7.5 million admissions, are for stress-related illness.

The overall cost of stress-related illnesses to the US system is dramatic, accounting for around **4% of health** sitting at an estimated **USD 133 billion** in spend annually. However, t**he true number is likely to be much higher** because mental health related diagnosis is unlikely to be covered by payors making it unlikely to be noted by physicians resulted in significant underreporting.

We estimate that close to 167 million GP attendances in the US are driven by stress-related illness, at a cost of $29.7 billion USD. Much of this cost is driven by patients seeking care for selected physical symptoms driven by stress-related mental illness. The high unit costs of care in the US make stress a much larger economic problem than in other markets.

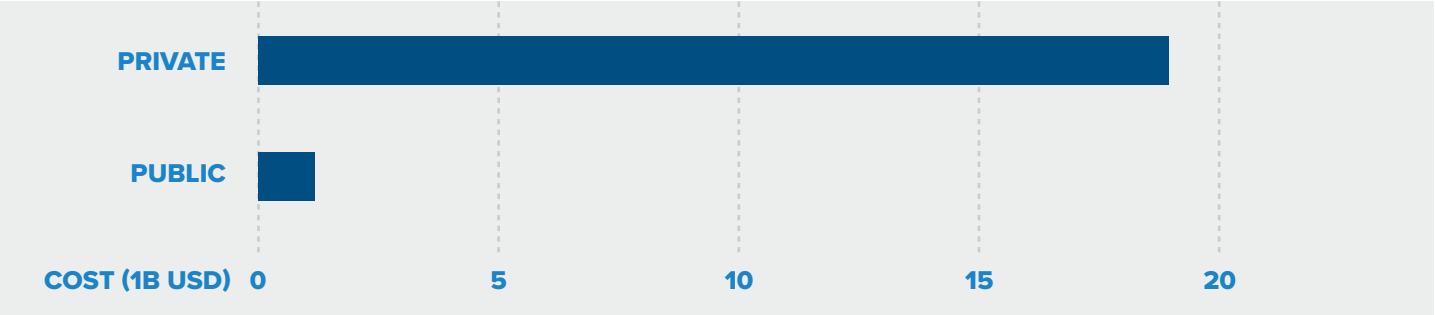
INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS	
7,519,595 PER YEAR	63.4B USD

A&E ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
26,526,591 PER YEAR	12B USD

GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS	
166,888,838 PER YEAR	29.7B USD

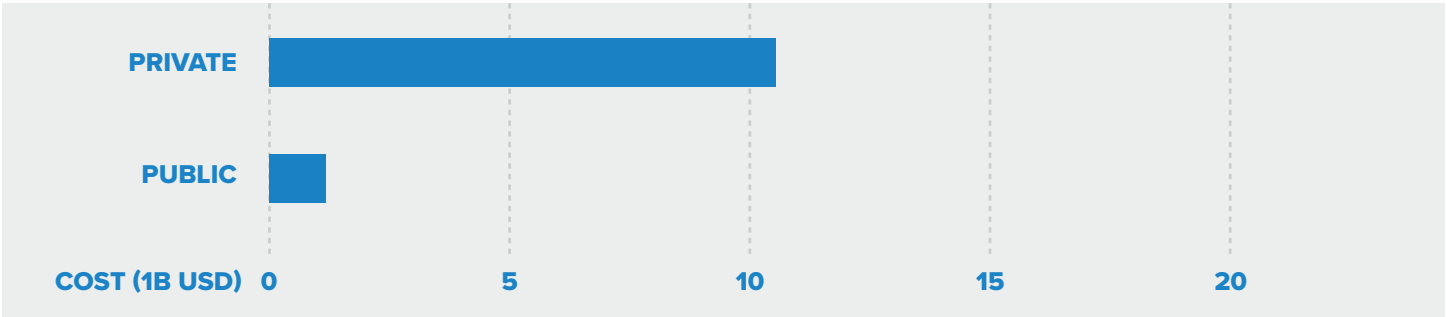
OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
113,260,852 PER YEAR	28.1B USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



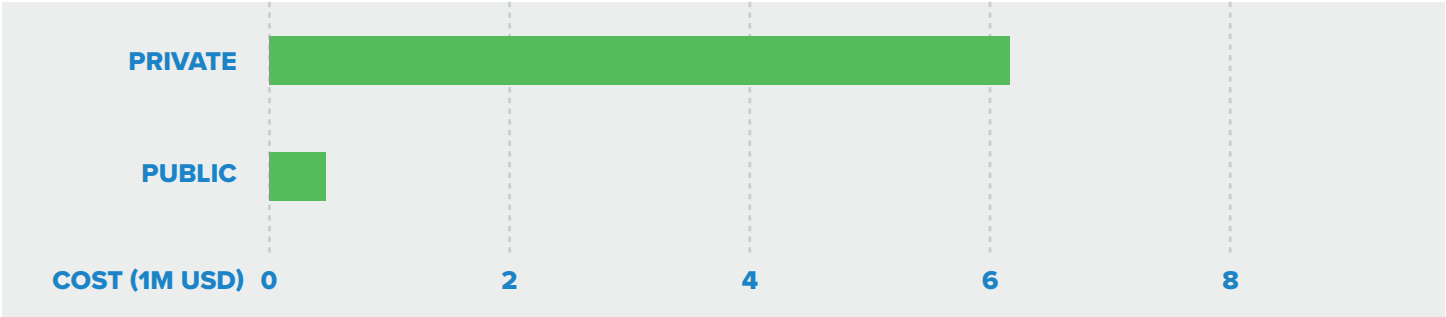
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF HOSPITAL ADMISSIONS FOR ALL CHEST PAIN, ANNUALISED (COHORT 3)



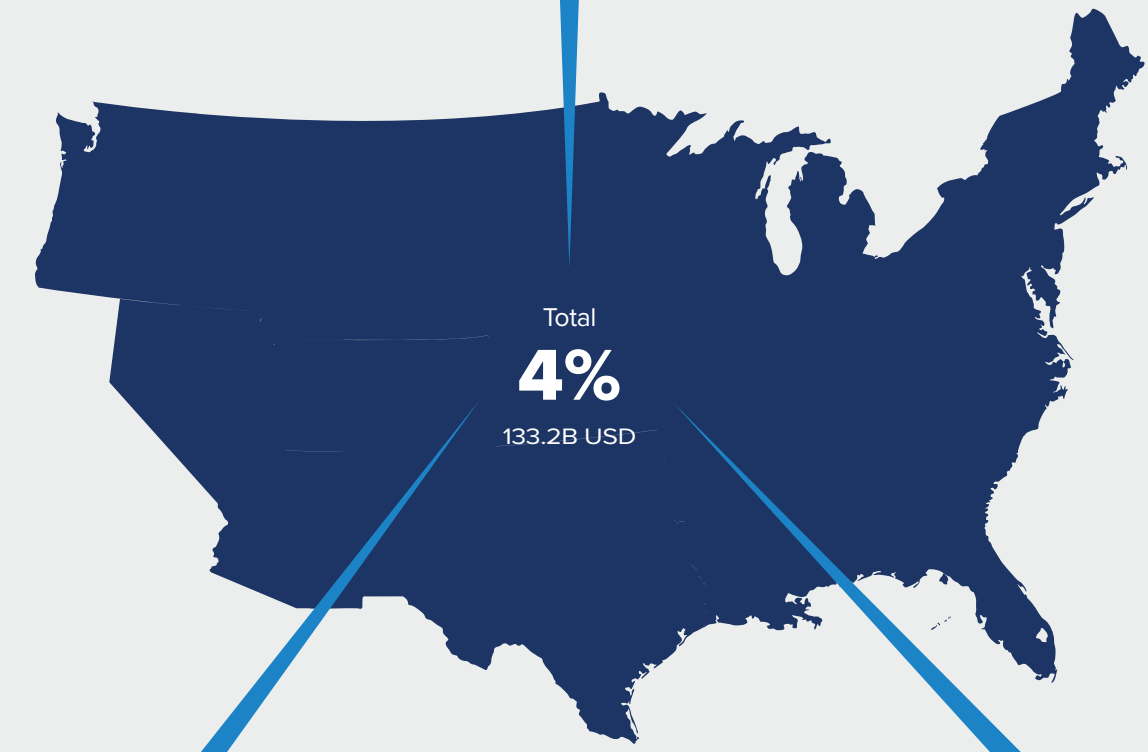
COST OF ALL CHEST PAIN DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF HOSPITAL ADMISSIONS FOR CIRCULATORY ISSUES ANNUALISED (COHORT 3)



COST OF ALL CIRCULATORY ISSUES DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 30 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF UNITED STATES' TOTAL HEALTH EXPENDITURE



AUSTRALIA - THE COST OF STRESS: 22.9B USD

Australia has a comprehensive health system, providing universal healthcare to its citizens through its Medicare programme. Government is both the major payor and provider, helping keep overall system costs to a reasonable level. Private insurance complements the system, and is often taken out as a "top-up" product to cover items that fall outside the scope of Medicare. Increasingly, private providers are emerging in major cities, altering the balance of care delivery. Currently, around 60% of inpatient and outpatient care are delivered in the public system, with the remainder being delivered by the growing private provider market. For both emergency and general practice care, the system skews heavily towards the public system with between 92% and 97% of activity being undertaken in public facilities.

The overall estimated cost of stress-related illness to the Australian health system is **USD 22.9 billion**. This translates to 23% of all inpatient spend, and over 3.2 million admissions. For GP appointments, we estimate that 37% of total GP appointment spend relates to stress-related illness with a breakdown of USD 7.4 billion and USD 120 million between the government and private sector respectively. The relative comprehensiveness of the Australian system means the use of GP services is higher than other markets, with around 59 million appointments related to stress-related illness. For outpatient attendances, 17% of total outpatient services spend pertained to stress-related illness with USD 827 million and USD 450 million of cost to government and private sector respectively.

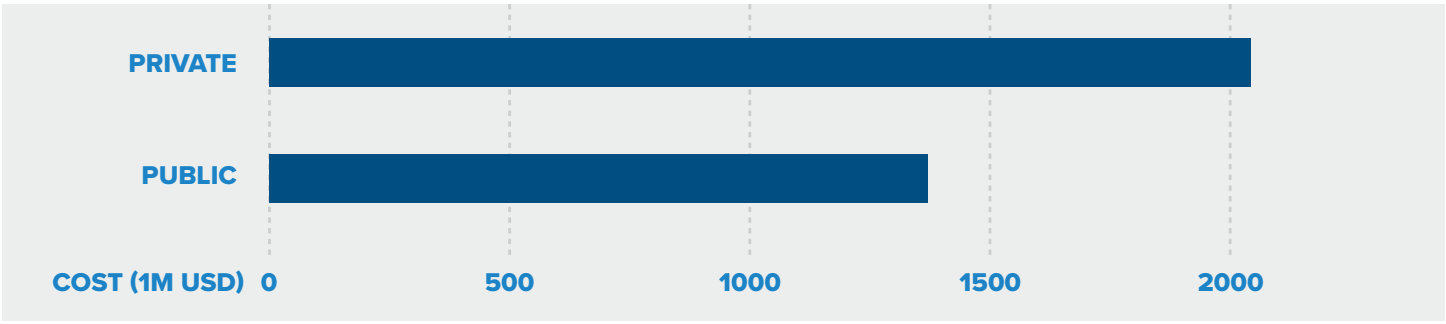
INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS	
3,201,349 PER YEAR	13.3B USD

A&E ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
2,084,369 PER YEAR	911M USD

GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS	
59,097,502 PER YEAR	7.5B USD

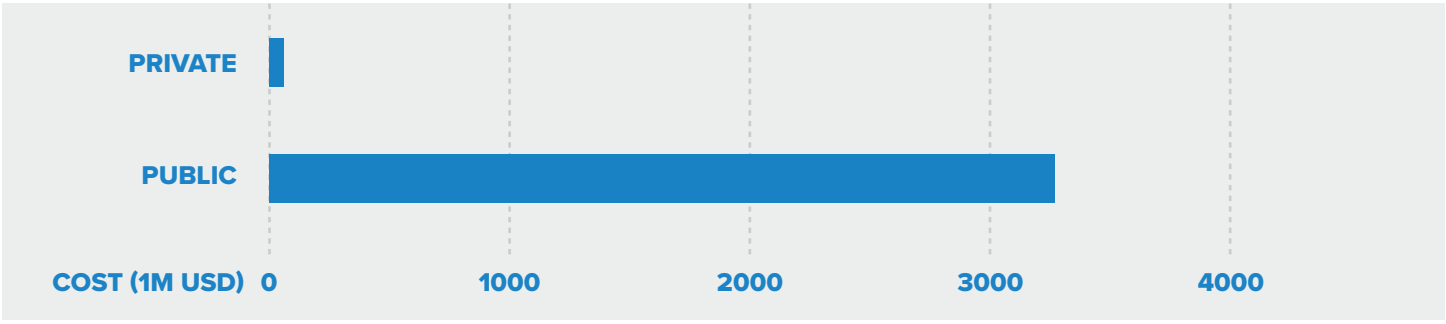
OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
6,598,005 PER YEAR	1.3B USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



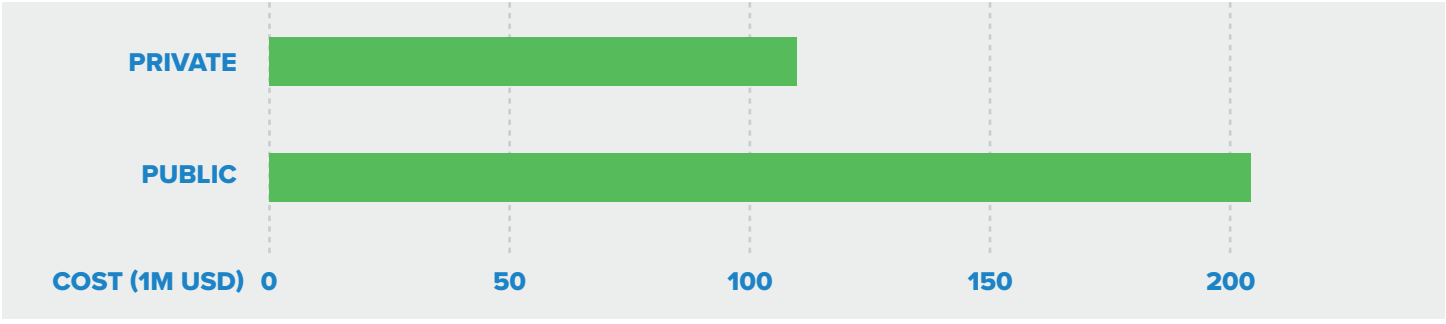
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



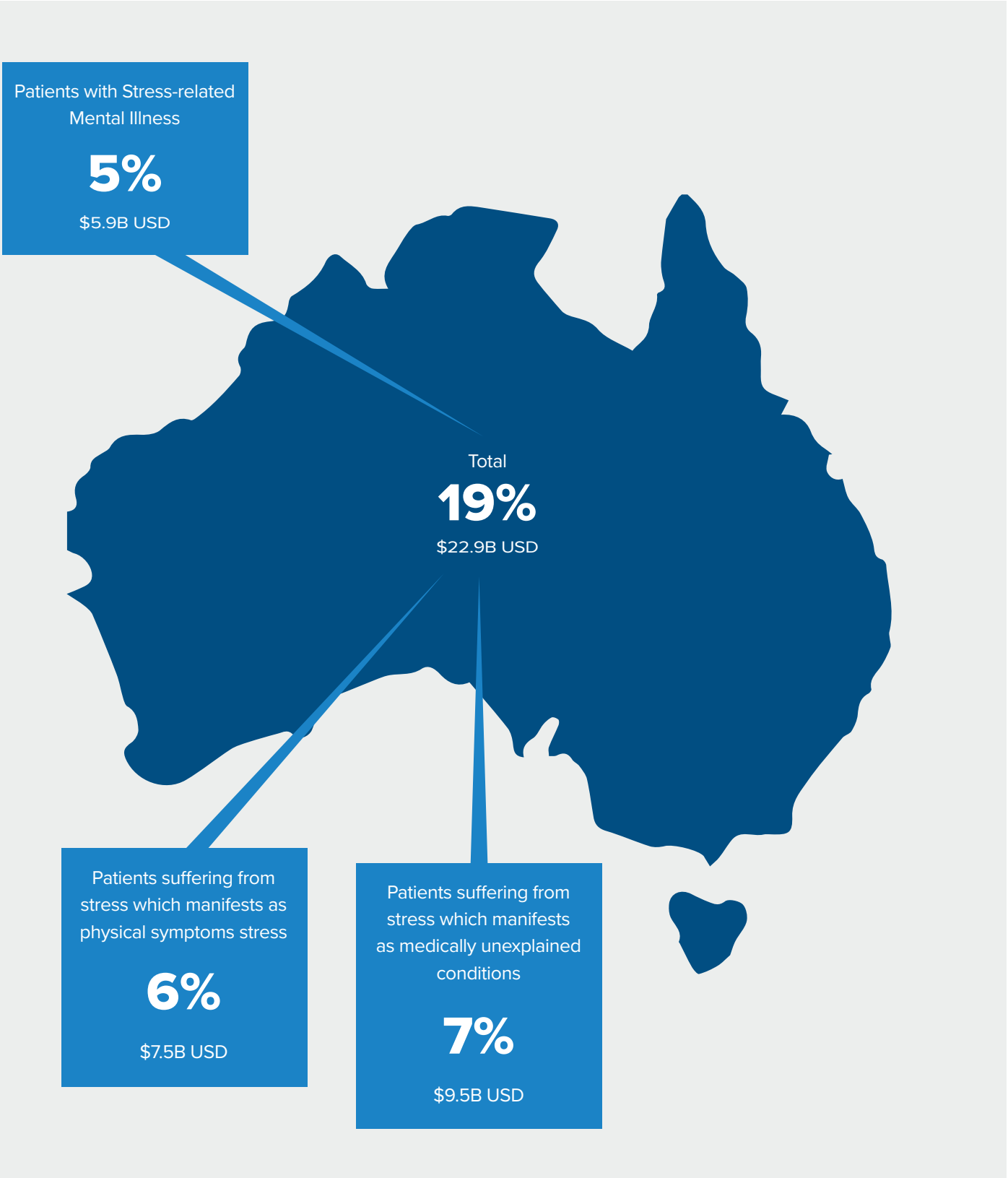
COST OF ALL CHEST PAIN DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF OUTPATIENT ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL CIRCULATORY ISSUES DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 31 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF AUSTRALIA'S TOTAL HEALTH EXPENDITURE



SINGAPORE - THE COST OF STRESS: 2.3B USD

Singapore's comprehensive health system, underpinned by mandatory and top-up health insurance, ensures universal health care for its citizens. Public delivery forms the majority of activity, accounting for 80% of inpatient admissions and emergency department attendances. The opposite is true of GP and outpatient attendances, where 80% of activity being undertaken by the private sector, with some price control.

The impact of stress-related illness on Singapore's health system conservatively equates to **USD 2.3 billion of spend, 18% of health expenditure**. This is most keenly felt in primary care, where just over 35% of all attendances relate to stress-related conditions. For emergency department attendances, just over 19% relate to stress-related illness and a cost of USD 16.7 million and USD 4.4 million of cost to government and private sector respectively. Stress-related illness is less obvious in outpatient settings, accounting for only 12% of total outpatient service spend. This may be due to an effective system of referral which ensures that access to outpatient care is controlled via triaging and redirecting patients back to primary care where necessary.

Singapore's public hospitals, like those in Hong Kong, are facing severe capacity challenges. We estimate that over 160,000 admissions relate to stress-related conditions. Identifying patients suffering with stress-related illness earlier in their journey and upskilling hospital staff to detect and manage patients with stress conditions are likely to be highly effective in reducing the burden on hospital beds and financing.

