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Mental Health in Commercial Aviation - Depression & Anxiety of Pilots

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Introduction

At regular intervals pilots utilizing their certificates in a commercial capacity undergo medical examinations by designated medical professionals. Vital signs are checked and the pilot's health is evaluated against a set of minimum criteria. With the exception of a few quantitative measures, much of the examination is subjective, the process relying on the pilot's self-reports of ailments or other issues that may be cause of concern for one tasked with piloting an aircraft filled with paying passengers or commercial goods.

Establishing a measure of the pilot's physical health is the primary goal of the medical evaluation process, however, limited inclusions are made to gauge each pilot's mental health as well. A short series of questions to which the applicant must self-report mental health diagnoses and identify visits to medical professionals provide information to examiners in evaluating medical applicants for mental health ailments. This information and the examiner's subjective observations of the applicant are the extent to what is included in the process for obtaining an aviation medical in the United States that might uncover underlying mental illness. With this limited information, the designated medical examiner must decide to issue a medical certificate, refuse to issue, or defer the application to FAA medical staff for follow up.

The process is typically successful. It can be cumbersome, but in the authors' opinion, it is usually effective in screening the health of each applicant, designating each fit or unfit to fly. Improvements, however, could be made if what is currently understood about mental health was better integrated in to the process. The jeopardy of career-altering implications of losing one's medical may result in the reluctance of a pilot to seek help when needed. Even in situations where one's career is not at stake, the arduous process required following the diagnosis of a mental health concern may be enough to dissuade a pilot from seeking help and/or from reporting the receipt of that help on his or her medical application. The result is that pilot mental health challenges may be ignored more often than properly addressed.

Ultimately this dismissal of possible mental health challenges can undermine aviation safety. Many examples of unsafe or even deadly actions by pilots suffering from mental health challenges are available. They include life-threatening or potentially life-threatening events such as those described below. They also include seemingly benign occurrences that, while don't pose an immediate lethal threat to passenger or crew safety, may contribute to errors that ultimately compromise safe operations.

Background

JetBlue Flight 191. 27 March 2012, JetBlue Flight 191, operating from New York's John F. Kennedy Airport to Las Vegas, diverts to Amarillo following disturbing comments and threats made by the aircraft's Captain. Recognizing the Captain's bizarre behavior, the aircraft's First Officer locks him out of the flight deck. In the cabin, the Captain is subdued by passengers. Another off-duty JetBlue pilot assists the First Officer in the uneventful diversion to Amarillo (Fernandez, 2012). Initial reports by the company indicate that the pilot suffered from a panic attack, though mental health professionals suggest that something more complicated likely contributed to the Captain's behavior (Donaldson, 2012).

Malaysia Flight 370. 8 March 2014, Malaysia Flight 370, operating from Kuala Lumpur to Beijing, disappears over the Indian Ocean claiming the lives of 12 crew members and 227 passengers (Australian Transport Safety Bureau [ATSB], 2017). The unsuccessful search for the aircraft continues for more than 1000 days until terminated in January 2017 (ATSB, 2017).

Inexplicably, the search is hampered by the failure or disabling of automatic aircraft reporting systems, the transponder and the aircraft communication addressing and reporting system. Nothing is heard from the aircraft after the first 38 minutes of flight. The small amounts of wreckage recovered during the search lead investigators to suspect that the aircraft was not configured for a water landing or ditching when it came into contact with the ocean (ATSB, 2017). Furthermore, it was not configured in a manner conducive to crew and passenger survival. As a result, investigators concluded that someone was controlling the aircraft at the end of its flight. Information retrieved from the Captain's personal computer indicate that he had made simulated "flights" in a Boeing 777-200LR. These flights included piloting the aircraft into remote areas of the Indian Ocean (Gladstone, 2016).