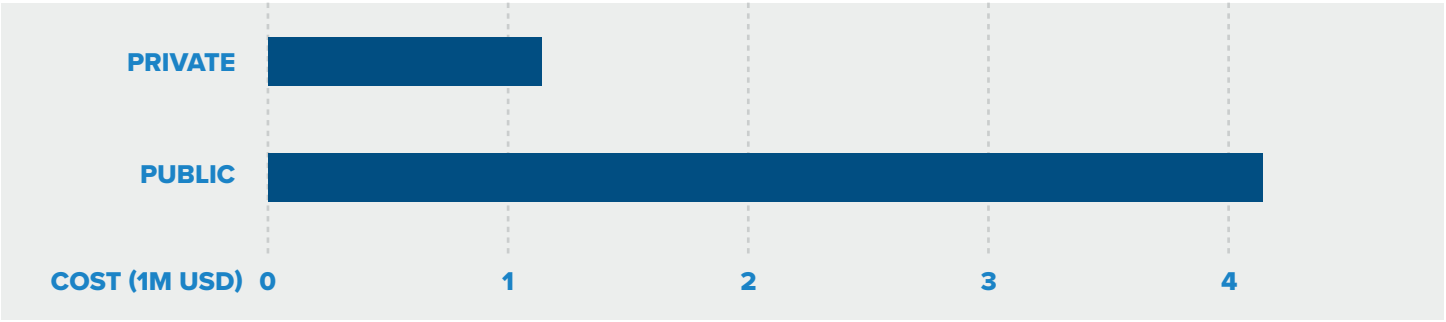
INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS	
160,118 PER YEAR	931M USD

A&E ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
239,123 PER YEAR	21M USD

GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS	
11,124,152 PER YEAR	1.1B USD

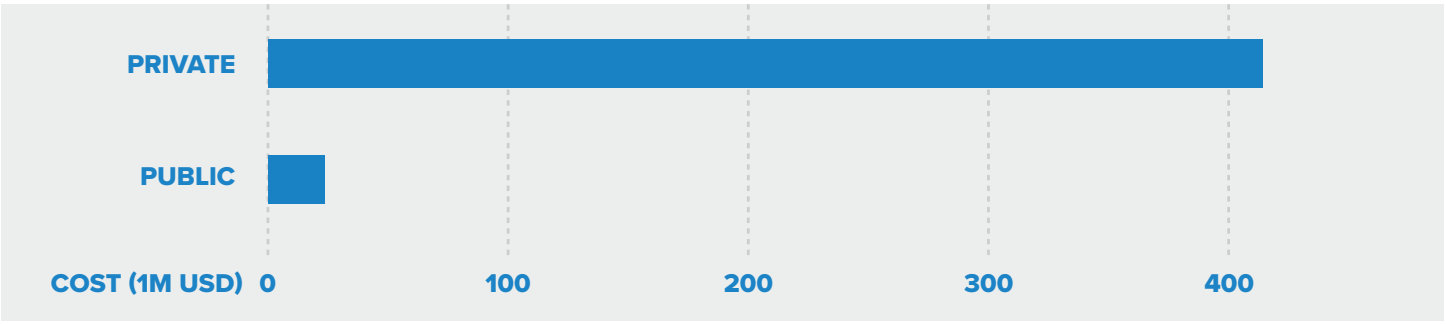
OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
3,034,159 PER YEAR	294M USD

COST OF ED ATTENDANCES, ANNUALISED (COHORT 3)



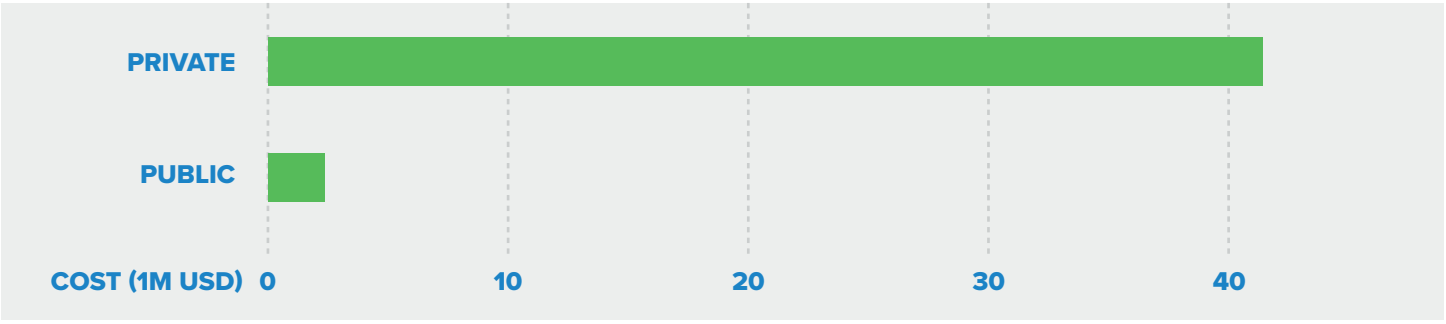
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL CHEST PAIN DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF OUTPATIENT ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL CIRCULATORY ISSUES DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 32 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF SINGAPORE'S TOTAL HEALTH EXPENDITURE

TAIWAN - THE COST OF STRESS: 4.6B USD

Taiwan's National Health Insurance System provides comprehensive cover to its citizens. Both public and private providers are reimbursed under the national scheme, with low co-pays being met by patients. This has led to reasonably high healthcare utilisation rates generally, and some concern over system sustainability in the long term. In addition, high utilisation rates are impacting waiting times, which are now rising steadily across the system. These access challenges have led some individuals to seek fully-private care; paid for either out-of-pocket or via private health insurance. However, the level of fully-privately financed care remains a reasonably small part of the overall ecosystem.

The cost of stress-related illness in Taiwan is estimated to be **USD 4.6 billion** annually. This manifests most markedly in primary care, where an estimated 180 million attendances and USD 2.4 billion of spend relates to stress-related illness. The high level of cost and activity seen in primary care is likely a feature of high usage generally: the average person in Taiwan visits a GP 14 times per year; one of the highest rates globally. Nonetheless, an estimated 38% of all primary care activity is likely to be the direct result of stress-related illness – more than one in three visits. In the inpatient settings, an estimated 13.4% of overall inpatient services spend relates to stress-related illness. This highlights that beyond the fiscal opportunity created by tackling stress, there is also an opportunity to reduce demand on beds – by almost one seventh. As the population ageing is a significant challenge for Taiwan, tackling the estimated 2 million inpatient admissions for stress-related illness will be an important part of ensuring operational capacity.

INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS

2,096,191 PER YEAR	980M USD

A&E ATTENDANCES DRIVEN BY STRESSRELATED ILLNESS

388,404 PER YEAR	27M USD

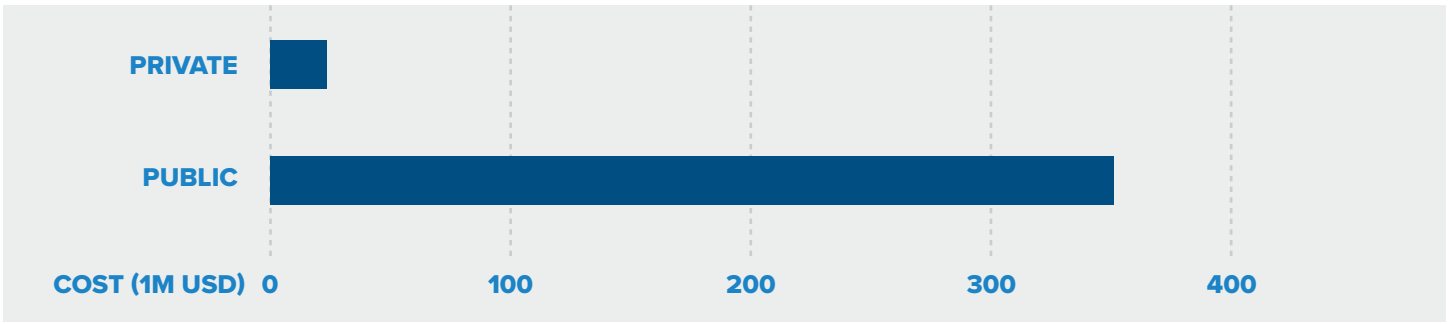
GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS

179,553,863 PER YEAR	2.4B USD

OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS

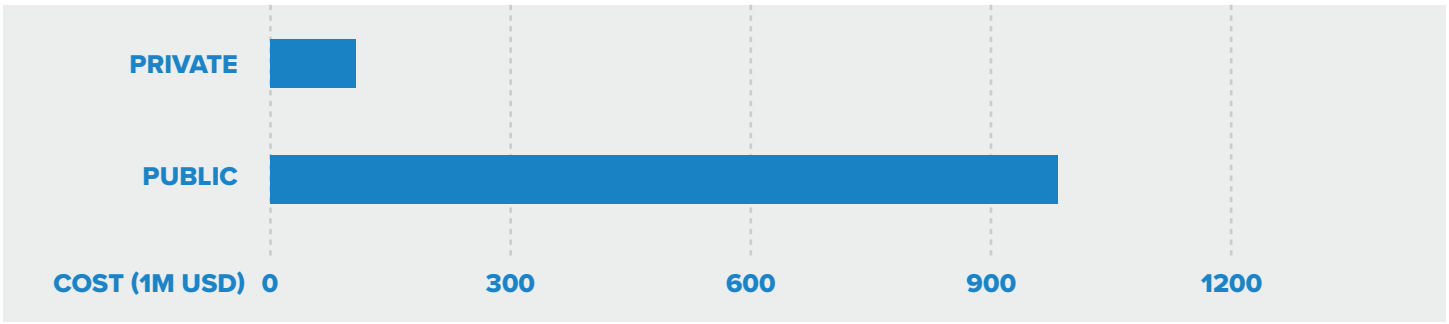
11,645,624 PER YEAR	12B USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



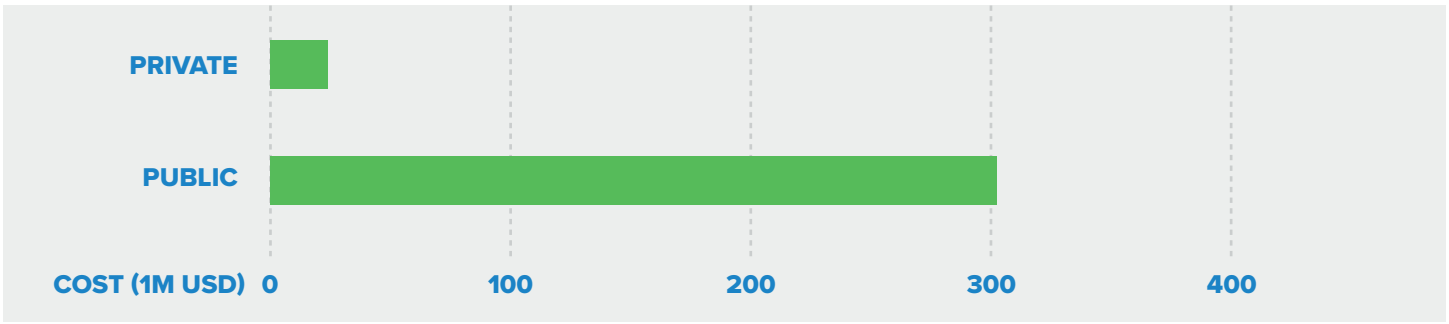
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



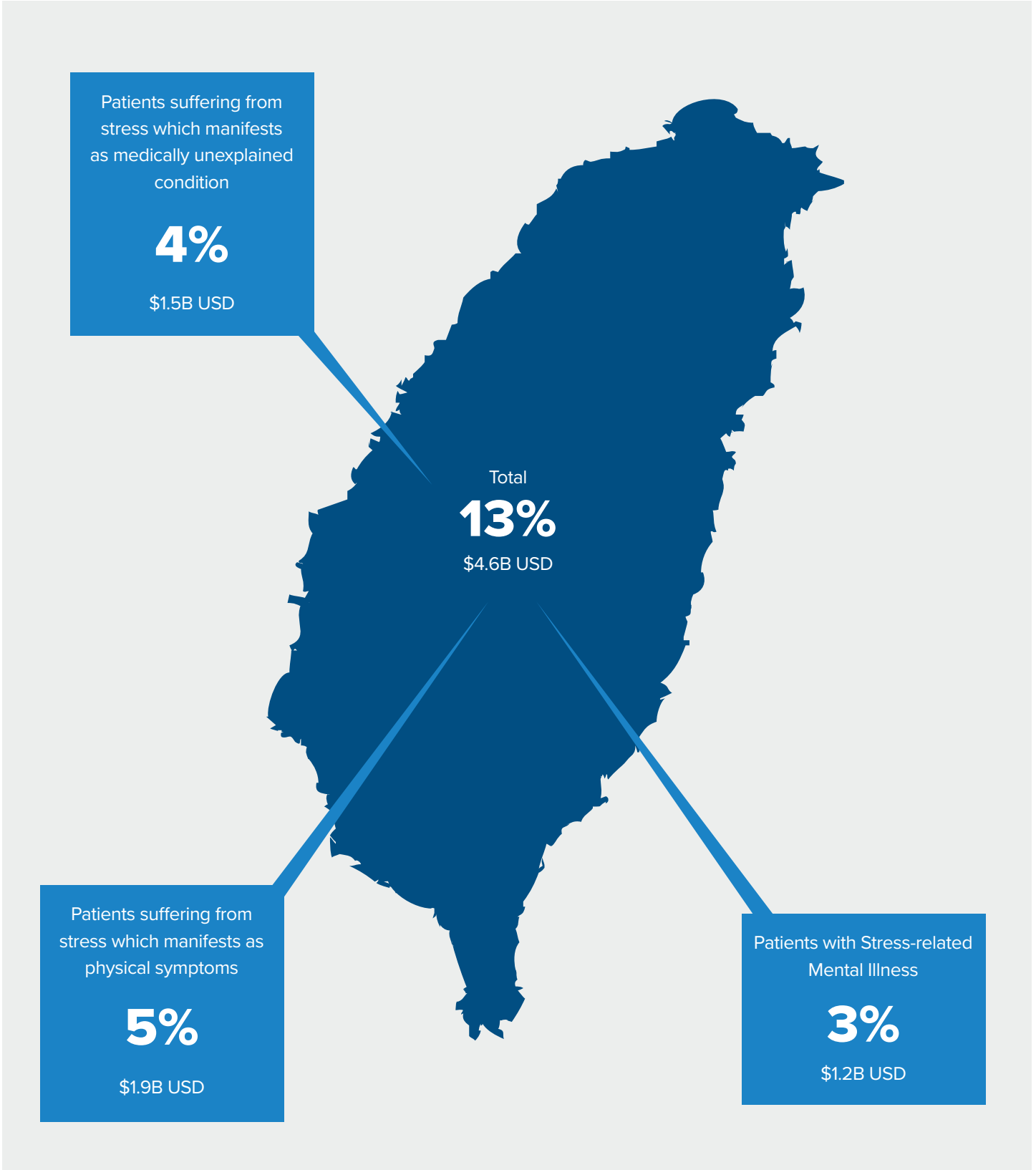
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF OUTPATIENT ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 33 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF TAIWAN'S TOTAL HEALTH EXPENDITURE



THAILAND - THE COST OF STRESS: 717M USD

Thailand introduced universal healthcare in the early part of the 21st century; operating a closed insurance-based system in which the Government predominately finances and delivers care.Thailand has been successful in containing costs, though access remains a considerable challenge. Outside of major urban centres, the provision of care can vary dramatically and co-pays – whilst very small – have an impact on healthcare usage. To provide choice and alleviate pressure on public services, Thailand has successfully stimulated the rapid growth of its private healthcare system. The capital's private hospitals now rank as some of the best in Asia – servicing both affluent locals and significant inbound medical tourists. Nonetheless, public services account for the majority of care – some 98% of all care delivery.

We estimate that the total cost for selected stress-related illness on the Thai health system to be around **USD 717 million, 4% of health expenditure**.

For inpatient care, this represents around 26% of the total health expenditure on inpatient care with USD 415 million and USD 20 million in cost to government and the private sector respectively. For outpatient services, the figures are estimated to be lower with only 12% of total outpatient services spend related to stress-related illness.

Overall, the costs associated with stress-related illness are lower in Thailand than other counties. This is mainly due to the low unit costs in Thailand which limit the overall cost exposure (when compared to the other 8 markets in this report).

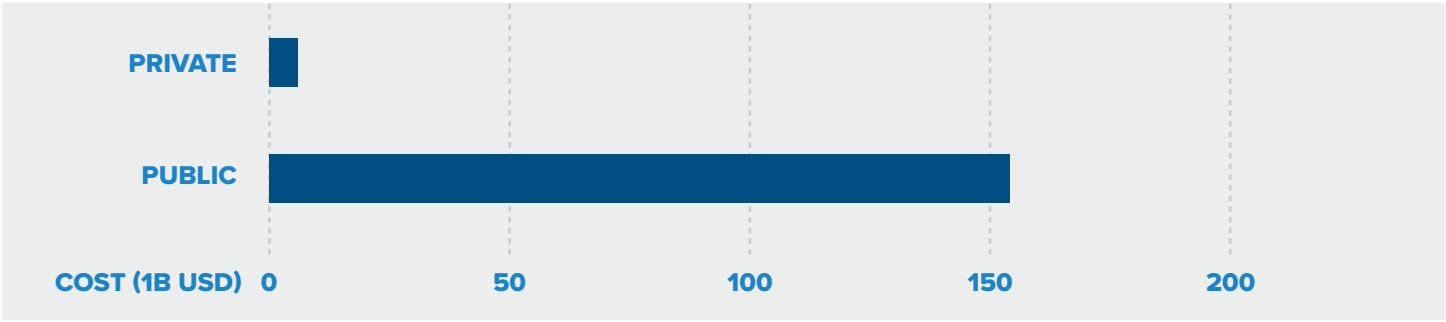
INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS	
1,512,203 PER YEAR	435M USD

A&E ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
868,170 PER YEAR	22M USD

GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS	
26,178,748 PER YEAR	167M USD

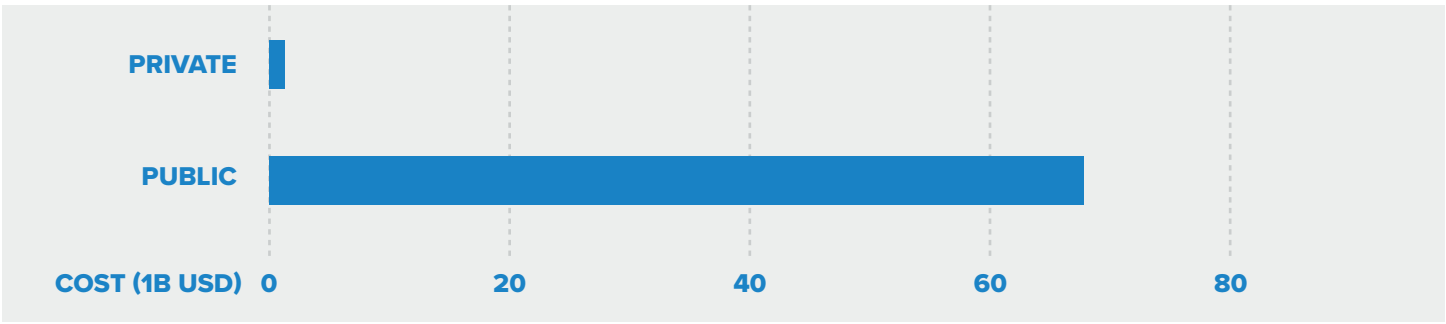
OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
10,779,071 PER YEAR	94M USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



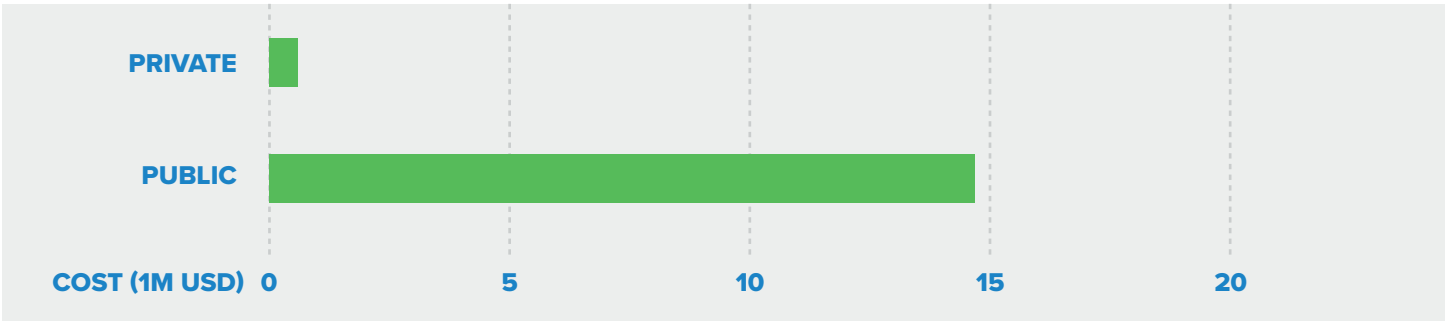
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



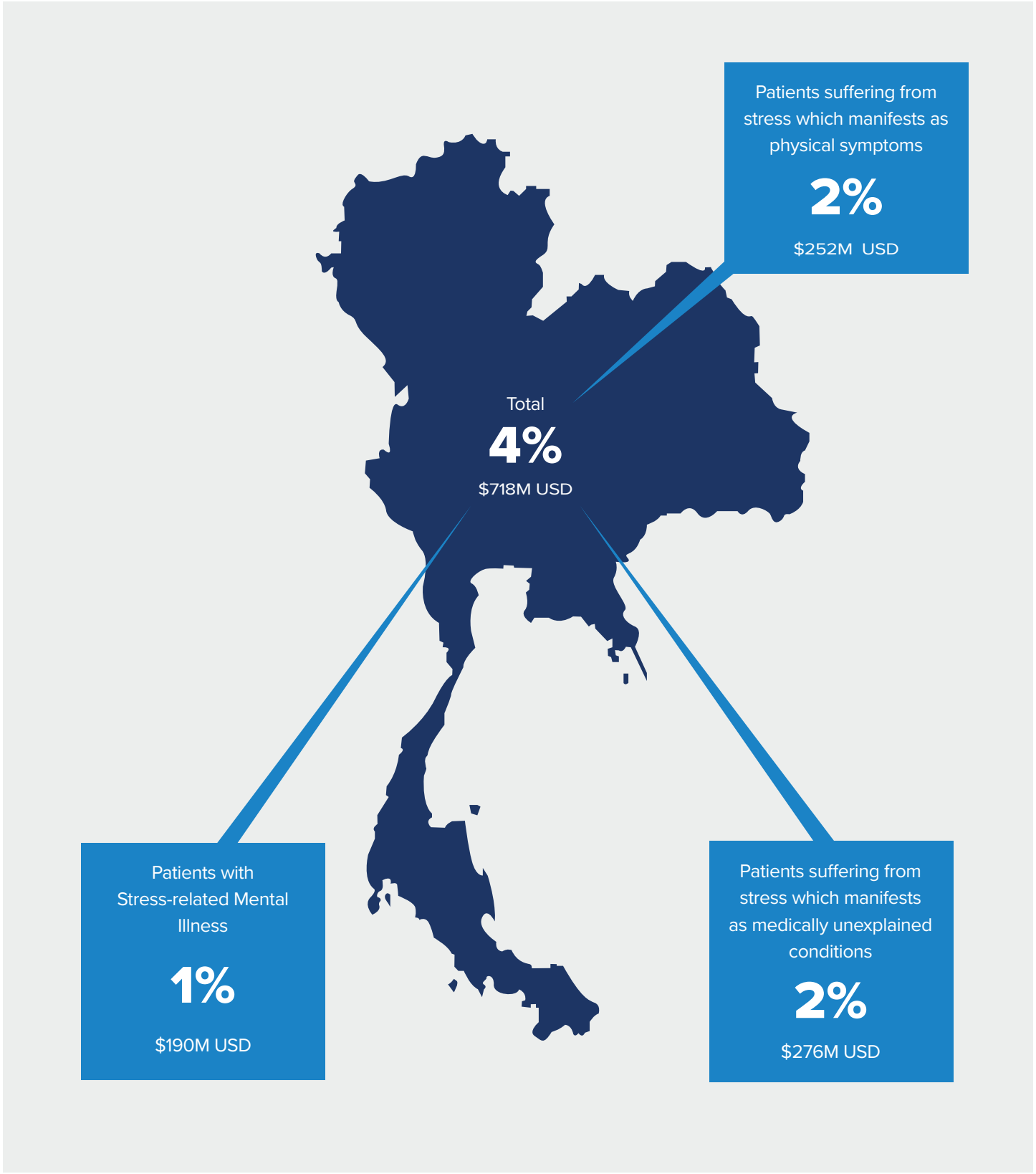
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF OUTPATIENT ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 34 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF THAILANDS' TOTAL HEALTH EXPENDITURE



HONG KONG - THE COST OF STRESS: 3.8B USD

Hong Kong's dual-track healthcare system encompasses a large public acute care system and a predominately private primary care system. Around 90% of all inpatient services are delivered by the Public Hospital Authority. Similarly, emergency department usage skews heavily toward public delivery, with 99% of all attendances being undertaken in the Hospital Authority. Conversely, primary care is dominated by private providers who deliver 81% of all consultations, and around 70% of all outpatient episodes. The structure of Hong Kong's health system has created incentives to use more resource intensive services; attending the emergency room for minor conditions is cheaper than attending a GP practice leading to some potential over use of emergency care. In addition, the low cost of public care, combined with an ageing population, has led to high demand for acute care putting pressure on hospital service.

The cost of stress on Hong Kong's health system is substantial. We estimate that **25% of total spending on inpatient care relates to stress-induced illness**, equating to some USD 1.7 billion of public sector spend and USD 586 million of spend in the private sector. Perhaps most importantly, close to **550,000 admissions relate to stress-related mental illness**. Helping prevent the escalation of these largely avoidable conditions would release a significant amount of bed days, which is much needed in a public system that routinely operates at over 100% capacity. For emergency care, we estimate that around **17% of total emergency department spending relates to stress-related illness**, with the majority of spend in the public system. For GP appointments, the numbers are high. We estimate that **35% of total GP appointment spend relates to stress-related mental illness**; a staggering USD 832 million and around 12 million appointments. Moving treatment of health related illness out of hospital settings would save considerable expense.

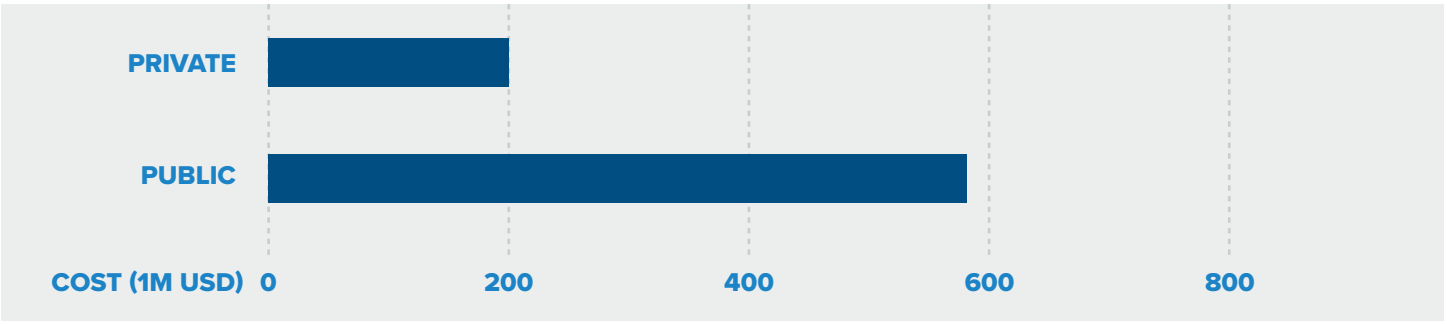
INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS	
550,627 PER YEAR	2.2B USD

A&E ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
371,612 PER YEAR	65.8M USD

GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS	
11,748,406 PER YEAR	832M USD

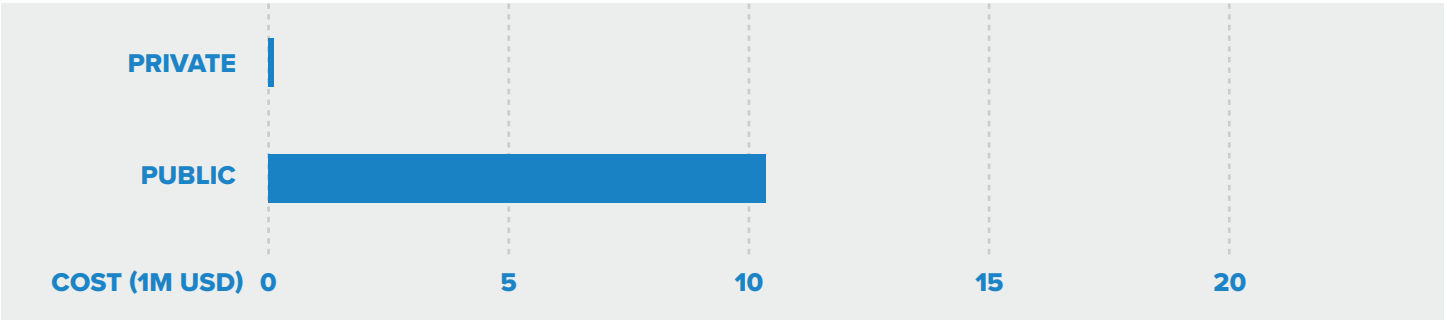
OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
3,172,206 PER YEAR	624M USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



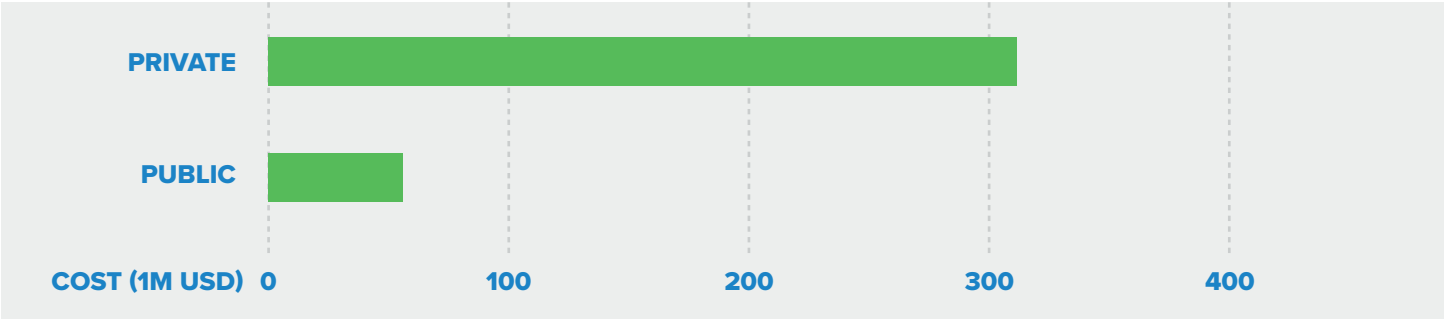
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF EMERGENCY DEPARTMENT ATTENDEANCES, ANNUALISED (COHORT 3)



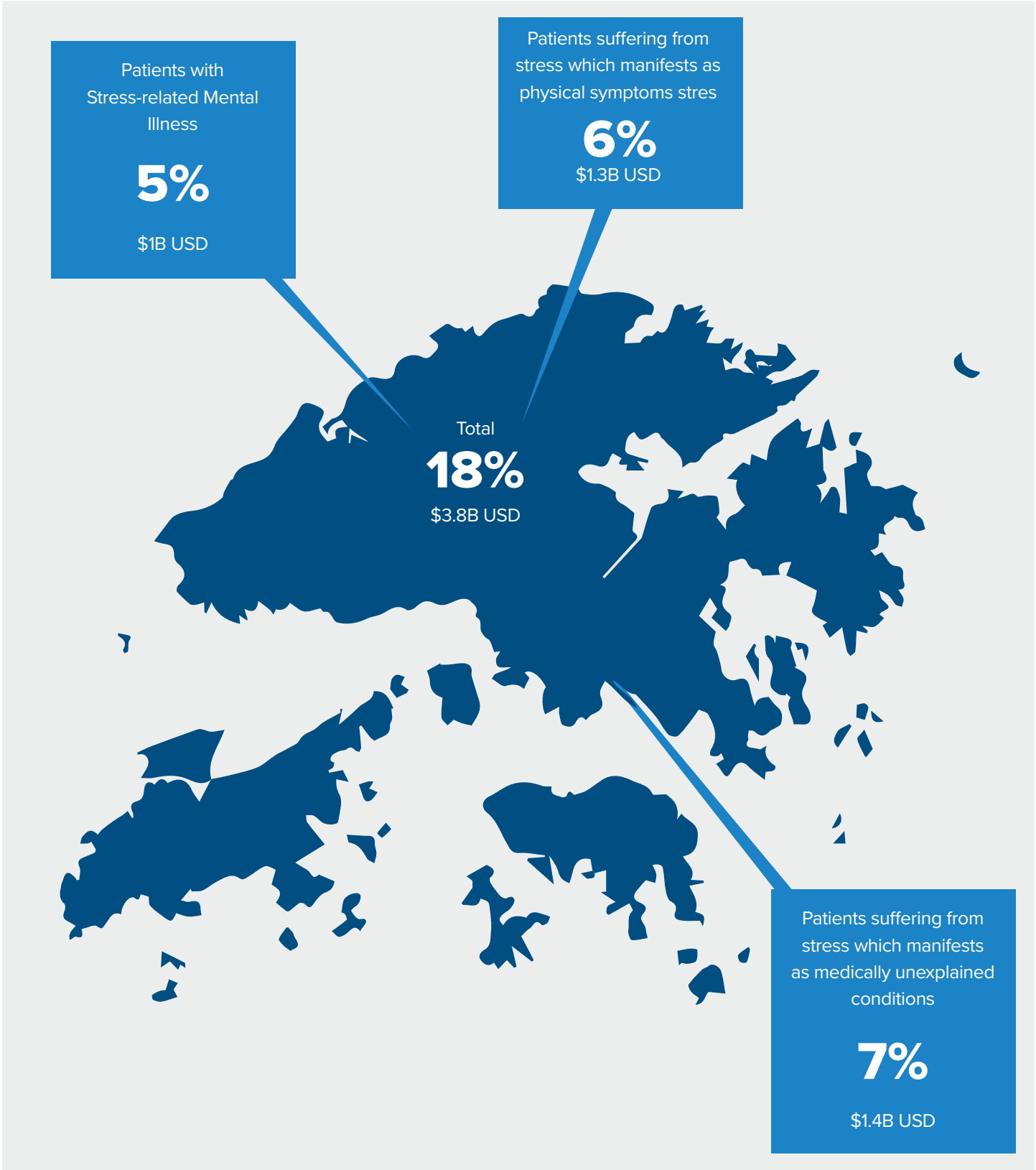
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 35 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF HONG KONG'S TOTAL HEALTH EXPENDITURE



UNITED ARAB EMIRATES - THE COST OF STRESS: 1.9B USD

The UAE has invested heavily in developing its healthcare system, and has an expansive public programme providing care to its citizens. A vast hospital infrastructure programme has created a growing network of public hospitals and clinics. Growing affluence in the region has stimulated the development of private insurance and numerable private hospitals which provide first-class care to patients. For now, private providers also provide much needed additional capacity in areas where Government provision is growing – but still developing. For inpatient services, around 47% of services are delivered in public settings, and 53% in private. For Emergency Department, GP and Outpatient attendances, public services account for less than 23% of the care delivery.

We estimate that the total cost for selected stress-related illness on the UAE's health system is in the region of **USD1.9 billion, 13% of health expenditure**. Better management of these patients should be a priority.

For inpatient services, we estimate that 28% of all inpatient services spend relates to stress-related illness with USD511 million and USD 918 million of cost to government and private sector respectively. For GP services, we estimate 35% of total GP appointments spending pertains to stress-related illness with USD 61 million and USD 290 million cost to government and private sector respectively. This equates to over 3.5 million GP attendances.

For emergency care, we estimate that around 600,000 attendances were driven by stress related illness. However, accurate unit cost data is not available so quantifying the cost of emergency care has not been possible.

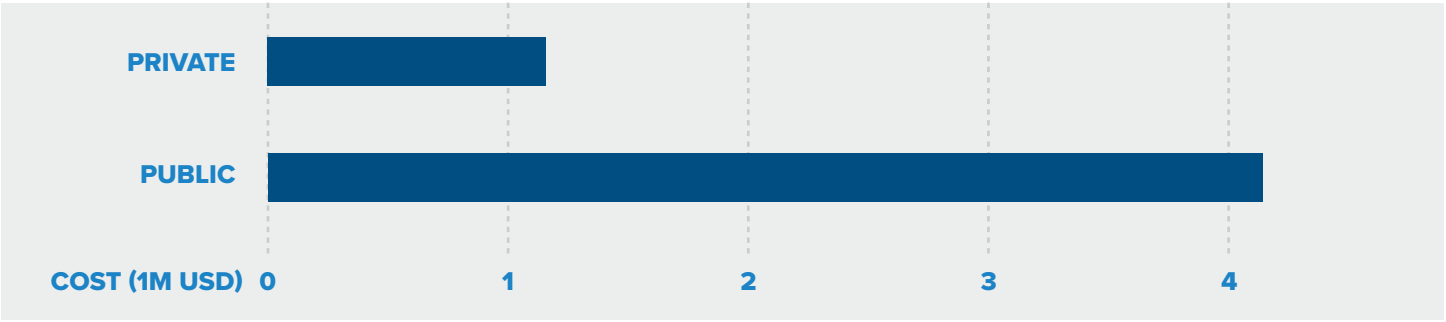
INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS	
161,394 PER YEAR	1.4B USD

A&E ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
582,966 PER YEAR	N/A

GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS	
3,509,806 PER YEAR	351M USD

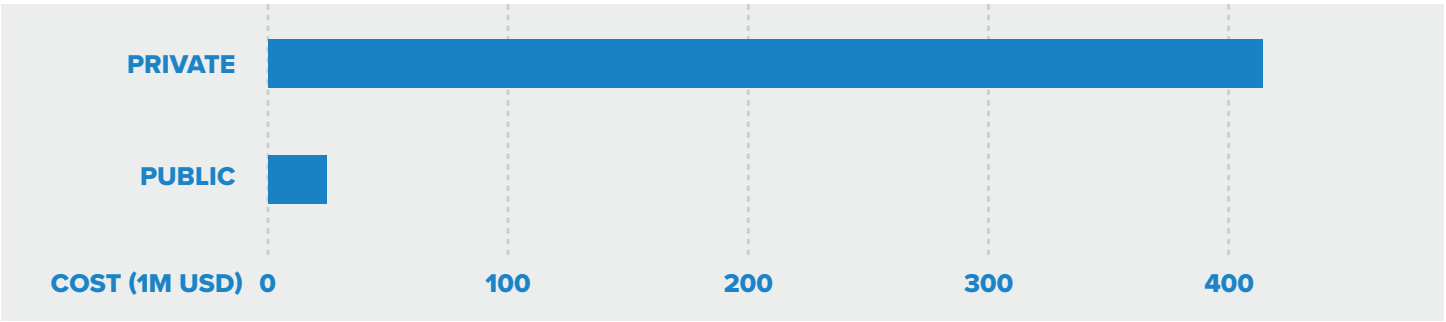
OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS	
581,407 PER YEAR	85M USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



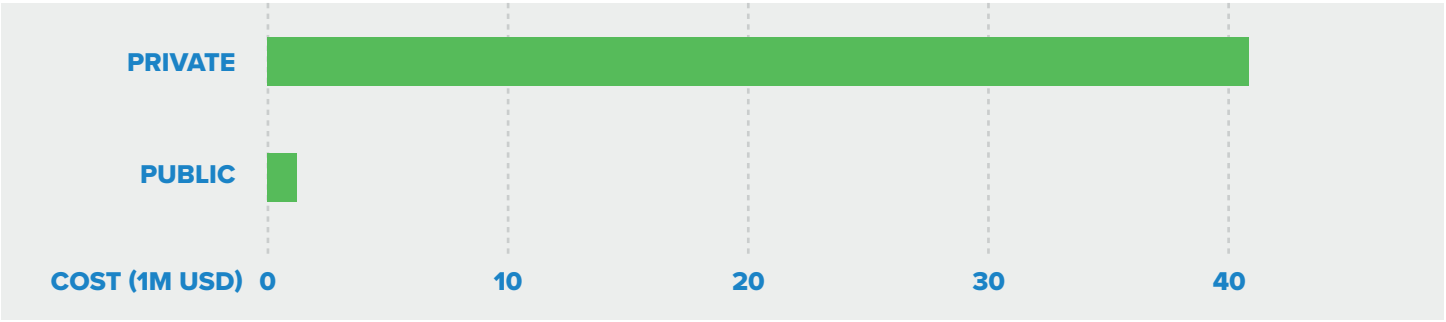
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL CHEST PAIN DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF OUTPATIENT ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL CIRCULATORY ISSUES DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 36 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF UAE'S TOTAL HEALTH EXPENDITURE

SOUTH KOREA - THE COST OF STRESS: 13.1B USD

South Korea has a significant social health insurance system, the funding of which accounts for just over 7% of GDP. Despite this, co-pays and shortfalls are common as the benefit limits of social health insurance plans are often too low to cover the fees charged by hospitals. The majority of providers – around 90% - of both hospitals and clinics operating in the country are privately owned. Due to the considerable cost of private hospital care, the use of primary care clinics is extensive and the population generally seek to manage their conditions well to avoid costly inpatient care at hospitals.

More than 11% of health expenditure in South Korea was due to stress-related illness. There was **particularly high levels of unexplained medical symptoms, with 4.9% of costs being due to that**.

The heavy use of primary care is also reflected in our findings – we estimate that about 258 million GP attendances could be related to stress-related illness. This equates to a considerable cost – around USD 5.2 billion of spend. By comparison, visits to the emergency department for stress related conditions are comparatively low, at about 2 million attendances. These findings reflect the incentives that are in place to help encourage South Korean citizens to utilise the most appropriate level of care.

For inpatient care, we estimate that 19% of total spend relates to stress related conditions, with a USD 3.6 billion and USD 1.9 billion cost to insurers and citizens respectively. This translates to over three million admissions and several million bed days. The high costs of inpatient care makes tackling the issues related to stress important, as part of overall efforts to ensure premiums and medical costs continue to be affordable for the overall population.