The revelation of aircraft configuration and the Captain's simulated flights lead some investigators to believe that the accident was calculated suicide, mass-murder carried out by the aircraft's Captain (Gladstone, 2016). Ultimately, however, the Australian Transport Safety Bureau concludes that the reason for the crash cannot be determine with certainty as long as the primary body of wreckage remains undiscovered (ATSB, 2017).

Germanwings Flight 9525. 24 March 2015, Germanwings Flight 9525, operating from Barcelona to Düsseldorf, crashes in the Alps killing all 150 passengers and crew. Leveling at 38,000 feet, the flight crew turned the aircraft toward the waypoint IRMAR in the French Alps (Bureau d'Enquêtes et d'Analyses pour la sécurité de l'aviation civile [BEA], 2016). Following a routine conversation in which the flight crew, joined by a member of the cabin crew, discuss the turn in Barcelona and their subsequent late departure, the Captain and Flight Attendant leave the flight deck, leaving the First Officer in control of the aircraft. Alone on the flight deck, the First Officer selects an altitude of 100 feet on the altitude selector and selects OPEN DES on the guidance panel, commanding the auto throttles to retard to flight idle and the autopilot to pitch downward to maintain airspeed. Despite efforts by the Captain, cabin crew, and air traffic control to reach the First Officer through the flight deck door and via VHF communication, the aircraft continues its descent, impacting terrain at nearly 350 knots (BEA, 2016). All aboard are killed.

As investigators begin to unravel the events preceding the accident, a disturbing revelation is uncovered. The First Officer, flying for Germanwings for less than one year at the time of the accident, had ongoing issues with mental health since 2009. In fact, since 2009, his medical certificate, renewed annually, included a waiver for a severe depressive episode without psychotic symptoms that had occurred in that year. The waiver stated that should the episode reoccur, the First Officer's medical certificate would become invalid. In December, roughly four months prior to the accident, the pilot's depression returned. He sought treatment from several mental health professionals and was given multiple authorizations from doctors permitting him to take time off from his flight duties. Not all of these authorizations were forwarded to Germanwings, nor did the First Officer disclose to his employer or aviation medical examiner that his depression had returned (BEA, 2016).

The accident unleashed a torrent of activity as aviation regulatory agencies around the world sought to better understand the implications of mental health on the flight deck.

Other Incidents with a Mental Health Component. Dangers of adverse mental health and emotion are frequently not catastrophic. Potentially many more are mundane, result in no accident or incident, but have the possibility of affecting safety and contributing to undesirable aircraft states. One of the authors has experienced and heard first hand testimony how seemingly minor symptoms of depression, anxiety, and stress can contribute to reduced awareness and concentration that may undermine safety.

In one instance, the author was second-in-command (SIC) of a flight operating from New York's LaGuardia Airport. The flight's Captain, having recently experienced a trying divorce with his wife of nearly two decades, was fighting with his former spouse in a series of text messages in the minutes leading up to the flight. Receiving a somewhat terse instruction from the ramp controller to have the aircraft pushed from the gate, the Captain relayed the instruction to the ground crew. The aircraft pushed near an adjacent taxiway causing a taxiing aircraft on the taxiway to stop and query the ground controller about the pushing aircraft's movement. The result was a potential taxiway incursion necessitating the filing of an ASAP report. The Captain's possible distraction and potential less-than-desirable mental state by his recent contentious interaction with his ex-wife wasn't the immediate cause of the possible incursion, but it was a potential contributing factor. No damage occurred and no harm was done, but the possible incursion was not desired and might easily have resulted in an incident had the second aircraft not yielded.