INPATIENT ADMISSIONS DRIVEN BY STRESS-RELATED ILLNESS

3,042,211 PER YEAR	5.5B USD

A&E ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS

1,997,899 PER YEAR	54M USD

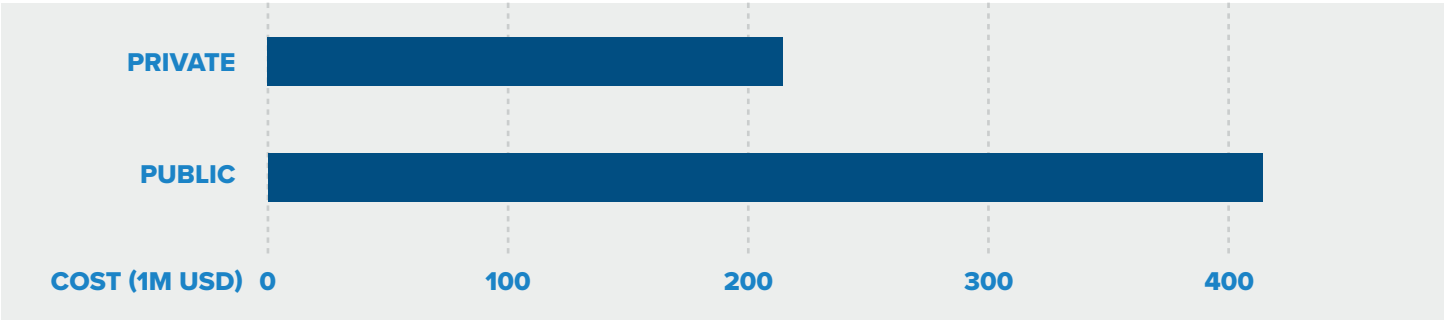
GP APPOINTMENTS DRIVEN BY STRESS-RELATED ILLNESS

258,487,329 PER YEAR	5.2B USD

OUTPATIENT ATTENDANCES DRIVEN BY STRESS-RELATED ILLNESS

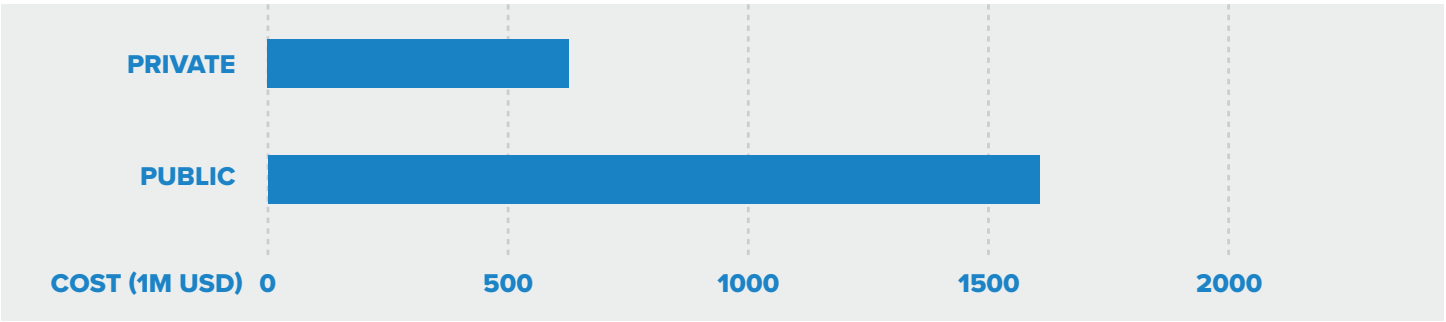
31,895,517 PER YEAR	2.3B USD

COST OF HOSPITAL ADMISSIONS, ANNUALISED (COHORT 3)



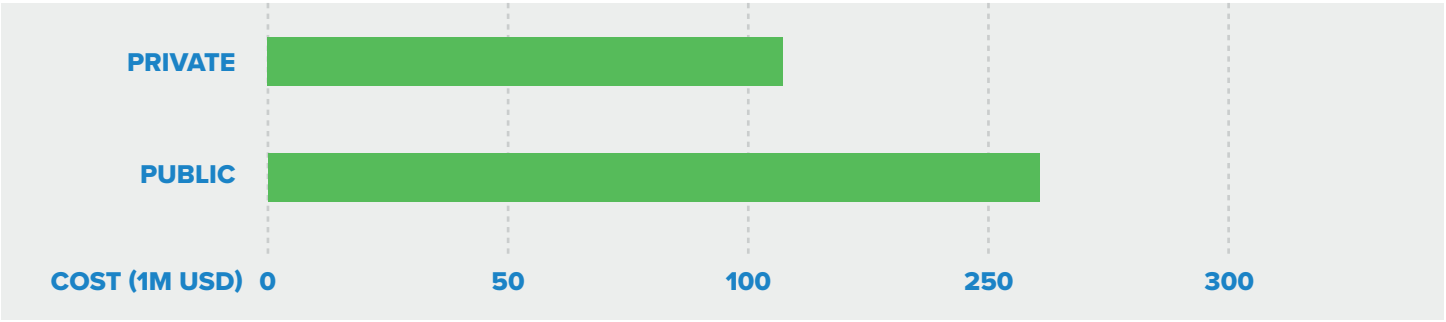
COST OF ALL SELECTED PHYSICAL SYMPTOMS DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF GP ATTENDANCES, ANNUALISED (COHORT 3)



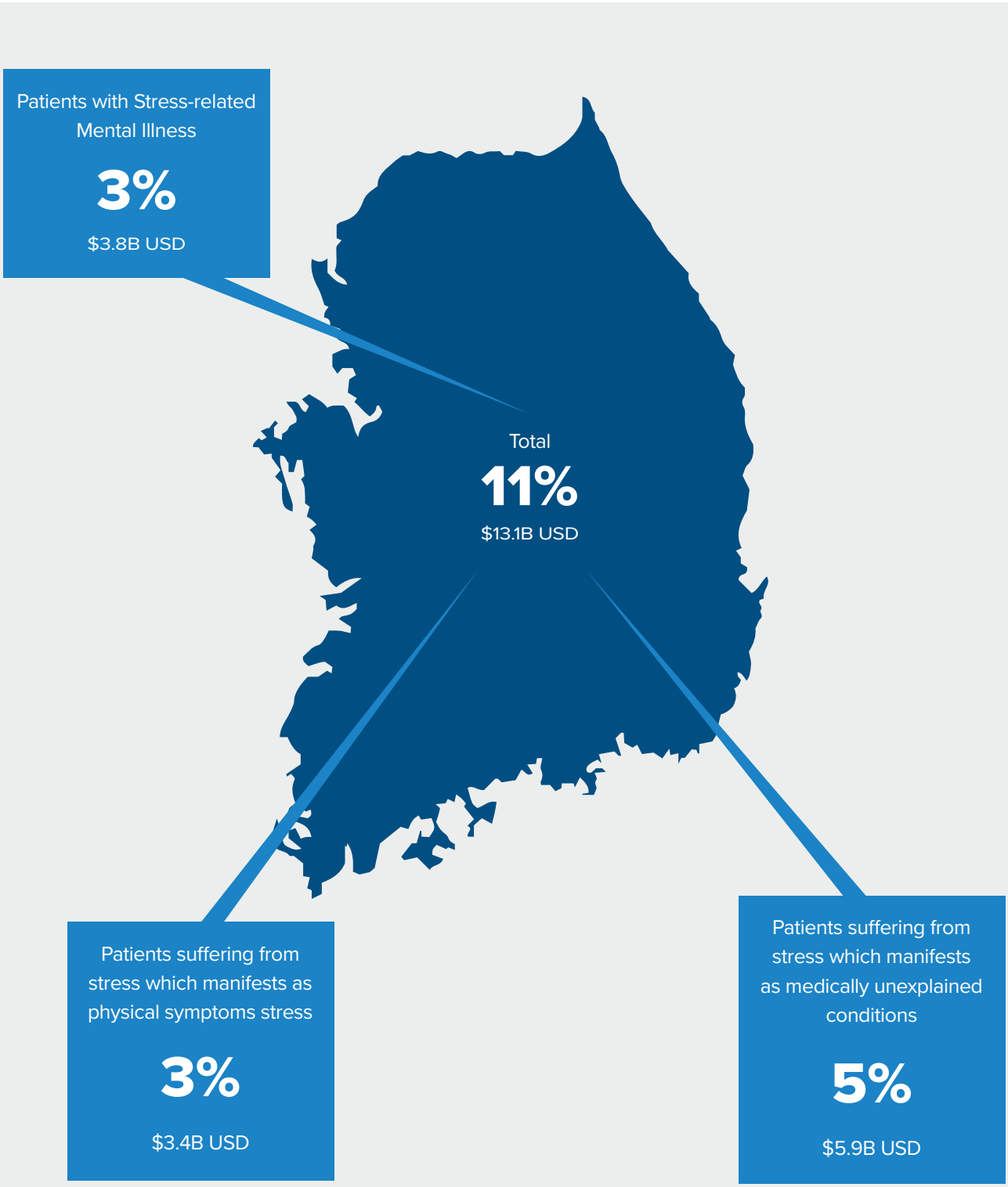
COST OF ALL CHEST PAIN DRIVEN BY STRESS-RELATED MENTAL ILLNESS

COST OF OUTPATIENT ATTENDANCES, ANNUALISED (COHORT 3)



COST OF ALL CIRCULATORY ISSUES DRIVEN BY STRESS-RELATED MENTAL ILLNESS

FIG 37 - COSTS ASSOCIATED WITH STRESS-RELATED ILLNESS (ANNUALLY) IN USD AND AS A PERCENTAGE OF SOUTH KOREA'S TOTAL HEALTH EXPENDITURE



RECOMMENDATIONS

The findings of this study indicate a need for system-wide action to address the causes of stress, and to ensure systems are in place to provide timely support to those experiencing stress-related illness. Fortunately, there are many things which can be done to improve the system; by Government, employers, payors and providers. In the following section we outline some of the key recommendations for health communities; all of which are based on the principle of ensuring improved health outcomes whilst maintaining cost-efficiency of scare health resources. Many of the recommendations centre on upskilling individuals and their treating physicians to detect the signs and symptoms of stress-related illness, in order to move towards a more preventative system of care and avoid costly – and distressing – periods of hospitalisation and illness.

Key recommendations are based on the principle of ensuring improved health outcomes whilst maintaining cost-efficiency of scare health resources

FIG 38 - RECOMMENDATIONS FOCUS ON FOUR ACTORS IN THE HEALTH SYSTEM

PROVIDERS

Providers are at the forefront of care delivery; seeing and treating patients when they seek help. This places them at both an advantage and disadvantage. An advantage because the advice given by a physician to a patient is often instrumental in changing their behaviour or giving them the confidence they need to seek other forms of care. A disadvantage however, because patients seeking care – particularly in hospital settings - may already be so overwhelmingly stressed that prolonged treatment is required to bring them back to health. Providers, on balance, have the ability to prevent further escalation of illness but perhaps not prevent it altogether. The recommendations for providers focus on the major role they play in diagnosing patients and ensuring they obtain the help that they need. Our recommendations include:

- Investing in staff training to help ensure that the clinical workforce are appropriately equipped to detect, diagnose and manage stress related illnesses.
- Investing in the development of 24-hour urgent care/emergency care clinics that can respond to mental health crisis, such as panic disorders or severe anxiety attacks.
- Ensuring a robust Electronic Health Record (HER) system is in place to capture patient diagnosis codes, in order to monitor and report the levels of stress-related illness. Engaging in cross-sector initiatives to share patient data between providers, as a building block to more seamless care.
- Reviewing treatment protocols and clinical pathways to ensure that patients with stress-related illnesses are referred to a psychiatrist or therapist that can properly evaluate and help manage the patient.

EMPLOYERS

For many people, the workplace forms a major part of their lives. Employers therefore have significant opportunity and touchpoints, to shape the wellbeing of their staff. Used effectively, the opportunity exist to not only improve employee health, but to increase productivity, reduce absenteeism and – with reduced claims – reduce corporate health premiums. There is much employers can do to reduce stress amongst their workforce. Our recommendations are set out below:

- Understanding that mental ill-health caused by a poor working environment can be as serious as a physically unsafe environment, and have legal implications. Treating stress as an occupational risk, and taking known effective measures – such as insisting that employees do not work during annual leave - to ensure that a safer environment is created.

- Working with the healthcare community to run educational campaigns aimed at helping employees better understand how stress can manifest and how to obtain help should they need to do so.

- Developing a comprehensive wellbeing programme, centred on equipping employees with tools to reduce and manage their stress. Ensuring that this goes beyond traditional talks, and is ingrained in the culture of the workplace (e.g. changing high fat/sugar snacks in vending machines to the provision of fresh produce).

- Evaluating the business case for taking out enhanced cover for employees, which includes coverage for mental health, wellness and Employee Assistant Program.

Employers need to be aware that mental ill-health caused by a poor working environment can be as serious as a physically unsafe environment, and have legal implications

GOVERNMENT

The role of Government is paramount in shaping the environment in which people live and work, and through this, creating the conditions for stress to be reduced. Legislative changes, such as maximum working hours, are an important part of the solution – but they can be slow; requiring multiple years to enact. Our study indicated that there are a number of actions that can be taken which do not require new legislation, but would have a major impact in reducing and managing stress within the population. These include:

- Undertaking social marketing campaigns to help populations to self-detect signs and symptoms of stress-related illness.
- Encouraging and supporting research to assess casual relationships between stress and physiological systems and the impact this has on care-seeking behaviour.
- Encouraging more advanced training of physicians in detecting, diagnosing and managing stress-related illness – particularly for physicians working in primary care and emergency care.
- Encouraging the supply of psychiatrists and associated therapists to meet the rising demand for care.
- Ensuring a psychiatrist is on-duty at all times in medium-sized acute hospitals or above. This is likely to not only support the upskilling of emergency staff but provide critical access to help for patients who need it.
- Establishing robust mechanisms to record a patient's diagnosis across care settings, based on international norms (ICD codes). This will allow greater transparency on the use of health systems by those suffering from stress-related illness.

PAYORS

The role of payors in improving health and wellbeing is often underestimated. This is, in part, a result of payors historically adopting a passive role in health systems; paying claims after they occur and adjusting premiums and underwriting as a result of changes in disease trends. However, payors are increasingly realising the benefits of taking a more active role; exploring dynamic pricing to incentivise corporates and individuals to invest in their own health, contracting with providers for specific care pathways and utilising claims data to build better predictive capabilities. These approaches are likely to yield significant value, especially in relation to reducing stress amongst their insured populations. Building on this, our recommendations for this sector include:

- Consider enhancing cover for stress-related illnesses, including common mental health disorders. This is likely to be highly cost-effective as well as improve clinical outcomes.
- Working with insured corporate clients to design and deliver educational/wellness campaigns centred on the impact of stress and exploring ways to reward this through premium-pricing.
- Investing in the development of predictive analytic tools to help identify patients that show a pattern of health-seeking behaviour that may indicate underlying stress.
- Working with contracted providers to ensure accurate coded data is submitted as part of the claims process, to allow better monitoring and evaluation of stress-related illness.
- Evaluate the cost-benefit of working with service providers that can offer stress-reducing health interventions, such as guided mediation, online/virtual counselling and access to crisis numbers when needed.

Payors are increasingly realising the benefits of taking a more active role; exploring dynamic pricing to incentivise corporates and individuals to invest in their own health

07 REFERENCES

Sources for Benchmarks

1 American Psychological Association (2013). How stress affects your health. [online] Available at: https://www.apa.org/helpcenter/stress [Accessed 12 Jul, 2019].

2 American Psychological Association (2019). Stress effects on the body. [online] Available at: https://www.apa.org/helpcenter/stress/effects-cardiovascular#menu [Accessed 12 Jul, 2019].

3 American Psychological Association (2019). Stress effects on the body. [online] Available at: https://www.apa.org/helpcenter/stress/effects-female-reproductive [Accessed 12 Jul, 2019].

4 Australia Government (2018). Australia -Mental health services provided in emergency departments 2017-18 - data includes patient demographics, triage category, principal diagnosis and episode end status. [online] Available at: https://www.aihw.gov.au/reports/mental-health-services/mental-health-services-in-australia/data#page1 [Accessed 12 Jul, 2019].

5 Bermingham, S. L., Cohen, A., Hague, J. and Parsonage, M. (2010). The cost of somatisation among the working-age population in England for the year 2008–2009. Mental Health in Family Medicine, [online] 7(2). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2939455/ [Accessed 12 Jul, 2019].

6 Bezdek, K. G. and Telzer, E. H. (2017). Have no fear, the brain is here! How your brain responds to stress. [online] Available at: https://kids.frontiersin.org/article/10.3389/frym.2017.00071 [Accessed 12 Jul, 2019].

7 British Heart Foundation (n.d.). Feeling stressed? Research shows how stress can lead to heart attacks and stroke. [online] Available at: https://www.bhf.org.uk/informationsupport/heart-matters-magazine/news/behind-the-headlines/stress-and-heart-disease [Accessed 12 Jul, 2019].

8 Burrage, E., Marshall, K. L., Santanam, N. and Chantler, P. D. (2018). Cerebrovascular dysfunction with stress and depression. Brain Circulation, [online] 4(2). Available at: https://www.researchgate.net/publication/326061863_Cerebrovascular_dysfunction_with_stress_and_depression [Accessed 12 Jul, 2019].

9 Costa, M., Brookes, S. J. H. and Hennig, G. W. (2000). Anatomy and physiology of the enteric nervous system. Gut, [online] 47(4). Available at: https://gut.bmj.com/content/47/suppl_4/iv15 [Accessed 12 Jul, 2019].

10 Fass, R. and Achem, S. R. (2011). Noncardiac chest pain: epidemiology, natural course and pathogenesis. Journal of Neurogastrolenterol Motility, [online] 17(2). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3093002/ [Accessed 12 Jul, 2019].

11 Forsythe, P. et al. (2004). Opposing effects of short- and long-term stress on airway inflammation. American Journal of Respiratory and Critical Care Medicine, [online] 169. Available at: https://www.atsjournals.org/doi/full/10.1164/rccm.200307-979OC [Accessed 12 Jul, 2019].

12 Hannibal, K. E. and Bishop, M. D. (2014). Chronic stress, cortisol dysfunction, and pain: a psychoneuroendocrine rationale for stress management in pain rehabilitation. Physical Therapy, [online] 94(12). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4263906/ [Accessed 12 Jul, 2019].

13 Huffman, J. C., Pollack, M. H. and Stern, T. A. (2002). Panic disorder and chest pain: mechanisms, morbidity, and management. The Primary Care Companion to the Clinical Journal of Clinical Psychiatry, [online] 4(2). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC181226/ [Accessed 12 Jul, 2019].

REFERENCES

Sources for Benchmarks

14 Kalantaridoua, S., Makrigiannakisb, A., Zoumakisc, E. and Chrousoscd, G. (2004). Stress and the female reproductive system. Journal of Reproductive Immunology, [online] 62(1-2). Available at: https://www.sciencedirect.com/science/article/pii/S0165037804000361 [Accessed 12 Jul, 2019].

15 Konturek, P., Brzozowski, T. and Konturek, S. (2011). Stress and the gut: pathophysiology, clinical consequences. Journal of Physiology and Pharmacology, [online] 62(6). Available at: https://www.ncbi.nlm.nih.gov/pubmed/22314561/ [Accessed 12 Jul, 2019].

16 Rapolienė, L., Razbadauskas, A. and Jurgelėnas, A. (2015). The reduction of distress using therapeutic geothermal water procedures in a randomized controlled clinical trial. Advances in Preventative Medicine, [online] 62(6). Available at: https://www.hindawi.com/journals/apm/2015/749417/ [Accessed 12 Jul, 2019].

17 Mariotti, A. (2015). The effects of chronic stress on health: new insights into the molecular mechanisms of brain–body communication. Future Science OA, [online] 1(3). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5137920/ [Accessed 12 Jul, 2019].

18 McEwen, B. S. (2008). Central effects of stress hormones in health and disease: understanding the protective and damaging effects of stress and stress mediators. European Journal of Pharmacology, [online] 583(2-3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18282566 [Accessed 12 Jul, 2019].

19 McEwen, B. and Sapolsky, R. (2006). Stress and your health. Journal of Clinical Endocrinology and Metabolism, [online] 91(2). Available at: https://academic.oup.com/jcem/article/91/2/E2/2843213 [Accessed 12 Jul, 2019].

20 NHS (2019). Health A to Z. [online] Available at: https://www.nhs.uk/conditions/ [Accessed 12 Jul, 2019].

21 NHS (2018). Medically unexplained symptoms. [online] Available at: https://www.nhs.uk/conditions/medically-unexplained-symptoms/ [Accessed 12 Jul, 2019].

22 Royal College of Psychiatrists (n.d.). Medically unexplained symptoms. [online] Available at: https://www.rcpsych.ac.uk/mental-health/problems-disorders/medically-unexplained-symptoms [Accessed 12 Jul, 2019].

23 Salleh, M. R. (2008). Life event, stress and illness. The Malaysian Journal of Medical Sciences, [online] 15(4). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3341916/ [Accessed 12 Jul, 2019].

24 The Office on Women's Health (2019). Stress and your health. [online] Available at: https://www.womenshealth.gov/mental-health/good-mental-health/stress-and-your-health [Accessed 12 Jul, 2019].

25 World Health Organization (2018). Classifications. [online] Available at: https://www.who.int/classifications/icd/en/ [Accessed 12 Jul, 2019].

26 NHS Digital (2018). Hospital Admitted Patient Care Activity, 2017-18. [online] Available at: https://digital.nhs.uk/data-and-information/publications/statistical/hospital-admitted-patient-care-activity/2017-18 [Accessed 1 Aug. 2019].

27 Australian Institute of Health and Welfare (2018). Admitted patient care 2016–17: Australian hospital statistics. [online] Available at: https://www.aihw.gov.au/reports/hospitals/ahs-2016-17-admitted-patient-care/contents/table-of-contents [Accessed 1 Aug. 2019].

REFERENCES

Sources for Benchmarks

28 Agency for Healthcare Research and Quality (2019). Healthcare Cost and Utilization Project. [online] Available at: https://hcupnet.ahrq.gov/#setup [Accessed 1 Aug. 2019].

29 NHS Digital (2018). Hospital Accident and Emergency Activity, 2017-18. [online] Available at: https://digital.nhs.uk/data-and-information/publications/statistical/hospital-accident--emergency-activity/2017-18 [Accessed 1 Aug. 2019].

30 Australian Institute of Health and Welfare (2018). Emergency department care 2017–18: Australian hospital statistics. [online] Available at: https://www.aihw.gov.au/reports/hospitals/emergency-department-care-2017-18/contents/table-of-contents [Accessed 1 Aug. 2019].

31 NHS Digital (2018). Hospital Outpatient Activity, 2017-18. [online] Available at: https://digital.nhs.uk/data-and-information/publications/statistical/hospital-outpatient-activity/2017-18 [Accessed 1 Aug. 2019].

32 Australian Institute of Health and Welfare (2019). Principal Diagnosis data cubes. [online] Available at: https://www.aihw.gov.au/reports/hospitals/principal-diagnosis-data-cubes/contents/data-cubes [Accessed 1 Aug. 2019].

33 ISD Scotland (2013). GP Consultations / Practice Team Information (PTI) Statistics. [online] Available at: https://www.isdscotland.org/Health-Topics/General-Practice/GP-Consultations/ [Accessed 1 Aug. 2019].

34 Britt, H., Miller, G. C., Henderson, J., Bayram, C., Harrison, C., Valenti, L., Pan, Y., Charles, J., Pollack, A. J., Wong, C. and Gordon, J. (2016). General practice activity in Australia 2015–16. General Practice Series, [online] 40. Available at: https://ses.library.usyd.edu.au/handle/2123/15514 [Accessed 1 Aug. 2019].

35 Robert Graham Center (2018). The State of Primary Care in the United States A Chartbook of Facts and Statistics. [online] Available at: https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/PrimaryCareChartbook.pdf [Accessed 1 Aug. 2019].

36 National Center for Health Statistics (2016). National Ambulatory Medical Care Survey: 2016 National Summary Tables. [online] Available at: https://www.cdc.gov/nchs/data/ahcd/namcs_summary/2016_namcs_web_tables.pdf [Accessed 1 Aug. 2019].

37 Australian Institute of Health and Welfare (2019). Mental health services in Australia. [online] Available at: https://www.aihw.gov.au/reports/mental-health-services/mental-health-services-in-australia/report-contents/community-mental-health-care-services [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

1 Wulsin, L. R., Hillard, J. R., Geier, P., Hissa, D. and Rouan, G. W. (1988). Screening emergency room patients with atypical chest pain for depression and panic disorder. International Journal of Psychiatry in Medicine, [online] 18(4). Available at: https://www.ncbi.nlm.nih.gov/pubmed/3235278 [Accessed 1 Aug. 2019].

2 Wulsin, L. R., Arnold, L. M. and Hillard, J. R. (1991). Axis I disorders in ER patients with atypical chest pain. International Journal of Psychiatry in Medicine, [online] 21(1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/2066256 [Accessed 1 Aug. 2019].

3 Yingling, K. W., Wulsin, L. R., Arnold, L. M. and Rouan, G. W. (1993). Estimated prevalences of panic disorder and depression among consecutive patients seen in an emergency department with acute chest pain. Journal of General Internal Medicine, [online] 8(5). Available at: https://www.ncbi.nlm.nih.gov/pubmed/8505680 [Accessed 1 Aug. 2019].

4 Katerndahl, D. A. and Trammell, C. (1997). Prevalence and recognition of panic states in STARNET patients presenting with chest pain. The Journal of Family Practice, [online] 45(1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/9228915 [Accessed 1 Aug. 2019].

5 White, K. S., Raffa, S. D., Jakle, K. R., Stoddard, J. A., Barlow, D. H., Brown, T. A., Covino, N. A., Ullman, E. and Gervino, E. V. (2008). Morbidity of DSM-IV Axis I disorders in patients with noncardiac chest pain: Psychiatric morbidity linked with increased pain and health care utilization. Journal of Consulting and Clinical Psychology, [online] 76(3). Available at: https://psycnet.apa.org/record/2008-06469-006 [Accessed 1 Aug. 2019].

6 Khare, R. K., Powell, E. S., Venkatesh, A. K. and Courtney, D. M. (2008). Diagnostic uncertainty and costs associated with current emergency department evaluation of low risk chest pain. Critical Pathways in Cardiology, [online] 7(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18791408 [Accessed 1 Aug. 2019].

7 Coley, K. C., Saul, M. I. and Seybert, A. L. (2009). Economic burden of not recognizing panic disorder in the emergency department. The Journal of Emergency Medicine, [online] 36(1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/17933481 [Accessed 1 Aug. 2019].

8 Al-Ani, M. and Winchester, D. E. (2015). Prevalence and overlap of noncardiac conditions in the evaluation of low-risk acute chest pain patients. Critical Pathways in Cardiology, [online] 14(3). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5279796/ [Accessed 1 Aug. 2019].

9 Kim, Y., Soffler, M., Paradise, S., Jelani, Q. U., Dziura, J., Sinha, R. and Safdar, B. (2017). Depression is associated with recurrent chest pain with or without coronary artery disease: a prospective cohort study in the emergency department. American Heart Journal, [online] 191. Available at: https://www.ncbi.nlm.nih.gov/pubmed/28888269 [Accessed 1 Aug. 2019].

10 Musey, P. I. Jr. and Kline, J. A. (2017). Emergency department cardiopulmonary evaluation of low-risk chest pain patients with self-reported stress and anxiety. The Journal of Emergency Medicine, [online] 52(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/27998631 [Accessed 1 Aug. 2019].

11 Goodacre, S. W., Morris, F. M., Campbell, S., Arnold, J. and Angelini, K. (2002). A prospective, observational study of a chest pain observation unit in a British hospital. Emergency Medicine Journal, [online] 19. Available at: https://emj.bmj.com/content/emermed/19/2/117.full.pdf [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

12 Robertson, N., Javed, N., Samani, N. J. and Khunti, K. (2008). Psychological morbidity and illness appraisals of patients with cardiac and non-cardiac chest pain attending a rapid access chest pain clinic: a longitudinal cohort study. Heart, [online] 94(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/17540685 [Accessed 1 Aug. 2019].

13 Marks, E. M., Chambers, J. B., Russell, V., Bryan, L. and Hunter, M. S. (2014). The rapid access chest pain clinic: unmet distress and disability. QJM, [online] 107(6). Available at: https://www.ncbi.nlm.nih.gov/pubmed/24448381 [Accessed 1 Aug. 2019].

14 Webster, R., Norman, P., Goodacre, S., Thompson, A. R. and McEachan, R. R. C. (2014). Illness representations, psychological distress and non-cardiac chest pain in patients attending an emergency department. Psychology & Health, [online] 29(11). Available at: https://www.ncbi.nlm.nih.gov/pubmed/24831735 [Accessed 1 Aug. 2019].

15 McDevitt-Petrovic, O., Kirby, K. and Shevlin, M. (2017). The prevalence of non-cardiac chest pain (NCCP) using emergency department (ED) data: a Northern Ireland based study. BMC Health Services Research, [online] 17(1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/28793910 [Accessed 1 Aug. 2019].

16 Barnett, L. A., Prior, J. A., Kadam, U. T. and Jordan, K. P. (2017). Chest pain and shortness of breath in cardiovascular disease: a prospective cohort study in UK primary care. BMJ Open, [online] 7(5). Available at: https://www.ncbi.nlm.nih.gov/pubmed/28550024 [Accessed 1 Aug. 2019].

17 Eslick, G. D. and Talley, N. J. (2008). Natural history and predictors of outcome for non-cardiac chest pain: a prospective 4-year cohort study. Neurogastroenterology & Motility, [online] 20(9). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18466221 [Accessed 1 Aug. 2019].

18 Cullen, L., Greenslade, J., Merollini, K., Graves, N., Hammett, C. J. K., Hawkins, T., Than, M. P., Brown, A. F. T., Huang, C. B., Panahi, S. E., Dalton, E. and Parsonage, W. A. (2015). Cost and outcomes of assessing patients with chest pain in an Australian emergency department. The Medical Journal of Australia, [online] 202(8). Available at: https://onlinelibrary.wiley.com/doi/abs/10.5694/mja14.00472 [Accessed 1 Aug. 2019].

19 Greenslade, J. H., Hawkins, T., Parsonage, W. and Cullen, L. (2017). Panic disorder in patients presenting to the emergency department with chest pain: prevalence and presenting symptoms. Heart, Lung and Circulation, [online] 26(12). Available at: https://www.ncbi.nlm.nih.gov/pubmed/28256404 [Accessed 1 Aug. 2019].

20 Fathieh, S., Sheriff, M. J., Ng, A., Brazete, S., Gullick, J., Brieger, D., Kritharides, L. and Lowe, H. C. (2018). High rates of self-reported depression in a rapid access chest pain clinic (RACPC) population from a tertiary metropolitan hospital. Heart, Lung and Circulation, [online] 27(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/29102434 [Accessed 1 Aug. 2019].

21 Mikocka-Walus, A. A., Turnbull, D., Holtmann, G. and Andrews, J. M. (2012). An integrated model of care for inflammatory bowel disease sufferers in Australia: development and the effects of its implementation. Inflammatory Bowel Diseases, [online] 18(8). Available at: https://academic.oup.com/ibdjournal/article/18/8/1573/4607734 [Accessed 1 Aug. 2019].

22 Jarrett, M. E., Burr, R. L., Cain, K. C., Hertig, V., Weisman, P. And Heitkemper, M. M. (2003). Anxiety and depression are related to autonomic nervous system function in women with irritable bowel syndrome. Digestive Diseases and Sciences, [online] 48(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/12643620 [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

23 Jones, M. P., Tack, J., Oudenhove, L. V., Walker, M. M., Holtmann, G., Koloski, N. A. And Talley, N. J. (2017). Mood and anxiety disorders precede development of functional gastrointestinal disorders in patients but not in the population. Clinical Gastroenterology and Hepatology, [online] 15. Available at: https://www.cghjournal.org/article/S1542-3565(17)30013-7/pdf [Accessed 1 Aug. 2019].

24 Blanciiard, E. B., Scharff, L., Schwarz, S. P., Suls, J. M. And Barlow, D. H. (1990). The role of anxiety and depression in the irritable bowel syndrome. Behaviour Research and Therapy, [online] 28(5). Available at: https://www.sciencedirect.com/science/article/abs/pii/000579679090159G [Accessed 1 Aug. 2019].

25 Ladabaum, U., Boyd, E., Zhao, W. K., Mannalithara, A., Sharabidze, A., Singh, G., Chung, E. and Levin, T. R. (2012). Diagnosis, comorbidities and management of irritable bowel syndrome in patients in a large health maintenance organization. Clinical Gastroenterology and Hepatology, [online] 10(1). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3242893/pdf/nihms-320728.pdf [Accessed 1 Aug. 2019].

26 Blanchard, E. B., Keefer, L., Galovski, T. E., Taylor, A. E. and Turner, S. M. (2001). Cluster analysis of symptoms and health seeking behaviour differentiates subgroups of patients with severe irritable bowel syndrome. Journal of Psychosomatic Research, [online] 50(5). Available at: https://www.ncbi.nlm.nih.gov/pubmed/11399285 [Accessed 1 Aug. 2019].

27 Whitehead, W. E., Palsson, O. S., Levy, R. R., Feld, A. D., Turner, M. and Von Korff, M. (2007). Comorbidity in irritable bowel syndrome. The American Journal of Gastroenterology, [online] 102(12). Available at: https://www.ncbi.nlm.nih.gov/pubmed/17900326 [Accessed 1 Aug. 2019].

28 Riddle, M. S., Welsh, M., Porter, C. K., Nieh, C., Boyko, E. J., Gackstetter, G. and Hooper, T. I. (2016). The epidemiology of irritable bowel syndrome in the US military: findings from the millennium cohort study. The American Journal of Gastroenterology, [online] 111(1). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4759150/ [Accessed 1 Aug. 2019].

29 Eslick, G. D. and Talley, N. J. (2009). Gastroesophageal reflux disease (GERD): risk factors, and impact on quality of life-a population-based study. Journal of Clinical Gastroenterology, [online] 43(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18838922 [Accessed 1 Aug. 2019].

30 On, Z. X., Grant, J., Shi, Z., Taylor, A. W., Wittert, G. A., Tully, P. J., Hayley, A. C. and Martin, S. (2016). The association between gastroesophageal reflux disease with sleep quality, depression, and anxiety in a cohort study of Australian men. Journal of Gastroenterology and Hepatology, [online] 32(6). Available at: https://www.ncbi.nlm.nih.gov/pubmed/27862259 [Accessed 1 Aug. 2019].

31 Litcher-Kelly, L., Lam, Y., Broihier, J. A., Brand, D. L., Banker, S.V., Kotov, R., Bromet, E., Bucobo, J. C., Shaw, R. D. and Luft, B. J. (2014). Longitudinal study of the impact of psychological distress symptoms on new-onset upper gastrointestinal symptoms in world trade center responders. Psychosomatic Medicine, [online] 76(9). Available at: https://insights.ovid.com/psychosomatic-medicine/psme/2014/11/000/longitudinal-study-impact-psychological-distress/4/00006842 [Accessed 1 Aug. 2019].

32 Savas, L. S., White, D. L., Wieman, M., Daci, K., Fitzgerald, S., Laday Smith, S., Tan, G., Graham, D. P., Cully, J. A. and El-serag, H. B. (2008). Irritable bowel syndrome and dyspepsia among women veterans: prevalence and association with psychological distress. Alimentary Pharmacology and Therapeutics, [online] 29(1). Available at: https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2036.2008.03847.x [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

33 Creed, F., Tomenson, B., Guthrie, E., Ratcliffe, J., Fernandes, L., Read, N., Palmer, S. and Thompson, D. G. (2008). The relationship between somatisation and outcome in patients with severe irritable bowel syndrome. Journal of Psychosomatic Research, [online] 64(6). Available at: https://www.sciencedirect.com/science/article/abs/pii/S0022399908000664 [Accessed 1 Aug. 2019].

34 Guthrie, E., Jackson, J., Shaffer, J., Thompson, D., Tomenson, B. and Creed, F. (2002). Psychological disorder and severity of inflammatory bowel disease predict health-related quality of life in ulcerative colitis and crohn's disease. The American Journal of Gastroenterology, [online] 97(8). Available at: https://www.ncbi.nlm.nih.gov/pubmed/12190166 [Accessed 1 Aug. 2019].

35 Andrews, H., Barczak, P. and Allan, R. N. (1987). Psychiatric illness in patients with inflammatory bowel disease. Gut, [online] 28(12). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1433950/ [Accessed 1 Aug. 2019].

36 Keefer, L., Sayuk, G., Bratten, J., Rahimi, R. and Jones, M. P. (2008). Multicenter study of gastroenterologists' ability to identify anxiety and depression in a new patient encounter and its impact on diagnosis. Journal of Clinical Gasteroenteralogy, [online] 42(6). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18496395 [Accessed 1 Aug. 2019].

37 Mikocka-Walus, A., Turnbull, D., Moulding, N., Wilson, I., Andrews, J. M. and Holtmann, G. (2008). Psychological comorbidity and complexity of gastrointestinal symptoms in clinically diagnosed irritable bowel syndrome patients. Journal of Gastroenterology and Hepatology, [online] 23(7.1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18070012 [Accessed 1 Aug. 2019].

38 Gracie, D. J., Williams, C. J., Sood, R., Mumtaz, S., Bholah, M. H., Hamlin, P. J. and Ford, A. C. (2017). Negative effects on psychological health and quality of life of genuine irritable bowel syndrome–type symptoms in patients with inflammatory bowel disease. Clinical Gastroenterology and Hepatology, [online] 15(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/?term=Negative+Effects+on+Psychological+Health+and+Quality+of+Life+of+Genuine+Irritable+Bowel+Syndrome%E2%80%93type+Symptoms+in+Patients+With+Inflammatory+Bowel+Disease [Accessed 1 Aug. 2019].

39 Dunlop, S. P., Jenkins, D. and Spiller, R. C. (2003). Distinctive clinical, psychological, and histological features of postinfective irritable bowel syndrome. The American Journal of Gastroenterology, [online] 98(7). Available at: https://www.ncbi.nlm.nih.gov/pubmed/?term=Distinctive+Clinical%2C+Psychological%2C+and+HistologicalFeatures+of+Postinfective+Irritable+Bowel+Syndrome [Accessed 1 Aug. 2019].

40 Guthrie, E., Creed, F., Fernandes, L., Ratcliffe, J., Van der Jagt, J., Martin, J., Howlett, S., Read, N., Barlow, J., Thompson, D. and Tomenson, B. (2003). Cluster analysis of symptoms and health seeking behaviour differentiates subgroups of patients with severe irritable bowel syndrome. Gut, [online] 52(11). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1773851/ [Accessed 1 Aug. 2019].

41 Kanuri, N., Cassell, B., Bruce, S. E., White, K. S., Gott, B. M., Gyawali, C. P. and Sayuk, G. S. (2003). The impact of abuse and mood on bowel symptoms and health-related quality of life in irritable bowel syndrome (IBS). Neurogastroenterology & Motility, [online] 28(10). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5042818/ [Accessed 1 Aug. 2019].

42 Gracie, D. J., Guthrie, E. A., Hamlin, P. J. and Ford, A. C. (2018). Bi-directionality of brain–gut interactions in patients with inflammatory bowel disease. Gastroenterology, [online] 154(6). Available at: http://eprints.whiterose.ac.uk/129946/3/Gastro%20D-17-02009R2%20CLEAN.pdf [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

43 Kurina, L. M., Goldacre, M. J., Yeates, D. and Gill, L. E. (2001). Depression and anxiety in people with inflammatory bowel disease. Journal of Epidemiology & Community Health, [online] 55(10). Available at: https://jech.bmj.com/content/55/10/716 [Accessed 1 Aug. 2019].

44 Bryant, R. V., van Langenberg, D. R., Holtmann, G. J. and Andrews, J. M. (2011). Functional gastrointestinal disorders in inflammatory bowel disease: impact on quality of life and psychological status. Journal of Gastroenterology and Hepatology, [online] 26(5). Available at: https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1440-1746.2011.06624.x [Accessed 1 Aug. 2019].

45 Gwee, K. A., Graham, J. C., McKendrick, M. W., Collins, S. M., Marshall, J. S., Walters, S. J. and Read, N. W. (1996). Psychometric scores and persistence of irritable bowel after infectious diarrhoea. Lancet, [online] 347(8995). Available at: https://www.ncbi.nlm.nih.gov/pubmed/8544549 [Accessed 1 Aug. 2019].

46 Atkinson, J. H., Slater, M. A., Patterson, T. L., Grant, I. and Garfin, S. R. (1991). Prevalence, onset, and risk of psychiatric disorders in men with chronic low back pain: a controlled study. Pain, [online] 45(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/1831555 [Accessed 1 Aug. 2019].

47 Reid, M. C., Engles-Horton, L. L., Weber, M. B., Kerns, R. D., Rogers, E. L. and O'Connor, P. G. (2002). Use of opioid medications for chronic noncancer pain syndromes in primary care. Journal of General Internal Medicine, [online] 17(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/11929502 [Accessed 1 Aug. 2019].

48 Frayne, S. M., Seaver, M. R., Loveland, S., Christiansen, C. L., Spiro III, A., Parker, V. A. and Skinner, K. M. (2004). Burden of medical illness in women with depression and posttraumatic stress disorder. Archives of Internal Medicine, [online] 164(12). Available at: https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/217112 [Accessed 1 Aug. 2019].

49 Bair, M. J., Robinson, R. L., Eckert, G. J., Stang, P. E., Croghan, T. W. and Kroenke, K. (2004). Impact of pain on depression treatment response in primary care. Psychosomatic Medicine, [online] 66(1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/14747633 [Accessed 1 Aug. 2019].

50 Gameroff, M. J. and Olfson, M. (2006). Major depressive disorder, somatic pain, and health care costs in an urban primary care practice. The Journal of Clinical Psychiatry, [online] 67(8). Available at: https://www.ncbi.nlm.nih.gov/pubmed/16965201 [Accessed 1 Aug. 2019].

51 Arnow, B. A., Hunkeler, E. M., Blasey, C. M., Lee, J., Constantino, M. J., Fireman, B., Kraemer, H. C., Dea, R., Robinson, R. and Hayward, C. (2006). Comorbid depression, chronic pain, and disability in primary care. Psychosomatic Medicine, [online] 68(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/16554392 [Accessed 1 Aug. 2019].

52 Husain, M. M., Rush, A. J., Trivedi, M. H., McClintock, S. M., Wisniewski, S. R., Davis, L., Luther, J. F., Zisook, S. and Fava, M. (2007). Pain in depression: STAR*D study findings. Journal of Psychosomatic Research, [online] 63(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/17662746 [Accessed 1 Aug. 2019].

53 Poleshuck, E. L., Bair, M. J., Kroenke, K., Damush, T. M., Tu, W,, Wu, J., Krebs, E. E. and Giles, D. E. (2009). Psychosocial stress and anxiety in musculoskeletal pain patients with and without depression. General Hospital Psychiatry, [online] 31(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/19269531 [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

54 George, S. Z., Coronado, R. A., Beneciuk, J. M., Valencia, C., Werneke, M. W., Hart, D. L. (2011). Depressive symptoms, anatomical region, and clinical outcomes for patients seeking outpatient physical therapy for musculoskeletal pain. Physical Therapy, [online] 91(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/21233305 [Accessed 1 Aug. 2019].

55 Kroenke, K., Wu, J., Bair, M. J., Damush, T. M., Krebs, E. E. and Tu, W. (2012). Impact of depression on 12-month outcomes in primary-care patients with chronic musculoskeletal pain. Journal of Musculoskeletal Pain, [online] 20(1). Available at: https://www.tandfonline.com/doi/abs/10.3109/10582452.2011.635844?journalCode=imup20& [Accessed 1 Aug. 2019].

56 Beehler, G. P., Rodrigues, A. E., Mercurio-Riley, D. and Dunn, A. S. (2013). Primary care utilization among veterans with chronic musculoskeletal pain: a retrospective chart review. Pain Medicine, [online] 14(7). Available at: https://www.ncbi.nlm.nih.gov/pubmed/23614929 [Accessed 1 Aug. 2019].

57 Kroenke, K., Yu, Z., Wu, J., Kean, J. and Monahan, P. O. (2014). Psychosocial predictors of outcome in acute and chronic low back trouble. Pain Medicine, [online] 15(11). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6283354/ [Accessed 1 Aug. 2019].

58 Meltzer, A. C., Bregman, B. and Blanchard, J. (2014). Depression is associated with repeat emergency department visits in patients with non-specific abdominal pain. The Western Journal of Emergency Medicine, [online] 15(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/24868312 [Accessed 1 Aug. 2019].

59 Outcalt, S. D., Kroenke, K., Krebs, E. E., Chumbler, N. R., Wu, J., Yu, Z. and Bair, M. J. (2015). Chronic pain and comorbid mental health conditions: independent associations of posttraumatic stress disorder and depression with pain, disability, and quality of life. Journal of Behavioral Medicine, [online] 38(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/25786741 [Accessed 1 Aug. 2019].

60 Brienza, A., Gianforcaro, A., Suffoletto, B., Callaway, C. W. and Pacella, M. L. (2018). The utility of assessing for pain interference and psychological factors among emergency department patients who present with pain. General Hospital Psychiatry, [online] 52. Available at: https://www.ncbi.nlm.nih.gov/pubmed/29518742 [Accessed 1 Aug. 2019].

61 Croft, P. R., Papageorgiou, A. C., Ferry, S., Thomas, E., Jayson, M. I. and Silman, A. J. (1995). Psychologic distress and low back pain. Evidence from a prospective study in the general population. Spine, [online] 20(24). Available at: https://www.ncbi.nlm.nih.gov/pubmed/8747252 [Accessed 1 Aug. 2019].

62 Wynne-Jones, G., Dunn, K. M. and Main, C. J. (2008). The impact of low back pain on work: a study in primary care consulters. European Journal of Pain, [online] 12(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/17561421 [Accessed 1 Aug. 2019].

63 Mallen, C. D. and Peat, G. (2008). Screening older people with musculoskeletal pain for depressive symptoms in primary care. British Journal of General Practice, [online] 58(555). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18826780 [Accessed 1 Aug. 2019].