In a second instance, the author received testimony from a Captain and former check airman about the difficulty the pilot faced in the months following the loss of a parent. The pilot related how otherwise routine actions in the aircraft became increasingly difficult. He lacked concentration and had increased difficulty hearing and understanding radio transmissions. Additionally, the pilot described having difficulty during an annual proficiency check. In response, the Captain chose to remove himself from the role of check airman. He continued working as a Captain. The adverse condition and emotional state continued for several months. It was not until much later, he related, that he put the two together, resolving that the emotional loss of his parent contributed to his diminished capacity (personal communication, February 12, 2018). Prior to his parent's passing, the two were close, conversing daily and routinely working together. Nothing unfortunate resulted from the Captain's compromised emotional state, but the minor lapse had the potential to be a contributor to an undesirable event should his ability been taxed during this period.

Much has been written about the JetBlue, Malaysia, and Germanwings incidents. The latter two were motivation for regulatory agencies around the world to take a second look at pilot mental health. The bigger issue, however, in the authors' opinions, are the seemingly minor examples provided above. For each catastrophic loss due to mental health challenges there are potentially hundreds of lapses of safety due to adverse pilot emotional states. It is suspected that there is a reluctance by the pilots suffering from these common mental health concerns to seek help in these instances.

Discussion

The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) from the American Psychiatric Association (2013) contains hundreds of mental health challenges that one might experience. The severity of each varies considerably from those that might be treated with cognitive or behavioral therapy and counseling to those requiring medication or institutionalization. The National Institute of Mental Health (NIMH) describes this disparity by defining mental health issues as any mental illness and serious mental illness. Any mental illness is defined as one causing no, mild, moderate, or even severe impairment, while serious mental illness causes severe impairment and substantially interferes with one's normal life functions. Severe mental illness may cause disability due to the illness. This complicates the screening of aviation medical certificate applicants. While disqualifying a pilot suffering from one of the more debilitating disorders may be relatively easy, identifying and screening applicants suffering from mental health challenges that are more commonplace and diagnosed on the subjective decision of

the clinician may be difficult. Two mental health disorders that may be more commonly occurring, their diagnosis more subjective in some cases, are depression and anxiety (NIMH, n.d.c).

Depression. Colloquially referred to as depression, depressive disorders encompass many variants. Each is categorized as a depressive disorder due to common features including "the presence of sad, empty or irritable mood, accompanied by somatic or cognitive changes that significantly affect the individual's capacity to function" (American Psychiatric Association [APA], 2013, p. 155). The variants of depressive disorders are distinguished by duration, timing and causation. They include disorders such as disruptive mood dysregulation disorder, major depressive disorder, persistent depressive disorder, premenstrual depressive disorder, substance / medication-induced depressive disorder, depressive disorder due to another medical condition, other specified depressive disorder and unspecified depressive disorder (APA, 2013).

Central to the depressive disorders is major depressive disorder. Characterized by episodes persisting over a duration of at least two weeks, diagnosis requires definitive changes in "affect, cognition and neurovegetative functions and inter-episode remissions" (APA, 2013, p. 155). It is frequently diagnosed following multiple occurrences and differentiated from normal sadness and grief by the magnitude of the emotion. According to the DSM-5, "major depressive disorder is associated with high mortality, much of which is accounted for by suicide" (APA, 2013, p. 164). Thoughts of suicide may range from occasional beliefs that others would be better off without one to more specific plans of time and place, and placing one's affairs in order or obtaining the means necessary to carry out the act (APA, 2013).

Those suffering from major depressive disorder frequently complain about fatigue and insomnia and many express a "loss of pleasure or interest in nearly all activities" (APA, 2013, p. 163). Concentrating, making decisions, or thinking clearly may be difficult and increased irritability is noted.

According to the APA, the prevalence of major depressive disorder is approximately 7%, with that percentage of the population experiencing the symptoms of the disorder within a rolling 12-month period (2013, p. 165). Adults 18 to 29 years of age are three times more likely to be affected. Additionally, occurrence is 1.5 to three times more likely in females than males. Interestingly, though, the risk of suicide as a result of major depressive disorder is elevated in males, especially those who are single or living alone (APA, 2013). Depression is one of the most common mental illnesses in the United States (National Institute of Mental Health, n.d.a).