64 Arola, H. M., Nicholls, E., Mallen, C. and Thomas, E. (2010). Self-reported pain interference and symptoms of anxiety and depression in community-dwelling older adults: can a temporal relationship be determined? European Journal of Pain, [online] 14(9). Available at: https://www.ncbi.nlm.nih.gov/pubmed/20381389 [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

65 Docking, R. E., Fleming, J., Brayne, C., Zhao, J., Macfarlane, G. J., Jones, G. T. and Cambridge City over-75s Cohort Study collaboration. (2011). Epidemiology of back pain in older adults: prevalence and risk factors for back pain onset. Rheumatology, [online] 50(9). Available at: https://www.ncbi.nlm.nih.gov/pubmed/21606130 [Accessed 1 Aug. 2019].

66 Rusua, A. C., Santos, R. and Pincus, T. (2016). Pain-related distress and clinical depression in chronic pain: a comparison between two measures. Scandinavian Journal of Pain, [online] 12. Available at: https://www.ncbi.nlm.nih.gov/pubmed/28850496 [Accessed 1 Aug. 2019].

67 Haggman, S., Maher, C. G. and Refshauge, K. M. (2004). Screening for symptoms of depression by physical therapists managing low back pain. Physical Therapy, [online] 84(12). Available at: https://www.ncbi.nlm.nih.gov/pubmed/15563256 [Accessed 1 Aug. 2019].

68 Pallant, J. F. and Bailey, C. M. (2005). Assessment of the structure of the Hospital Anxiety and Depression Scale in musculoskeletal patients. Health and Quality of Life Outcomes, [online] 3. Available at: https://www.ncbi.nlm.nih.gov/pubmed/16364179 [Accessed 1 Aug. 2019].

69 Roberts, M. B. and Drummond, P. D. (2016). Sleep problems are associated with chronic pain over and above mutual associations with depression and catastrophizing. The Clinical Journal of Pain, [online] 32(9). Available at: https://www.ncbi.nlm.nih.gov/pubmed/26710225 [Accessed 1 Aug. 2019].

70 Himelhoch, S., Weller, W. E., Wu, A. W., Anderson, G. F. and Cooper, L. A. (2004). Chronic medical illness, depression, and use of acute medical services among Medicare beneficiaries. Medical Care, [online] 42(6). Available at: https://www.ncbi.nlm.nih.gov/pubmed/15167319 [Accessed 1 Aug. 2019].

71 Wulsin, L., Evans, J., Vasan, R., Murabito, J., Kelly-Hayes, M. and Benjamin, E. (2005). Depressive symptoms, coronary heart disease, and overall mortality in the Framingham heart study. Psychosomatic Medicine, [online] 67(5). Available at: https://www.ncbi.nlm.nih.gov/pubmed/16204426 [Accessed 1 Aug. 2019].

72 Arbelaez, J. J., Ariyo, A. A., Crum, R. M., Fried, L. P. and Ford, D. E. (2007). Depressive symptoms, inflammation, and ischemic stroke in older adults: a prospective analysis in the cardiovascular health study. Journal of the American Geriatrics Society, [online] 55(11). Available at: https://www.ncbi.nlm.nih.gov/pubmed/17916124 [Accessed 1 Aug. 2019].

73 Pan, A., Okereke, O. I., Sun, Q., Logroscino, G., Manson, J. E., Willett, W. C., Ascherio, A., Hu, F. B. and Rexrode, K. M. (2011). Depression and incident stroke in women. Stroke, [online] 42(10). Available at: https://www.ncbi.nlm.nih.gov/pubmed/21836097 [Accessed 1 Aug. 2019].

74 Byrd, J. B., Powers, J. D., Magid, D. J., Tavel, H. M., Schmittdiel, J. A., O'Connor, P. J., Beck, A. L., Butler, M. G. and Ho, P. J. (2012). Detection and recognition of hypertension in anxious and depressed patients. Journal of Hypertension, [online] 30(12). Available at: https://www.ncbi.nlm.nih.gov/pubmed/23032145 [Accessed 1 Aug. 2019].

75 Aron, A. W., Staff, I., Fortunato, G. and McCullough, L. D. (2014). Pre-stroke living situation and depression contribute to initial stroke severity and stroke recovery. Journal of Stroke and Cerebrovascular Diseases, [online] 24(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/25524014 [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

76 Scherrer, J. F., Salas, J., Brieler, J. A., Miller, B. J., Meyer, D. and Schneider, F. D. (2015). Depression leads to incident vascular disease: evidence for the relevance to primary care. Family Practice, [online] 32(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/25667165 [Accessed 1 Aug. 2019].

77 Davydow, D. S., Levine, D. A., Zivin, K., Katon, W. J. and Langa, K. M. (2015). The association of depression, cognitive impairment without dementia and dementia with risk of ischemic stroke: a cohort study. Psychosomatic Medicine, [online] 77(2). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4333011/ [Accessed 1 Aug. 2019].

78 Ho, A. K., Thorpe, C. T., Pandhi, N., Palta, M., Smith, M. A. and Johnson, H. M. (2015). Association of anxiety and depression with hypertension control: a U.S. multi-disciplinary group practice observational study. Journal of Hypertension, [online] 33(11). Available at: https://www.ncbi.nlm.nih.gov/pubmed/26259121 [Accessed 1 Aug. 2019].

79 Haines, A. P., Imeson, J. D. and Meade, T. W. (1987). Phobic anxiety and ischaemic heart disease. British Medical Journal, [online] 295(6593). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1247140/ [Accessed 1 Aug. 2019].

80 May, M., McCarron, P., Stansfeld, S., Ben-Shlomo, Y., Gallacher, J., Yarnell, J., Smith, G. D., Elwood, P. and Ebrahim, S. (2002). Does psychological distress predict the risk of ischemic stroke and transient ischemic attack? The caerphilly study. Stroke, [online] 33(1). Available at: https://www.ahajournals.org/doi/full/10.1161/hs0102.100529 [Accessed 1 Aug. 2019].

81 How, J., Volz, G., Doe, S., Heycock, C., Hamilton, J. and Kelly, C. (2005). The causes of musculoskeletal chest pain in patients admitted to hospital with suspected myocardial infarction. European Journal of Internal Medicine, [online] 16(6). Available at: https://www.ncbi.nlm.nih.gov/pubmed/16198904 [Accessed 1 Aug. 2019].

82 Walters, K., Rait, G., Petersen, I., Williams, R. and Nazareth, I. (2008). Panic disorder and risk of new onset coronary heart disease, acute myocardial infarction, and cardiac mortality: cohort study using the general practice research database. European Heart Journal, [online] 29(24). Available at: https://www.ncbi.nlm.nih.gov/pubmed/18948354 [Accessed 1 Aug. 2019].

83 Surtees, P. G., Wainwright, N. W. J., Luben, R. N., Wareham, N. J., Bingham, S. A. and Khaw, K.-T. (2008). Psychological distress, major depressive disorder, and risk of stroke. Neurology, [online] 70(10). Available at: https://n.neurology.org/content/70/10/788.short [Accessed 1 Aug. 2019].

84 Gargalas, S., Weeks, R., Khan-Bourne, N., Shotbolt, P., Simblett, S., Ashraf, L., Doyle, C., Bancroft, V. and David, A. S. (2015). Incidence and outcome of functional stroke mimics admitted to a hyperacute stroke unit. Journal of Neurology, Neurosurgery, and Psychiatry, [online] 88(1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/26319438 [Accessed 1 Aug. 2019].

85 Daskalopoulou, M., George, J., Walters, K., Osborn, D. P., Batty, G. D., Stogiannis, D., Rapsomaniki, E., Pujades-Rodriguez, M., Denaxas, S., Udumyan, R., Kivimaki, M. and Hemingway, H. (2015). Depression as a risk factor for the initial presentation of twelve cardiac, cerebrovascular, and peripheral arterial diseases: data linkage study of 1.9 million women and men. PLoS One, [online] 11(4). Available at: https://www.ncbi.nlm.nih.gov/pubmed/27105076 [Accessed 1 Aug. 2019].

REFERENCES

Sources for Literature Review

86 Mathur, R., Pérez-Pinar, M., Foguet-Boreu, Q., Ayis, S., Ayerbe, L. (2016). Risk of incident cardiovascular events amongst individuals with anxiety and depression: a prospective cohort study in the east London primary care database. Journal of Affective Disorders, [online] 206. Available at: https://www.ncbi.nlm.nih.gov/pubmed/27466741 [Accessed 1 Aug. 2019].

87 Pe´rez-Pin˜ar, M., Mathur, R., Foguet, Q., Ayis, S., Robson, J., Ayerbe, L. (2016). Cardiovascular risk factors among patients with schizophrenia, bipolar, depressive, anxiety, and personality disorders. European Psychiatry, [online] 35. Available at: https://www.ncbi.nlm.nih.gov/pubmed/27061372 [Accessed 1 Aug. 2019].

88 Jani, B. D., Boachie, C., McCowan, C., Barry, S. J. E., Cavanagh, J. and Mair, F. S. (2017). Relationship of depression screening in cardiometabolic disease with vascular events and mortality: findings from a large primary care cohort with 4 years follow-up. European Heart Journal - Quality of Care and Clinical Outcomes, [online] 3(1). Available at: https://www.ncbi.nlm.nih.gov/pubmed/28927181 [Accessed 1 Aug. 2019].

89 Gunn, J. M., Ayton, D. R., Densley, K., Pallant, J. F., Chondros, P., Herrman, H. E. and Dowrick, C. F. (2012). The association between chronic illness, multimorbidity and depressive symptoms in an Australian primary care cohort. Social Psychiatry and Psychiatric Epidemiology, [online] 47(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/21184214 [Accessed 1 Aug. 2019].

90 Poleshuck, E. L., Bair, M. J., Kroenke, K., Watts, A., Tu, X. and Giles, D. E. (2009). Pain and depression in gynecology patients. Psychosomatics, [online] 50(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/19567767 [Accessed 1 Aug. 2019].

91 Watkins, K. E., Eberhart, N., Hilton, L., Suttorp, M. J., Hepner, K. A., Clemens, J. Q. and Berry, S. H. (2011). Depressive disorders and panic attacks in women with bladder pain syndrome/interstitial cystitis: a population-based sample. General Hospital Psychiatry, [online] 33(2). Available at: https://www.ncbi.nlm.nih.gov/pubmed/21596207 [Accessed 1 Aug. 2019].

92 Bromberger, J. T., Schott, L. L., Matthews, K. A., Kravitz, H. M., Randolph Jr, J. F., Harlow, S., Crawford, S., Green, R. and Joffe, H. (2012). Association of past and recent major depression and menstrual characteristics in midlife: study of women's health across the nation. Menopause, [online] 19(9). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3404212/ [Accessed 1 Aug. 2019].

93 Bancroft, J., Rennie, D. and Warner, A. (1994). Vulnerability to perimenstrual mood change: the relevance of a past history of depressive disorder. Psychosomatic Medicine, [online] 56(3). Available at: https://www.ncbi.nlm.nih.gov/pubmed/8084968 [Accessed 1 Aug. 2019].

94 Slatera, H., Paananenb, M., Smitha, A. J., O'Sullivana, P., Briggsa, A. M., Hickeye, M., Mountainf, J., Karppinenb, J. and Bealesa, D. (2015). Heightened cold pain and pressure pain sensitivity in young female adults with moderate-to-severe menstrual pain. Pain, [online] 156(12). Available at: https://www.ncbi.nlm.nih.gov/pubmed/26262827 [Accessed 1 Aug. 2019].

REFERENCES

Sources for Utilisation Data

United Kingdom:

1 The King's Fund (2014). The UK private health market. [online] Available at: https://www.kingsfund.org.uk/sites/default/files/media/commission-appendix-uk-private-health-market.pdf [Accessed 23 Aug. 2019].

2 Betsi Cadwaladr University Health Board (2010). Gynaecology Focus Report. [online] Available at: http://www.wales.nhs.uk/sitesplus/documents/861/Item%2010%20058%202%202%20-%20Focus%20on%20Gynaecology.pdf [Accessed 23 Aug. 2019].

United States:

1 National Center for Health Statistics (2016). National Hospital Ambulatory Medical Care Survey: 2016 emergency department summary tables. [online] Available at: https://www.cdc.gov/nchs/data/nhamcs/web_tables/2016_ed_web_tables.pdf [Accessed 23 Aug. 2019].

Australia:

1 Australian Government (2016). Overview of the Department of Veterans' Affairs Claiming Channels. [online] Available at: https://data.gov.au/dataset/ds-dga-58ebeb4e-6235-407d-9756-4a7d89ec4500/details [Accessed 23 Aug. 2019].

2 Australian Institute of Health and Welfare (2018). Australia's health 2018. [online] Available at: https://www.aihw.gov.au/getmedia/7c42913d-295f-4bc9-9c24-4e44eff4a04a/aihw-aus-221.pdf.aspx?inline=true [Accessed 23 Aug. 2019].

3 Australian Institute of Health and Welfare (2018). Admitted patient care 2016–17: Australian hospital statistics. [online] Available at: https://www.aihw.gov.au/reports/hospitals/ahs-2016-17-admitted-patient-care/data [Accessed 23 Aug. 2019].

4 Australian Institute of Health and Welfare (2018). Emergency department care 2016–17: Australian hospital statistics. [online] Available at: https://www.aihw.gov.au/reports/hospitals/ahs-2016-17-emergency-department-care/contents/table-of-contents [Accessed 23 Aug. 2019].

5 Britt, H., Miller, G. C., Henderson, J., Bayram, C., Harrison, C., Valenti, L., Pan, Y., Charles, J., Pollack, A. J., Wong, C. and Gordon, J. (2016). General practice activity in Australia 2015–16. General Practice Series, [online] 40. Available at: https://ses.library.usyd.edu.au/handle/2123/15514 [Accessed 23 Aug. 2019].

Hong Kong:

1 The Government of Hong Kong Special Administration Region (2017). Average Daily Attendance at Accident and Emergency Departments by Week [Provisional Figures]. [online] Available at: https://gia.info.gov.hk/general/201711/29/P2017112900552_272995_1_1511942777286.pdf [Accessed 23 Aug. 2019].

REFERENCES

2 Jiang, H., Li, Y., Mo, J., Chen, X., Li, M., Lin, P., et al. (2019). Comparison of outcomes in emergency department patients with suspected cardiac chest pain: two-centre prospective observational study in Southern China. BMC Cardiovascular Disorders, [online] 18(1). Available at: https://bmccardiovascdisord.biomedcentral.com/articles/10.1186/s12872-018-0814-4 [Accessed 23 Aug. 2019].

3 Hospital Authority (2019). HA Statistics. [online] Available at: http://www3.ha.org.hk/data/HAStatistics/MajorReport [Accessed 23 Aug. 2019].

4 Food and Health Bureau (2010). My Health My Choice Healthcare Reform Second Stage Public Consultation Document. [online] Available at: https://www.legco.gov.hk/yr09-10/english/panels/hs/papers/hs1006-cppr201010-e.pdf [Accessed 23 Aug. 2019].

5 Department of Health (2019). Health Facts of Hong Kong 2019 Edition. [online] Available at: https://www.dh.gov.hk/english/statistics/statistics_hs/files/Health_Statistics_pamphlet_E.pdf [Accessed 23 Aug. 2019].

6 The Government of Hong Kong Special Administration Region (2012). LCQ16: Non-eligible persons receiving public healthcare service. [online] Available at: https://www.info.gov.hk/gia/general/201203/21/P201203210274.htm [Accessed 23 Aug. 2019].

7 Food and Health Bureau (2008). Your Health Your Life Consultation Document on Healthcare Reform - Appendix C Hong Kong's Current Healthcare Financing Arrangements. [online] Available at: https://www.fhb.gov.hk/beStrong/files/consultation/appendixc_eng.pdf [Accessed 23 Aug. 2019].

Singapore:

1 Ministry of Health (2019). Admissions and Outpatient Attendances. [online] Available at: https://www.moh.gov.sg/resources-statistics/singapore-health-facts/admissions-and-outpatient-attendances [Accessed 23 Aug. 2019].

2 Chan, W. X., Lin, W. and Wong, R. C. C. (2016). Transitional Care to Reduce Heart Failure Readmission Rates in South East Asia. Cardiac Failure Review Journal, [online] 2(2). Available at: https://www.cfrjournal.com/system/files/articles/CFR-2_2-085-9.pdf [Accessed 23 Aug. 2019].

3 Ministry of Health (2019). Primary Healthcare Services. [online] Available at: https://www.moh.gov.sg/our-healthcare-system/healthcare-services-and-facilities/primary-healthcare-services [Accessed 23 Aug. 2019].

South Korea:

1 Ministry of Health and Welfare (2017). Report on Health Care Services Utilization. [online] Available at: https://kosis.kr/eng/statisticsList/statisticsListIndex.do?menuId=M_01_01&vwcd=MT_ETITLE&parmTabId=M_01_01&statId=1988017&themaId=#D1_30.3 [Accessed 23 Aug. 2019].

2 Organisation for Economic Co-operation and Development (2003). OECD Reviews of Health Care Systems: Korea 2003. [online] Available at: https://www.oecd-ilibrary.org/social-issues-migration-health/oecd-reviews-of-health-care-systems-korea-2003_9789264299474-en [Accessed 23 Aug. 2019].

3 Baek, H., Cho, M., Kim, S., Hwang, H., Song, M. and Yoo, S. (2018). Analysis of length of hospital stay using electronic health records: A statistical and data mining approach. PLoS ONE, [online] 13(4). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0195901 [Accessed 23 Aug. 2019].

REFERENCES

United Arabic Emirates:

1 Ministry of Health and Prevention (2015). Annual Statistics Book 2015. [online] Available at: https://www.mohap.gov.ae/en/OpenData/Pages/default.aspx [Accessed 23 Aug. 2019].

2 United Arab Emirates Health Authority (2018). Annual Statistical Report 2017. [online] Available at: https://www.dha.gov.ae/en/Pages/Opendata.aspx [Accessed 23 Aug. 2019].

Taiwan:

1 衛生福利部統計處 (2018)統計表[互聯網] 檢自: https://dep.mohw.gov.tw/DOS/lp-4268-113.html [上網日期: 2019年8月23日].

2 衛生福利部全民健康保險會 (2017)。總額支付制度下建立基層與醫院門診分級醫療指標之研究。[互聯網] 檢自: https://dep.mohw.gov.tw/NHIC/cp-1697-2758-116.html [上網日期: 2019年8月23日].

3 Ministry of Health and Welfare (2018). Statistics of Medical Care Institution's Status & Hospital's Utilization 2017. [online] Available at: https://www.mohw.gov.tw/cp-4113-43597-2.html [Accessed 23 Aug. 2019].

4 Wu, T.Y., Majeed, A. and Kuo, K. N. (2010). An overview of the healthcare system in Taiwan. London Journal of Primary Care, [online] 3(2). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3960712/ [Accessed 23 Aug. 2019].

Thailand:

1 National Statistical Office (2017). The 2017 Health and Welfare Survey. [online] Available at: http://www.nso.go.th/sites/2014en/Survey/social/SocialSecurity/health_and_welfare/2017/Full%20Report_080119.pdf [Accessed 23 Aug. 2019].

2 National Health Security Office (2016). NHSO Annual Report Fiscal Year 2015. [online] Available at: https://www.nhso.go.th/eng/files/userfiles/file/2018/001/Annual%20report%202015.pdf [Accessed 23 Aug. 2019].

3 National Health Security Office (2015). NHSO Annual Report Fiscal Year 2014. [online] Available at: https://www.nhso.go.th/eng/files/userfiles/file/2018/001/Annual%20report%202015.pdf [Accessed 23 Aug. 2019].

Others (references applied for several markets):

1 Organisation for Economic Co-operation and Development (2019). Health Care Utilisation: Hospital average length of stay by diagnostic categories. [online] Available at: https://stats.oecd.org/index.aspx?queryid=30165 [Accessed 23 Aug. 2019].

2 Organisation for Economic Co-operation and Development (2014). Health Systems Characteristics. [online] Available at: https://www.oecd.org/els/health-systems/Delivery-Outpatient-Specialist.xls [Accessed 23 Aug. 2019].

REFERENCES

Sources for Unit Costs

United Kingdom:

1 NHS England (2019). Missed GP appointments costing NHS millions. [online] Available at: https://www.england.nhs.uk/2019/01/missed-gp-appointments-costing-nhs-millions/ [Accessed 23 Aug. 2019].

2 NHS Improvement (2018). Reference costs. [online] Available at: https://improvement.nhs.uk/resources/reference-costs/ [Accessed 23 Aug. 2019].

3 BMI Healthcare (2019). Private GP Service & Appointments. [online] Available at: https://www.bmihealthcare.co.uk/treatments/gp-service/gp-service-private [Accessed 23 Aug. 2019].

4 NHS Improvement (2019). Overseas patient upfront tariff. [online] Available at: https://improvement.nhs.uk/resources/overseas-patient-upfront-tariff/ [Accessed 23 Aug. 2019].

5 Prederi (2013). Quantitative Assessment of Visitor and Migrant use of the NHS In England: Exploring the data. [online] Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/251909/Quantitative_Assessment_of_Visitor_and_Migrant_Use_of_the_NHS_in_England_-_Exploring_the_Data_-_FULL_REPORT.pdf [Accessed 23 Aug. 2019].

6 Office for National Statistics (2019). Healthcare expenditure, UK Health Accounts: 2017. [online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthcaresystem/bulletins/ukhealthaccounts/2017 [Accessed 2 Sep. 2019].

United States:

1 Robert Graham Center (2018). The State of Primary Care in the United States A Chartbook of Facts and Statistics. [online] Available at: https://www.graham-center.org/content/dam/rgc/documents/publications-reports/reports/PrimaryCareChartbook.pdf [Accessed 23 Aug. 2019].

2 U.S. Bureau of Labor Statistics (2016). Medical care prices rise 4 percent over the year ending November 2016. [online] Available at: https://www.bls.gov/opub/ted/2016/medical-care-prices-rise-4-percent-over-the-year-ending-november-2016.htm [Accessed 23 Aug. 2019].

3 National Center for Health Statistics (2017). Health Expenditures. [online] Available at: https://www.cdc.gov/nchs/fastats/health-expenditures.htm [Accessed 2 Sep. 2019].