Anxiety. Anxiety comes in many forms. Collectively, the forms are referred to as anxiety disorders by the DSM-5. Each form "share features of excessive fear and anxiety and related behavioral disturbances" where fear is a "response to real or perceived imminent threat" and anxiety is the "anticipation of a future threat" (APA, 2013, p. 189). Fear within an anxiety disorder may trigger the flight or fight response while anxiety may result in tension and over vigilance and cautious and avoidance behavior.

Anxiety disorders differ from one another in the triggering mechanism (APA, 2013). They include specific phobias in which one is triggered by a specific thing, situation or event and more generalized anxiety in which an individual may be overwhelmed by many events or activities at once. While all may be detrimental to one's performance, depending on the specific phobia, anxiety may be avoided by limiting one's exposure to the trigger. Generalized anxiety, on the other hand, cannot be thus avoided as otherwise normally occurring events and activities trigger the disorder (APA, 2013). Research indicates that anxiety, regardless of type, can put one at risk for physical health impairment (Anxiety and Depression Association of America, n.d.).

Generalized anxiety disorder is diagnosed as anxiety occurring "more days than not over a six-month period," in which the sufferer faces debilitating worry over a number of events or activities (APA, 2013, p. 222). Symptomatically, those diagnosed with generalized anxiety disorder suffer from three or more of the following conditions: restlessness, becoming easily fatigued, having difficulty concentrating, irritability, muscle tension, and/or sleep disturbance. Worry and anxiety associated with the disorder occurs at a severity to cause impairment in one's behavior in social and occupation settings. The disorder is diagnosed subjectively by the clinician taking into account environmental factors. It is differentiated from normal levels of worry and anxiety by the context and duration of its occurrence. Generalized anxiety disorder impairs one's ability to perform tasks quickly and efficiently (APA, 2013).

According to the APA, 2.9% of the population in the United States suffers from generalized anxiety disorder. The median age of onset is 30 years and females are twice as likely to suffer from the disorder as males. Additionally, data indicates that those of European descent are more likely to exhibit the symptoms of generalized anxiety disorder than those of other origins (APA, 2013, p. 223). Though the exact cause of the disorder is not known, biological factors, family background, and stressful life appear to play a role (Anxiety and Depression Association of America, n.d.).

Either of these mental health concerns, depressive disorders and anxiety disorders, may be severe in nature. Equally, either may be classified as not severe according to the National Institute of Mental Health's definition. Severe cases, those reaching a level that might cause an incident or accident of the magnitude of JetBlue, Malaysia or Germanwings, may be effectively screened by the existing medical certification process. Those not reaching that level of severity are more likely to slip through the medical certification process and may go untreated and undiagnosed, ultimately resulting in more benign safety compromising events.

State of Mental Health

The National Institute of Mental Health classifies the consequences of severity of mental illness as any mental illness and serious mental illness. The definition of each was discussed above. National Institute of Mental Health data estimated that over 18% of the population in the United States suffered from any mental illness in 2016 (n.d.). Adults between the ages of 18 to 25, suffered at the highest rate, over 22%, while those age 50 and over suffered at the lowest rate, less than 15%. The prevalence of any mental illness was higher among women than men with rates of approximately 22% and 15%, respectively (NIMH, n.d.c).

In the same year, approximately 4% of the population suffered from a serious mental illness. The prevalence of serious mental illness according to age and gender is similar to that of any mental illness (NIMH, n.d.c).

Interestingly, of those individuals suffering from any mental illness, less than 45% sought treatment. Those seeking treatment were more likely to be age 50 and older and less likely to be between the ages of 18 to 25. Consequently, the age group most likely to suffer from any mental illness is the least likely to seek treatment. National Institute of Mental Health data also indicates that women suffering from any mental illness are more likely to seek treatment than men suffering from any mental illness. Treatment rates are better for those suffering from serious mental illness. Approximately 64% of those affected by serious mental illness received treatment in 2016 (NIMH, n.d.c).