Australia:

1 Independent Hospital Pricing Authority (2019). National Hospital Cost Data Collection Report Public Sector, Round 21 (Financial Year 2016-17). [online] Available at: https://www.ihpa.gov.au/sites/default/files/publications/national_hospital_cost_data_collection_australian_public_hospitals_cost_report_round_21_2016-17.pdf [Accessed 23 Aug. 2019].

2 The Royal Australian College of General Practitioners (2018). General Practice: Health of the Nation 2018. [online] Available at: https://www.racgp.org.au/download/Documents/Publications/Health-of-the-Nation-2018-Report.pdf [Accessed 23 Aug. 2019].

REFERENCES

3 Department of Health (2018). Health Insurance Act 1973 Section 3GA Approved Private Emergency Department. [online] Available at: https://www.health.gov.au/sites/default/files/approved-private-emergency-department-program-guidelines_0.pdf [Accessed 23 Aug. 2019].

4 Federal Australian Medical Association (2018). List of Medical Services and Fees. [online] Available at: https://ama.com.au/system/tdf/documents/AMA_fees_list_nov_14_1.pdf?file=1&type=node&id=35118 [Accessed 23 Aug. 2019].

5 Australian Institute of Health and Welfare (2018). Health expenditure Australia 2016–17. [online] Available at: https://www.aihw.gov.au/reports/health-welfare-expenditure/health-expenditure-australia-2016-17/contents/data-visualisation [Accessed 2 Sep. 2019].

Hong Kong:

1 Food and Health Bureau (2019). Estimates of Health Expenditure, 1989/90 – 2017/18. [online] Available at: https://www.fhb.gov.hk/statistics/download/dha/en/table4_1718.pdf [Accessed 23 Aug. 2019].

2 Hospital Authority (2017). Fees and Charges. [online] Available at: http://www.ha.org.hk/visitor/ha_visitor_index.asp?Content_ID=10045&Lang=ENG [Accessed 23 Aug. 2019].

3 Bupa (2019). Hospital Charges. [online] Available at: https://www.bupa.com.hk/en/customer-care/hospital-charges/ [Accessed 23 Aug. 2019].

4 Hospital Authority (2019). Hospital Authority Annual Report 2017-2018. [online] Available at: http://www.ha.org.hk/ho/corpcomm/AR201718/PDF/HA_Annual_Report_2017-2018.pdf [Accessed 23 Aug. 2019].

5 Department of Health (2019). Health Facts of Hong Kong 2019 Edition. [online] Available at: https://www.dh.gov.hk/english/statistics/statistics_hs/files/Health_Statistics_pamphlet_E.pdf [Accessed 2 Sep. 2019].

Singapore:

1 Ministry of Health (2019). Fee Benchmarks Advisory Committee Report. [online] Available at: https://www.moh.gov.sg/docs/librariesprovider5/default-document-library/committee-report---launch-of-fee-benchmarks---final-(updated-30-july-2019).pdf [Accessed 23 Aug. 2019].

2 Singapore Medical (2019). Medical Costs. [online] Available at: http://singapore-medical.com/medical-costs [Accessed 23 Aug. 2019].

3 National Healthcare Group Polyclinics (2019). Our Clinics. [online] Available at: https://www.nhgp.com.sg/Find_A_Polyclinic_Near_You/ [Accessed 23 Aug. 2019].

4 SingHealth Group (2019). Fees and Charges. [online] Available at: https://www.singhealth.com.sg/patient-care/patient-visitor-info/fees-charges [Accessed 23 Aug. 2019].

5 Raffles Medical Group (2019). Consultation Fees. [online] Available at: https://www.rafflesmedicalgroup.com/specialist-centres/fees/consultation-fees [Accessed 23 Aug. 2019].

6 Parkway Holdings Limited (2019). Estimated Bill Size. [online] Available at: https://www.parkwayhospitals.com/cost-financing/estimated-bill-size [Accessed 23 Aug. 2019].

REFERENCES

South Korea:

1 Ministry of Health and Welfare (2019). Korea National Health Accounts. [online] Available at: http://kosis.kr/eng/statisticsList/statisticsListIndex.do?menuId=M_01_01&vwcd=MT_ETITLE&parmTabId=M_01_01&statId=1988017&themaId=#D1_30.3 [Accessed 23 Aug. 2019].

2 Jung, H., Do, Y. K., Kim, Y. and Ro, J. (2014). The Impact of an Emergency Fee Increase on the Composition of Patients Visiting Emergency Departments. Journal of Preventive Medicine & Public Health, [online] 47(6). Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4263005/#b1-jpmph-47-6-309 [Accessed 23 Aug. 2019].

United Arab Emirates:

1 Statistics Center (2018). Statistical Yearbook of Abu Dhabi 2018. [online] Available at: https://www.scad.gov.abudhabi/Release%20Documents/SYB_2018_EN_9Sep.pdf [Accessed 23 Aug. 2019].

2 United Arab Emirates Statistics Center (2019). Annual Inflation 2019. [online] Available at: https://www.dsc.gov.ae/Report/Annual%20Inflation%202019.pdf [Accessed 23 Aug. 2019].

Taiwan:

1 衛生福利部統計處 (2018)統計表。[互聯網] 檢自: https://dep.mohw.gov.tw/DOS/lp-4268-113.html [上網日期: 2019年8月23日].

2 衛生福利部中央健康保險署 (2014)。全民健康保險法對掛號費是否有明確規定？[互聯網] 檢自: https://www.nhi.gov.tw/Content_List.aspx?n=A5F2247FE22A65D2&topn=0B69A546F5DF84DC[accessed 23 Aug, 2019].

3 National Health Insurance Administration (2019). Copayments. [online] Available at: https://www.nhi.gov.tw/English/Content_List.aspx?n=E5509C8FE29950EA&topn=1D1ECC54F86E9050 [Accessed 23 Aug. 2019].

4 Ministry of Health and Welfare (2019). National Health Expenditure 2017. [online] Available at: https://www.mohw.gov.tw/lp-4271-2.html [Accessed 2 Sep. 2019].

Thailand:

1 National Health Security Office (2016). NHSO Annual Report Fiscal Year 2015. [online] Available at: https://www.nhso.go.th/eng/files/userfiles/file/2018/001/Annual%20report%202015.pdf [Accessed 23 Aug. 2019].

2 MedConsult International Clinic (2019). Prices & Payment. [online] Available at: https://www.medconsultasia.com/paymentinfo [Accessed 23 Aug. 2019].

3 Ministry of Commerce (2019). Consumer Price Index (CPI). [online] Available at: http://www.price.moc.go.th/en/content1.aspx?cid=1 [Accessed 23 Aug. 2019].

REFERENCES

Others (references applied for several markets):

1 World Health Organization (2008). Country-specific unit costs. [online] Available at: https://www.who.int/choice/country/country_specific/en/ [Accessed 23 Aug. 2019].

2 World Health Organization (2019). Global Health Expenditure Database. [online] Available at: http://apps.who.int/nha/database/Select/Indicators/en [Accessed 2 Sep. 2019].

3 World Bank Group (2019). Current health expenditure (% of GDP). [online] Available at: https://data.worldbank.org/indicator/SH.XPD.CHEX.GD.ZS [Accessed 2 Sep. 2019].

4 World Bank Group (2019). GDP (current USD). [online] Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD [Accessed 2 Sep. 2019].

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED KINGDOM

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	2,616,238	5,336,419,280
ED Attendances Per Year for All Medically Unexplained Conditions	1,897,200	402,870,316
GP Attendances Per Year for All Medically Unexplained Conditions	35,029,963	1,379,479,940
Outpatient Attendances Per Year for All Medically Unexplained Conditions	2,169,670	362,356,542
Hospital Admissions Per Year for All Stress-related Mental Illness	1,709,114	3,486,131,086
ED Attendances Per Year for All Stress-related Mental Illness	382,686	81,263,335
GP Attendances Per Year for All Stress-related Mental Illness	8,228,607	324,042,543
Outpatient Attendances Per Year for All Stress-related Mental Illness	6,004,748	1,002,852,966
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,216,072	1,057,434,747
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	813,262	172,696,090
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	25,638,920	1,009,660,681
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,069,336	178,589,796

DETAILED BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED KINGDOM

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	2,616,238	5,336,419,280
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	608,640	1,241,460,372
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	736,377	1,502,010,949
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	233,726	476,737,296
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	37,077	75,628,068
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	1,536	3,132,356
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	3,923	8,001,182
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	59,851	122,079,302
Hospital Admissions Per Year for Conditions Not Coded/Blank	407	830,879
ED Attendances Per Year for All Medically Unexplained Conditions	1,897,200	402,870,316
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	177,275	37,644,319
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	101,259	21,502,306
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	165,627	35,170,918
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	15,416	3,273,615
ED Attendances Per Year for Conditions Not Coded/Blank	728,528	154,702,929

DETAILED BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED KINGDOM

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	35,029,963	1,379,479,940
Outpatient Attendances Per Year for All Medically Unexplained Conditions	2,169,670	362,356,542
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	194,522	32,487,138
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	269,338	44,982,191
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	119,706	19,992,085
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	59,853	9,996,043
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	229,436	38,318,163
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	14,963	2,499,011
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	104,743	17,493,074

DETAILED BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED KINGDOM

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	1,709,114	3,486,131,086
Hospital Admissions Per Year for Depressive Disorders	1,459,603	2,977,196,636
Hospital Admissions Per Year for Anxiety Disorders	209,254	426,822,267
Hospital Admissions Per Year for Panic Disorders	40,256	82,112,184
ED Attendances Per Year for All Stress-related Mental Illness	382,686	81,263,335
ED Attendances Per Year for Depressive Disorders	109,747	23,304,808
ED Attendances Per Year for Anxiety Disorders	145,540	30,905,390
ED Attendances Per Year for Panic Disorders	125,223	26,591,015
GP Attendances Per Year for All Stress-related Mental Illness	8,228,607	324,042,543
GP Attendances Per Year for Depressive Disorders	5,199,545	204,758,101
GP Attendances Per Year for Anxiety Disorders	3,029,062	119,284,442
Outpatient Attendances Per Year for All Stress-related Mental Illness	6,004,748	1,002,852,966
Outpatient Attendances Per Year for Depressive Disorders	4,312,532	720,236,025
Outpatient Attendances Per Year for Anxiety Disorders	1,476,872	246,652,349
Outpatient Attendances Per Year for Panic Disorders	10,474	1,749,307

DETAILED BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED KINGDOM

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,216,072	1,057,434,747
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	943,374	509,356,122
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	30,947	53,840,667
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	153,347	409,381,816
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	1,853	4,947,177
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	4,060	10,837,899
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	20,445	54,581,605
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	88,404	84,856,142
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	813,262	172,696,090
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	149,281	31,699,868
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	8,280,231	12,333,016
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	79,428,037	118,304,343
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	15,235,040	22,691,879
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	383,579	571,300

DETAILED BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED KINGDOM

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	25,638,920	1,009,660,681
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	8,612,978	339,179,062
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	5,274,482	207,709,106
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	2,778,268	109,408,177
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	6,797,214	267,674,288
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	245,910	9,683,949
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	1,896,450	74,682,204
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	2,175,979	85,690,048
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,069,336	178,589,796
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	993,772	165,969,792
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	17,705	2,956,866
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	75,564	12,620,004

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED STATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	1,059,560	11,475,157,128
ED Attendances Per Year for All Medically Unexplained Conditions	19,258,610	8,690,640,574
GP Attendances Per Year for All Medically Unexplained Conditions	69,981,028	12,441,926,897
Outpatient Attendances Per Year for All Medically Unexplained Conditions	69,971,000	17,373,799,300
Hospital Admissions Per Year for All Stress-related Mental Illness	2,899,697	31,404,054,535
ED Attendances Per Year for All Stress-related Mental Illness	1,438,215	649,008,895
GP Attendances Per Year for All Stress-related Mental Illness	19,246,389	3,421,815,524
Outpatient Attendances Per Year for All Stress-related Mental Illness	35,463,884	8,805,682,459
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	3,560,338	20,556,725,459
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,829,766	2,630,740,283
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	77,661,421	13,807,424,090
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	7,825,968	1,943,187,888

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED STATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	1,059,560	11,475,157,128
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	170,215	1,843,446,215
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	34,355	372,067,916
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	27,640	299,344,170
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	345	3,736,382
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	275	2,978,284
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	12,890	139,600,075
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	1,060,559	11,485,976,928
Hospital Admissions Per Year for Conditions Not Coded/Blank	691	7,484,792
ED Attendances Per Year for All Medically Unexplained Conditions	19,258,610	8,690,640,574
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	2,012,248	908,047,178
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	4,675,309	2,109,779,789
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	329,424	148,655,770
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	101,390	45,753,215
ED Attendances Per Year for Conditions Not Coded/Blank	883,541	398,706,588

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED STATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	69,981,028	12,441,926,897
Outpatient Attendances Per Year for All Medically Unexplained Conditions	69,971,000	17,373,799,300
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	8,648,242	2,147,358,527
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	6,910,000	1,715,753,000
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	1,835,407	455,731,576
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	397,676	98,743,013
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	3,976,763	987,430,129
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	176,745	43,885,784
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	1,237,215	307,200,485

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED STATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	2,899,697	31,404,054,535
Hospital Admissions Per Year for Depressive Disorders	2,476,375	26,819,429,101
Hospital Admissions Per Year for Anxiety Disorders	355,023	3,844,935,663
Hospital Admissions Per Year for Panic Disorders	68,299	739,689,771
ED Attendances Per Year for All Stress-related Mental Illness	1,438,215	649,008,895
ED Attendances Per Year for Depressive Disorders	412,453	186,123,643
ED Attendances Per Year for Anxiety Disorders	546,970	246,825,622
ED Attendances Per Year for Panic Disorders	470,613	212,368,900
GP Attendances Per Year for All Stress-related Mental Illness	19,246,389	3,421,815,524
GP Attendances Per Year for Depressive Disorders	12,161,533	2,162,198,958
GP Attendances Per Year for Anxiety Disorders	7,084,856	1,259,616,566
Outpatient Attendances Per Year for All Stress-related Mental Illness	35,463,884	8,805,682,459
Outpatient Attendances Per Year for Depressive Disorders	25,469,703	6,324,127,212
Outpatient Attendances Per Year for Anxiety Disorders	8,722,366	2,165,763,416
Outpatient Attendances Per Year for Panic Disorders	61,861	15,360,024

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED STATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	3,560,338	20,556,725,459
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	2,846,975	12,847,110,232
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	35,871	372,299,302
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	635,659	6,884,259,720
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	6,946	75,221,693
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	20,778	225,032,687
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	64,737	701,113,514
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	41,833	453,056,204
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,829,766	2,630,740,283
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	1,462,613	660,018,588
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	1,074,571	484,910,874
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	3,582,902	1,616,820,577
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	784,251	353,901,118
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	126,031	56,872,795

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED STATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	77,661,421	13,807,424,090
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	30,731,812	5,463,808,788
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	8,023,238	1,426,451,495
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	23,513,842	4,180,525,997
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	10,303,000	1,831,770,399
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	575,175	102,260,300
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	7,367,412	1,309,852,131
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	5,089,529	904,867,411
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	7,825,968	1,943,187,888
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	5,362,496	1,331,507,837
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	143,046	35,518,232
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	2,463,472	611,680,050

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - AUSTRALIA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	921,792	4,921,164,776
ED Attendances Per Year for All Medically Unexplained Conditions	1,754,334	767,152,697
GP Attendances Per Year for All Medically Unexplained Conditions	24,850,473	3,139,111,751
Outpatient Attendances Per Year for All Medically Unexplained Conditions	3,316,548	641,652,524
Hospital Admissions Per Year for All Stress-related Mental Illness	894,080	4,773,214,942
ED Attendances Per Year for All Stress-related Mental Illness	84,185	36,813,185
GP Attendances Per Year for All Stress-related Mental Illness	6,296,715	795,400,989
Outpatient Attendances Per Year for All Stress-related Mental Illness	1,593,096	308,216,320
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,385,477	3,564,047,846
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	245,850	107,507,699
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	27,950,314	3,530,683,674
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,688,361	326,647,241

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - AUSTRALIA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	921,792	4,921,164,776
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	279,424	1,491,760,642
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	198,160	1,057,912,931
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	54,853	292,841,445
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	5,296	28,271,729
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	282	1,504,392
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	223	1,192,671
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	9,208	49,157,029
Hospital Admissions Per Year for Conditions Not Coded/Blank	213	1,137,640
ED Attendances Per Year for All Medically Unexplained Conditions	1,754,334	767,152,697
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	78,392	34,279,843
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	147,971	64,706,022
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	27,859	12,182,445
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	4,663	2,039,102
ED Attendances Per Year for Conditions Not Coded/Blank	308,689	134,986,775

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - AUSTRALIA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	24,850,473	3,139,111,751
Outpatient Attendances Per Year for All Medically Unexplained Conditions	3,316,548	641,652,524
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	725,379	140,339,019
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	531,146	102,760,868
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	133,140	25,758,658
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	19,849	3,840,223
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	3,970	768,045
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	11,910	2,304,134
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	83,367	16,128,938

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - AUSTRALIA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	921,792	4,921,164,776
Hospital Admissions Per Year for Depressive Disorders	279,424	1,491,760,642
Hospital Admissions Per Year for Anxiety Disorders	198,160	1,057,912,931
Hospital Admissions Per Year for Panic Disorders	54,853	292,841,445
ED Attendances Per Year for All Stress-related Mental Illness	5,296	28,271,729
ED Attendances Per Year for Depressive Disorders	282	1,504,392
ED Attendances Per Year for Anxiety Disorders	223	1,192,671
ED Attendances Per Year for Panic Disorders	9,208	49,157,029
GP Attendances Per Year for All Stress-related Mental Illness	213	1,137,640
GP Attendances Per Year for Depressive Disorders	1,754,334	767,152,697
GP Attendances Per Year for Anxiety Disorders	78,392	34,279,843
Outpatient Attendances Per Year for All Stress-related Mental Illness	147,971	64,706,022
Outpatient Attendances Per Year for Depressive Disorders	27,859	12,182,445
Outpatient Attendances Per Year for Anxiety Disorders	4,663	2,039,102
Outpatient Attendances Per Year for Panic Disorders	308,689	134,986,775

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - AUSTRALIA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,385,477	3,564,047,846
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	1,036,641	1,680,055,900
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	30,673	111,117,955
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	194,840	1,114,489,549
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	3,314	18,954,668
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	3,964	22,672,833
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	14,564	83,304,999
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	123,323	658,384,443
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	245,850	107,507,699
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	66,656	29,147,964
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	62,735	27,433,563
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	136,013	59,476,906
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	43,181	18,882,829
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	3,984	1,742,376

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - AUSTRALIA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	27,950,314	3,530,683,674
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	13,517,806	1,707,569,234
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	3,443,430	434,974,127
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	5,037,897	636,387,186
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	4,286,073	541,416,706
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	188,176	23,770,406
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	192,213	24,280,312
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	1,665,108	210,336,422
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,688,361	326,647,241
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	1,487,082	287,705,841
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	30,736	5,946,548
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	201,279	38,941,400

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SINGAPORE

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	48,531	282,157,765
ED Attendances Per Year for All Medically Unexplained Conditions	163,005	14,349,301
GP Attendances Per Year for All Medically Unexplained Conditions	4,983,154	490,990,203
Outpatient Attendances Per Year for All Medically Unexplained Conditions	1,509,834	146,136,858
Hospital Admissions Per Year for All Stress-related Mental Illness	49,739	289,179,383
ED Attendances Per Year for All Stress-related Mental Illness	12,479	1,098,517
GP Attendances Per Year for All Stress-related Mental Illness	1,262,652	124,409,108
Outpatient Attendances Per Year for All Stress-related Mental Illness	1,025,663	99,273,884
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	61,848	359,582,303
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	63,639	5,602,159
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	4,878,346	480,663,427
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	498,662	48,265,463

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SINGAPORE

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	48,531	282,157,765
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	12,059	70,110,811
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	11,014	64,037,457
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	3,443	20,014,640
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	460	2,673,556
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	22	126,133
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	116	673,817
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	6,815	39,623,869
Hospital Admissions Per Year for Conditions Not Coded/Blank	12	68,923
ED Attendances Per Year for All Medically Unexplained Conditions	163,005	14,349,301
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	11,620	1,022,921
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	21,934	1,930,848
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	4,130	363,528
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	691	60,847
ED Attendances Per Year for Conditions Not Coded/Blank	25,727	2,264,724

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SINGAPORE

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	4,983,154	490,990,203
Outpatient Attendances Per Year for All Medically Unexplained Conditions	1,509,834	146,136,858
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	250,119	24,208,983
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	195,938	18,964,798
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	53,082	5,137,846
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	11,501	1,113,213
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	39,190	3,793,171
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	5,112	494,761
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	35,782	3,463,330

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SINGAPORE

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	49,739	289,179,383
Hospital Admissions Per Year for Depressive Disorders	42,477	246,962,568
Hospital Admissions Per Year for Anxiety Disorders	6,090	35,405,496
Hospital Admissions Per Year for Panic Disorders	1,172	6,811,319
ED Attendances Per Year for All Stress-related Mental Illness	12,479	1,098,517
ED Attendances Per Year for Depressive Disorders	3,579	315,034
ED Attendances Per Year for Anxiety Disorders	4,746	417,779
ED Attendances Per Year for Panic Disorders	4,083	359,457
GP Attendances Per Year for All Stress-related Mental Illness	1,262,652	124,409,108
GP Attendances Per Year for Depressive Disorders	797,853	78,612,433
GP Attendances Per Year for Anxiety Disorders	464,799	45,796,675
Outpatient Attendances Per Year for All Stress-related Mental Illness	1,025,663	99,273,884
Outpatient Attendances Per Year for Depressive Disorders	736,618	71,297,219
Outpatient Attendances Per Year for Anxiety Disorders	252,262	24,416,477
Outpatient Attendances Per Year for Panic Disorders	1,789	173,167

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SINGAPORE

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	61,848	359,582,303
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	44,653	259,609,339
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	1,176	6,838,899
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	10,622	61,757,454
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	119	692,667
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	232	1,347,034
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	839	4,875,292
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	5,397	31,376,612
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	63,639	5,602,159
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	9,146	805,151
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	461	40,611
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	34,737	3,057,859
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	19,756	1,739,149
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	591	51,993

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SINGAPORE

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	4,878,346	480,663,427
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	2,016,149	198,651,147
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	675,780	66,584,627
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	993,053	97,845,531
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	859,467	84,683,286
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	37,734	3,717,942
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	270,961	26,697,810
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	333,897	32,898,836
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	498,662	48,265,463
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	427,415	41,369,478
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	4,137	400,427
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	71,247	6,895,985

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - TAIWAN

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	954,125	578,142,222
ED Attendances Per Year for All Medically Unexplained Conditions	1,521,451	105,193,148
GP Attendances Per Year for All Medically Unexplained Conditions	75,008,886	1,013,370,043
Outpatient Attendances Per Year for All Medically Unexplained Conditions	8,878,673	525,795,017
Hospital Admissions Per Year for All Stress-related Mental Illness	977,868	592,529,541
ED Attendances Per Year for All Stress-related Mental Illness	116,475	8,053,105
GP Attendances Per Year for All Stress-related Mental Illness	19,006,059	256,771,851
Outpatient Attendances Per Year for All Stress-related Mental Illness	6,031,472	357,183,766
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,118,323	387,696,081
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	271,929	18,801,154
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	85,538,918	1,155,630,782
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,614,152	332,470,072

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - TAIWAN

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	954,125	578,142,222
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	237,082	143,657,290
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	216,544	131,212,967
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	67,680	41,010,066
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	9,041	5,478,124
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	427	258,448
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	2,279	1,380,654
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	133,989	81,189,444
Hospital Admissions Per Year for Conditions Not Coded/Blank	233	141,223
ED Attendances Per Year for All Medically Unexplained Conditions	1,521,451	105,193,148
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	108,460	7,498,922
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	204,727	14,154,831
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	38,545	2,664,983
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	6,452	446,066
ED Attendances Per Year for Conditions Not Coded/Blank	240,128	16,602,444

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - TAIWAN

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	75,008,886	1,013,370,043
Outpatient Attendances Per Year for All Medically Unexplained Conditions	8,878,673	525,795,017
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	1,470,838	87,103,028
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	1,152,223	68,234,643
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	312,154	18,485,781
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	67,634	4,005,300
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	230,457	13,647,689
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	30,060	1,780,133
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	210,418	12,460,934

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - TAIWAN

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	977,868	592,529,541
Hospital Admissions Per Year for Depressive Disorders	835,111	506,027,144
Hospital Admissions Per Year for Anxiety Disorders	119,725	72,545,982
Hospital Admissions Per Year for Panic Disorders	23,033	13,956,416
ED Attendances Per Year for All Stress-related Mental Illness	116,475	8,053,105
ED Attendances Per Year for Depressive Disorders	33,403	2,309,480
ED Attendances Per Year for Anxiety Disorders	44,297	3,062,690
ED Attendances Per Year for Panic Disorders	38,113	2,635,140
GP Attendances Per Year for All Stress-related Mental Illness	19,006,059	256,771,851
GP Attendances Per Year for Depressive Disorders	12,009,671	162,250,660
GP Attendances Per Year for Anxiety Disorders	6,996,387	94,521,191
Outpatient Attendances Per Year for All Stress-related Mental Illness	6,031,472	357,183,766
Outpatient Attendances Per Year for Depressive Disorders	4,331,725	256,524,759
Outpatient Attendances Per Year for Anxiety Disorders	1,483,444	87,849,583
Outpatient Attendances Per Year for Panic Disorders	10,521	623,047

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - TAIWAN

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,118,323	529,6 387,696,081
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	877,876	238,993,069
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	12,070	6,312,345
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	218,941	140,211,866
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	2,342	1,500,016
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	4,555	2,917,090
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	16,486	10,557,761
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	9,436	2,178,800
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	271,929	18,801,154
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	85,370	5,902,477
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	46,774	3,233,948
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	116,206	8,034,459
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	70,353	4,864,217
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	5,513	381,155

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - TAIWAN

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	85,538,918	1,155,630,782
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	30,348,062	410,002,318
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	24,029,459	324,637,993
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	15,187,238	205,179,587
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	12,937,119	174,780,484
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	567,992	7,673,577
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	4,078,641	55,102,446
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	3,037,039	41,030,398
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,614,152	332,470,072
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	5,063,779	299,877,010
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	24,328	1,440,721
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	550,373	32,593,062

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - THAILAND

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	470,118	135,250,592
ED Attendances Per Year for All Medically Unexplained Conditions	768,865	19,329,270
GP Attendances Per Year for All Medically Unexplained Conditions	11,726,983	74,642,244
Outpatient Attendances Per Year for All Medically Unexplained Conditions	5,363,797	46,611,395
Hospital Admissions Per Year for All Stress-related Mental Illness	481,817	138,616,362
ED Attendances Per Year for All Stress-related Mental Illness	24,616	618,851
GP Attendances Per Year for All Stress-related Mental Illness	2,971,431	18,913,157.37
Outpatient Attendances Per Year for All Stress-related Mental Illness	3,643,742	31,664,114
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	560,268	161,186,134
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	74,689	1,877,686
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	11,480,334	73,072,327
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,771,532	15,394,614

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - THAILAND

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	470,118	135,250,592
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	116,815	33,607,187
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	106,696	30,695,962
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	33,347	9,593,895
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	4,455	1,281,552
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	210	60,461
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	1,123	322,990
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	66,019	18,993,459
Hospital Admissions Per Year for Conditions Not Coded/Blank	115	33,038
ED Attendances Per Year for All Medically Unexplained Conditions	768,865	19,329,270
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	54,810	1,377,929
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	103,459	2,600,954
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	19,479	489,691
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	3,260	81,965
ED Attendances Per Year for Conditions Not Coded/Blank	121,349	3,050,704

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - THAILAND

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	11,726,983	74,642,244
Outpatient Attendances Per Year for All Medically Unexplained Conditions	5,363,797	46,611,395
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	888,565	7,721,628
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	696,083	6,048,958
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	188,579	1,638,753
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	40,859	355,067
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	139,224	1,209,859
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	18,160	157,808
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	127,118	1,104,654

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - THAILAND

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	481,817	138,616,362
Hospital Admissions Per Year for Depressive Disorders	411,478	118,379,991
Hospital Admissions Per Year for Anxiety Disorders	58,991	16,971,407
Hospital Admissions Per Year for Panic Disorders	11,349	3,264,964
ED Attendances Per Year for All Stress-related Mental Illness	24,616	618,851
ED Attendances Per Year for Depressive Disorders	7,059	177,475
ED Attendances Per Year for Anxiety Disorders	9,362	235,356
ED Attendances Per Year for Panic Disorders	8,055	202,501
GP Attendances Per Year for All Stress-related Mental Illness	2,971,431	18,913,157.37
GP Attendances Per Year for Depressive Disorders	1,877,607	11,950,968
GP Attendances Per Year for Anxiety Disorders	1,093,824	6,962,189
Outpatient Attendances Per Year for All Stress-related Mental Illness	3,643,742	31,664,114
Outpatient Attendances Per Year for Depressive Disorders	2,616,888	22,740,757
Outpatient Attendances Per Year for Anxiety Disorders	896,181	7,787,810
Outpatient Attendances Per Year for Panic Disorders	6,356	55,233

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - THAILAND

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	560,268	161,186,134
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	432,549	124,442,143
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	10,407	2,994,033
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	84,591	24,336,390
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	1,154	332,026
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	2,244	645,693
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	8,123	2,336,942
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	32,721	9,413,569
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	74,689	1,877,686
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	18,042	453,583
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	13,507	339,559
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	45,672	1,148,205
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	10,974	275,898
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	1,165	29,290

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - THAILAND

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	11,480,334	73,072,327
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	4,744,654	30,199,721
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	1,590,331	10,122,454
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	2,336,977	14,874,859
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	2,022,605	12,873,883
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	88,801	565,216
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	637,660	4,058,705
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	785,767	5,001,409
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,771,532	15,394,614
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	1,518,422	13,195,091
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	14,697	127,719
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	253,110	2,199,524

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - HONG KONG

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	174,506	708,794,956
ED Attendances Per Year for All Medically Unexplained Conditions	283,926	50,263,382
GP Attendances Per Year for All Medically Unexplained Conditions	5,262,794	372,500,571
Outpatient Attendances Per Year for All Medically Unexplained Conditions	1,519,507	298,765,385
Hospital Admissions Per Year for All Stress-related Mental Illness	178,849	726,433,625
ED Attendances Per Year for All Stress-related Mental Illness	21,736	3,847,934
GP Attendances Per Year for All Stress-related Mental Illness	1,333,508	94,385,720
Outpatient Attendances Per Year for All Stress-related Mental Illness	1,032,233	202,957,696
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	197,272	801,264,201
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	65,950	11,675,207
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,152,104	364,665,934
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	620,466	121,995,998

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - HONG KONG

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	174,506	708,794,955.69
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	43,361	176,121,997
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	39,605	160,865,416
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	12,378	50,277,816
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	1,654	6,716,110
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	78	316,854
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	417	1,692,664
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	4,506	99,537,217
Hospital Admissions Per Year for Conditions Not Coded/Blank	43	173,137
ED Attendances Per Year for All Medically Unexplained Conditions	283,926	50,263,382
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	20,240	3,583,134
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	38,205	6,763,460
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	7,193	1,273,382
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	1,204	213,139
ED Attendances Per Year for Conditions Not Coded/Blank	44,811	7,932,978

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - HONG KONG

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	5,262,794	372,500,571
Outpatient Attendances Per Year for All Medically Unexplained Conditions	1,519,507	298,765,385
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	251,721	49,493,375
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	197,193	38,772,048
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	53,422	10,503,925
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	11,575	2,275,877
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	39,441	7,754,842
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	5,144	1,011,501
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	36,011	7,080,508

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - HONG KONG

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	178,849	726,433,625
Hospital Admissions Per Year for Depressive Disorders	152,739	620,382,794
Hospital Admissions Per Year for Anxiety Disorders	21,897	88,940,444
Hospital Admissions Per Year for Panic Disorders	4,213	17,110,387
ED Attendances Per Year for All Stress-related Mental Illness	21,736	3,847,934
ED Attendances Per Year for Depressive Disorders	6,233	1,103,516
ED Attendances Per Year for Anxiety Disorders	8,266	1,463,414
ED Attendances Per Year for Panic Disorders	7,112	1,259,122
GP Attendances Per Year for All Stress-related Mental Illness	1,333,508	94,385,720
GP Attendances Per Year for Depressive Disorders	842,626	59,641,060
GP Attendances Per Year for Anxiety Disorders	490,882	34,744,660
Outpatient Attendances Per Year for All Stress-related Mental Illness	1,032,233	202,957,696
Outpatient Attendances Per Year for Depressive Disorders	741,337	145,761,592
Outpatient Attendances Per Year for Anxiety Disorders	253,878	49,917,579
Outpatient Attendances Per Year for Panic Disorders	1,801	354,025

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - HONG KONG

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	197,272	801,264,201
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	160,561	652,152,140
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	2,415	9,808,030
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	22,151	89,971,232
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	428	1,740,016
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	833	3,383,820
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	3,015	12,246,988
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	12,146	49,332,798
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	65,950	11,675,207
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	15,931	2,820,321
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	727	128,771
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	40,329	7,139,387
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	9,690	1,715,499
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	1,029	182,124

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - HONG KONG

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,152,104	364,665,934
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	2,129,289	150,711,084
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	713,703	50,515,899
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	1,048,780	74,232,675
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	907,698	64,246,847
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	39,852	2,820,699
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	286,167	20,254,884
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	352,634	24,959,429
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	620,466	121,995,998
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	430,153	84,576,665
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	4,164	818,642
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	190,313	37,419,333

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED ARAB EMIRATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	50,175	444,410,852
ED Attendances Per Year for All Medically Unexplained Conditions	445,408	-
GP Attendances Per Year for All Medically Unexplained Conditions	1,572,246	157,335,126
Outpatient Attendances Per Year for All Medically Unexplained Conditions	289,315	42,240,914
Hospital Admissions Per Year for All Stress-related Mental Illness	51,423	455,470,208
ED Attendances Per Year for All Stress-related Mental Illness	34,098	-
GP Attendances Per Year for All Stress-related Mental Illness	398,382	39,866,219
Outpatient Attendances Per Year for All Stress-related Mental Illness	196,538	28,695,153
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	59,796	529,630,711
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	103,460	-
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,539,178	154,025,967
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	95,554	13,951,150

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED ARAB EMIRATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	50,175	444,410,852
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	12,467	110,427,601
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	11,387	100,861,802
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	3,559	31,523,936
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	475	4,210,967
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	22	198,666
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	120	1,061,291
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	7,046	62,409,332
Hospital Admissions Per Year for Conditions Not Coded/Blank	12	108,556
ED Attendances Per Year for All Medically Unexplained Conditions	445,408	-
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	31,752	-
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	59,934	-
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	11,284	-
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	1,889	-
ED Attendances Per Year for Conditions Not Coded/Blank	70,298	-

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED ARAB EMIRATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	1,572,246	157,335,126
Outpatient Attendances Per Year for All Medically Unexplained Conditions	289,315	42,240,914
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	47,928	6,997,616
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	37,546	5,481,782
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	10,172	1,485,096
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	2,204	321,775
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	7,510	1,096,418
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	980	143,011
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	6,857	1,001,077

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED ARAB EMIRATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	51,423	455,470,208
Hospital Admissions Per Year for Depressive Disorders	43,916	388,976,874
Hospital Admissions Per Year for Anxiety Disorders	6,296	55,765,208
Hospital Admissions Per Year for Panic Disorders	1,211	10,728,126
ED Attendances Per Year for All Stress-related Mental Illness	34,098	-
ED Attendances Per Year for Depressive Disorders	9,779	-
ED Attendances Per Year for Anxiety Disorders	12,968	-
ED Attendances Per Year for Panic Disorders	11,158	-
GP Attendances Per Year for All Stress-related Mental Illness	398,382	39,866,219
GP Attendances Per Year for Depressive Disorders	251,732	25,190,924
GP Attendances Per Year for Anxiety Disorders	146,650	14,675,294
Outpatient Attendances Per Year for All Stress-related Mental Illness	196,538	28,695,153
Outpatient Attendances Per Year for Depressive Disorders	141,151	20,608,488
Outpatient Attendances Per Year for Anxiety Disorders	48,339	7,057,592
Outpatient Attendances Per Year for Panic Disorders	343	50,054

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED ARAB EMIRATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	59,796	529,630,711
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	46,165	408,896,093
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	1,111	9,837,891
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	9,028	79,965,312
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	123	1,090,981
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	240	2,121,638
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	867	7,678,799
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	3,492	30,931,415
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	103,460	-
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	24,992	-
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	18,710	-
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	63,265	-
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	15,202	-
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	1,614	-

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - UNITED ARAB EMIRATES

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,539,178	154,025,967
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	636,120	63,656,674
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	213,217	21,336,680
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	313,320	31,354,065
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	271,172	27,136,296
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	11,906	1,191,394
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	85,492	8,555,167
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	105,348	10,542,252
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	95,554	13,951,150
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	81,901	11,957,863
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	793	115,744
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	13,652	1,993,287

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SOUTH KOREA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	976,784	2,372,949,920
ED Attendances Per Year for All Medically Unexplained Conditions	1,597,502	43,292,305
GP Attendances Per Year for All Medically Unexplained Conditions	115,791,498	2,345,935,743
Outpatient Attendances Per Year for All Medically Unexplained Conditions	15,871,598	1,125,931,138
Hospital Admissions Per Year for All Stress-related Mental Illness	1,001,092	2,432,001,806
ED Attendances Per Year for All Stress-related Mental Illness	103,722	2,810,860
GP Attendances Per Year for All Stress-related Mental Illness	29,339,724	594,422,805
Outpatient Attendances Per Year for All Stress-related Mental Illness	10,781,915	764,869,029
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,064,335	723,971,045
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	296,675	8,039,905
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	113,356,107	2,296,594,731
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,242,004	371,867,772

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SOUTH KOREA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Medically Unexplained Conditions	976,784	2,372,949,920
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	242,712	589,632,693
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	221,687	538,555,718
Hospital Admissions Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	69,287	168,323,347
Hospital Admissions Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	9,255	22,484,632
Hospital Admissions Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	437	1,060,783
Hospital Admissions Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	2,333	5,666,809
Hospital Admissions Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	137,171	333,237,180
Hospital Admissions Per Year for Conditions Not Coded/Blank	239	579,639
ED Attendances Per Year for All Medically Unexplained Conditions	1,597,502	43,292,305
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	113,881	3,086,186
ED Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	214,960	5,825,429
ED Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	40,471	1,096,775
ED Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	6,774	183,579
ED Attendances Per Year for Conditions Not Coded/Blank	252,131	6,832,746

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SOUTH KOREA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Medically Unexplained Conditions	115,791,498	2,345,935,743
Outpatient Attendances Per Year for All Medically Unexplained Conditions	15,871,598	1,125,931,138
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Cardiac, Circulatory and Respiratory Systems	2,629,284	186,521,379
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving Gastrointestinal/ Digestive Issues	2,059,724	146,116,846
Outpatient Attendances Per Year for Unexplained Symptoms and Signs Involving the Nervous and Musculoskeletal Systems	558,010	39,585,230
Outpatient Attendances Per Year for Abnormal Findings on Examination of Blood, without Diagnosis	120,904	8,576,902
Outpatient Attendances Per Year for Abnormal Findings on Examination of Urine, without Diagnosis	411,968	29,224,998
Outpatient Attendances Per Year for Abnormal Findings on Examination of Other Body Fluids, Substances and Tissues, without Diagnosis	53,735	3,811,956
Outpatient Attendances Per Year for Abnormal Findings on Diagnostic Imaging and in Function Studies, without Diagnosis	376,145	26,683,694

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SOUTH KOREA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Stress-related Mental Illness	1,001,092	2,432,001,806
Hospital Admissions Per Year for Depressive Disorders	854,944	2,076,957,927
Hospital Admissions Per Year for Anxiety Disorders	122,568	297,760,611
Hospital Admissions Per Year for Panic Disorders	23,580	57,283,268
ED Attendances Per Year for All Stress-related Mental Illness	103,722	2,810,860
ED Attendances Per Year for Depressive Disorders	29,745	806,102
ED Attendances Per Year for Anxiety Disorders	39,447	1,069,003
ED Attendances Per Year for Panic Disorders	33,940	919,771
GP Attendances Per Year for All Stress-related Mental Illness	29,339,724	594,422,805
GP Attendances Per Year for Depressive Disorders	18,539,375	375,607,732
GP Attendances Per Year for Anxiety Disorders	10,800,349	218,815,073
Outpatient Attendances Per Year for All Stress-related Mental Illness	10,781,915	764,869,029
Outpatient Attendances Per Year for Depressive Disorders	7,743,432	549,319,041
Outpatient Attendances Per Year for Anxiety Disorders	2,651,819	188,120,043
Outpatient Attendances Per Year for Panic Disorders	18,807	1,334,185

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SOUTH KOREA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
Hospital Admissions Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	1,064,335	723,971,045
Hospital Admissions Per Year for All Chest Pain Driven by Stress-related Mental Illness	898,725	295,042,408
Hospital Admissions Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	12,697	11,004,553
Hospital Admissions Per Year for Circulatory Issues Driven by Stress-related Mental Illness	84,928	385,873,878
Hospital Admissions Per Year for Stroke Driven by Stress-related Mental Illness	2,398	10,894,957
Hospital Admissions Per Year for Hypertension Driven by Stress-related Mental Illness	4,663	21,187,490
Hospital Admissions Per Year for Myocardial Infarction Driven by Stress-related Mental Illness	16,877	76,683,426
Hospital Admissions Per Year for Women Health Issues Driven by Stress-related Mental Illness	67,985	32,050,206
ED Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	296,675	8,039,905
ED Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	76,022	2,060,204
ED Attendances Per Year for Non-cardiac Chest Pain Driven by Stress-related Mental Illness	56,911	1,542,298
ED Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	192,444	5,215,219
ED Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	28,210	764,482
ED Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	4,909	133,039

BREAKDOWN OF THE ACTIVITY AND COSTS RELATED TO STRESS RELATED ILLNESS - SOUTH KOREA

Description	Attendances for stress-related conditions	Cost of attendances for stress related conditions (USD)
GP Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	113,356,107	2,296,594,731
GP Attendances Per Year for All Chest Pain Driven by Stress-related Mental Illness	46,848,417	949,148,930
GP Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	15,702,826	318,139,253
GP Attendances Per Year for MSK Issues Driven by Stress-related Mental Illness	23,075,166	467,502,868
GP Attendances Per Year for Circulatory Issues Driven by Stress-related Mental Illness	19,971,080	404,614,077
GP Attendances Per Year for Stroke Driven by Stress-related Mental Illness	876,812	17,764,211
GP Attendances Per Year for Hypertension Driven by Stress-related Mental Illness	6,296,214	127,561,298
GP Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	7,758,618	157,189,603
Outpatient Attendances Per Year for All Selected Physical Symptoms Driven by Stress-related Mental Illness	5,242,004	371,867,772
Outpatient Attendances Per Year for Gastrointestinal Issues Driven by Stress-related Mental Illness	4,493,047	318,736,725
Outpatient Attendances Per Year for IBS Driven by Stress-related Mental Illness	43,489	3,085,144
Outpatient Attendances Per Year for Women Health Issues Driven by Stress-related Mental Illness	748,958	53,131,047

CHRONIC STRESS:

ARE WE REACHING HEALTH SYSTEM BURN OUT?

NOVEMBER 2019

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