The apparent lack of treatment of mental health issues appears to represent a considerable opportunity for the improved wellbeing for the population of the United States. Assuming the overall population is also representative of the pilot population, it could also represent an opportunity for improvements in aviation safety and in improvements to the overall health of flight crews.

Mental Health in Aviation

A 2016 survey conducted by researchers from the Harvard T. H. Chan School of Public Health appears to support the notion that the rate of mental health issues within the airline pilot population is similar to that in the general U. S. population. Wu et al. (2016) found that over 12% of the pilots responding to the survey met threshold levels for depression. Additionally, more than 13% of those respondents reporting having worked as a pilot in the preceding 30 days met the same criteria. The anonymous survey was completed by 1837 pilots. More shocking perhaps is that Wu et al. also found that over 4% of the study participants reported having suicidal thoughts within the preceding two weeks (2016).

The internet-based survey utilized Patient Health Questionnaire number 9 (PHQ-9), a self-report tool for diagnosing depression (Wu et al, 2016). PHQ-9 is the depression module of the more in-depth Patient Health Questionnaire (PHQ) (Kroenke, Spitzer, & Williams, 2001). The PHQ-9 is a self-administered version of a Pfizer Pharmaceutical-developed mental health evaluation tool. The PHQ-9 is a reliable and valid means of determine patient depression (Kroenke et al., 2001).

The research has limitations as Wu et al. (2016) readily admit. Participation was encouraged through various avenues and female pilots were targeted. Consequently, the sample's representation of the pilot population is not assured. Wu et al. report that women comprise approximately 4% of the pilot population yet account for nearly 14% of survey participants. Likewise, the voluntary nature of survey completion may have skewed the results. The Wu et al. research places depression and depressive symptoms within the pilot population at higher levels than previously reported.

Conversely, the survey identified trends similar to those found in other high stress occupations. Symptoms related to major depressive disorder and diagnosed major depressive disorder are reported to occur at a prevalence of 12% and 13% for deployed and previously deployed U. S. military personnel, respectively, 7% for emergency medical technicians and up to 17% for police officers. Wu et al. suspect that the results of their survey show higher levels of depression in pilots due to the nature of the measuring instrument, while earlier lower estimates were the result of post-accident investigations and proprietary information that might minimize prevalence (Wu et al., 2016).

The Wu et al. research presents a compelling case that mental health challenges, specifically depression, within the pilot community are aligned with the population in general. This would suggest that greater emphasis might be placed on effective diagnosis and treatment so that these mental health challenges do not go unaddressed and potentially compromise aviation safety. Wu et al. suggest that a more preventative approach be taken toward pilot mental health rather than the current policies of screening, evaluation, and record keeping (2016).

Risk Factors

The causes of depression and anxiety are not well delineated. A medical criterion for determining one's susceptibility for the conditions is not available. Instead mental health professionals point to risk factors that may contribute to one's suffering of these conditions.

The NIMH writes that current research indicates that depression is caused by a combination of genetic, biological, environmental, and psychological factors. These include factors such as personal or family history of depression, significant life changes, trauma and stress, and certain physical illnesses and medication (Depression, n.d.).

Even less is known about the causes of anxiety. The NIMH states that, generalized anxiety disorder "sometimes runs in families, but no one knows for sure why some family members have it while others don't." The organization also points to ongoing research that appears to indicate that certain parts of the brain as well as biological processes may contribute. Research is also being conducted to identify how environmental factors and stress play a role in the development of anxiety disorders (NIMH, n.d.b, para. 1).

In light of the seemingly limited concrete data revealing the causes of anxiety and depression, it is beneficial to identify some of the behavioral recommendations by the National Institute of Mental Health for those suffering from depression. From these recommendations contributing environmental factors can be identified. Interestingly, some of these factors point to conditions that may complicate treatment of the diseases for pilots.

According to the NIMH, those seeking treatment for depression should consider a number of self-help behaviors to help improve recovery. These include such things as being active and participating in regular exercise and spending time with trusted friends and family (Depression, n.d.). The NIMH offers similar recommendations for sufferers of anxiety. "A healthy lifestyle can also help combat anxiety. Make sure to get enough sleep and exercise, eat a healthy diet, and turn to family and friends who you trust for support" (NIMH, n.d.b, para. 8).

The recommendations for both illnesses can be problematic for pilots, potentially complicating recovery. A pilot's schedule may make getting regular exercise a challenge. Likewise, pilots frequently spend long periods in isolation, away from friends and family. This isolation can make getting needed support from trusted loved ones more difficult. Finally, the irregular hours required of many in the aviation profession can make adequate sleep difficult under the best of circumstances, let alone for one suffering from a condition or precondition like anxiety or depression that is at least partially defined by the symptom of irregular sleep patterns and fatigue. Together, the characteristics of a pilot's life may make effective treatment for depression and anxiety more difficult. Additionally, these lifestyle conditions may contribute to the prevalence of these mental health challenges within the pilot population.

Challenges

Depression and mental illness represent a significant expense to all businesses. According to the American Psychiatric Association Center for Workplace Mental Health, the annual cost due to depression to businesses in the United States is $44 billion dollars (2018). This is a result of low productivity, absenteeism, and presenteeism. One study found that depressed workers had significantly more lost productivity time than those workers who were not depressed (Steward, Ricci, Chee, Hahn & Morganstein, 2013). Steward et al. concluded that these costs are often overlooked as depression is infrequently diagnosed and yet prevalent in the workforce (2013). This

revelation is especially troubling to those in the aviation industry as it relates to flight crews because presenteeism introduces the opportunity for serious lapses in safety.

Presenteeism, in short, is defined as showing up for work when one is ill (Garrow, 2016). According to Garrow, research indicates an increased risk of hazards to others due to mistakes and potentially the escalation of illness leading to longer absences when one chooses to work when not feeling well - physically or mentally (2016). This is especially true for those with mental illnesses as they report working less carefully than those not suffering from a mental illness (Garrow, 2016). In the case of a flight crew member, or someone employed in a role with similar responsibilities, this can potentially contribute to a dangerous outcome or reduced margin of safety. Interestingly, even mild to moderate levels of depression contributed to poorer occupational performance (Garrow, 2016). Smith echoes these concerns, calling mental illness one of the "main issues" (2016) of presenteeism, writing that these illnesses affect sleep patterns, contribute to fatigue, and overall decreases in concentration and performance. This should be a wakeup call to the industry. Pilots suffering from even mild levels of depression and anxiety do not perform as well as those who are not, and yet, are unlikely to seek assistance for their illness.

Depression and anxiety are a challenge for individual suffers as well. A stigma against the acknowledgement of mental illness exists. According to Smith there is a reluctance to admit to needing help with depression and anxiety for fear of being seen as a failure (2016). The stigma surrounding mental illness appears to be primarily due to a misunderstanding of the mentally ill. The mentally ill are frequently erroneously portrayed in the media as violent and dangerous (Mental Health Foundation, n.d.). Recent headlines confirm this stereotype and stigma. On March 31, the USA Today published a front-page story announcing, "Authorities found that 64% of mass-attack suspects had symptoms of mental illness" (Johnson, 2018). While that may be the case, it is certainly not a good representation of those suffering from mental health challenges. It's misleading in that the article makes little attempt to better define mental illness and consequently equates mental illness with dangerous criminals.

Those with mental illness are described as unstable and unable to live normal lives (Mental Health Foundation, n.d.). This is not the case, however, as most sufferers of mental health challenges who seek treatment are able to live full and health lives. Additionally, those suffering from mental illness are described as being hard to talk to. It is also sometimes thought that mental illness is self-inflicted and that those who suffer do so purposefully (Davey, 2013). Regardless of reason, the mental health stigma exists. It contributes to the cost of mental illness described above and to the low treatment rate. For flight crews, the mental health stigma is an even greater hurdle.

Pilots tend to be an accomplished, self-reliant group. The romantic notion of pilots facing inclement weather and mechanical difficulties without so much as a second thought abounds. The Federal Aviation Administration seems to acknowledge this believe in its five hazardous attitudes that all student pilots learn. Pilots may be prone to hazardous attitudes. The third and fourth hazardous attitudes are invulnerability and macho, respectively (Pilot's Handbook of Aeronautical Knowledge, 2016). "It won't happen to me" and "I can do it" are the catch phrases for these attitudes. Unfortunately, mental illness, depression and anxiety, can and do happen to pilots. Like the rest of the population, pilots are reluctant to seek help.

In addition to the mental health stigma, flight crews may be equally reluctant to seek help due to an unwillingness to complicate their medical certification process. Visits to health professionals must be self-disclosed on the aviation medical certification application. Questions specific to mental health must be answered. One question asks if the applicant has ever been diagnosed with or presently has "mental disorders of any kind' depression, anxiety, etc." Should

the applicant respond in the affirmative, the Guide for Aviation Medical Examiners stipulates that the issuance of a medical certificate should be deferred and the examiner's finding be reported to the FAA (2018). In some cases, the applicant is ultimately granted a medical certificate, but this blanket response to any affirmative response to a mental health concern or diagnosis is likely to make any professional pilot think twice before seeking help with depression or anxiety or any other mental illness for that matter. The perceived risk of disrupting or ending one's career is potentially too great for one to seek needed assistance.

Even in cases where the pilot's concern may not be depression or anxiety, seeking mental health help has a potential risk to his or her medical certificate. Even treatment without the use of narcotics can be problematic. In some cases, one's medical insurance may not cover visits to a behavioral therapist or counsellor unless a diagnosis of mental illness is made. Sometimes, a benign diagnosis of Adjustment Disorder is made in cases where something more serious is not discovered simply to satisfy the insurance requirement (J. Williams, LISW, personal communication, January 12, 2018). Unfortunately, even this harmless diagnosis requires a deferral and subsequent follow up by the FAA for medical certificate issuance though ultimately, the pilot is likely to receive the desired medical (FAA, 2018).

The conditions identified above contribute to the creation of an environment in which mental health negatively affects aviation safety. Mental health issues, depression and anxiety, are commonplace. Some may be severe enough to result in catastrophic loss while more contribute to diminished decision making and poor performance. As a society, help for mental health concerns is largely not sought due to cultural stigma. Pilots may be even less likely to seek help due to personality traits and the perceived and real risk of difficulty completing the medical certification process. Pilot lifestyle may complicate treatment for depression and anxiety. Considered together, these factors point to an opportunity for changes to significantly improve aviation safety.

Pilot Mental Health Initiatives

With renewed emphasis on pilot mental health following the Germanwings accident, the International Civil Aviation Organization (ICAO) and the FAA revisited recommendations to ensure safety. The FAA did so through the establishment of the Pilot Fitness Aviation Rulemaking Committee in May 2015.

The Committee was tasked by the FAA to answer questions surrounding the issue of pilot mental health and provide recommendations for reducing associated risks. The issues examined by the committee included such things as changes to emotional and mental health awareness, safety risks due to mental health challenges, methods of mental health evaluation, and reporting methods and barriers to reporting mental health challenges (FAA, 2015). In each case, the committee was asked to provide specific recommendations that might improve aviation safety.

ICAO and FAA initiatives were supported by independent organizations also seeking answers into pilot mental fitness. The most notable of these reports coming from the Aerospace Medical Association, a group of aviation medical professionals dedicated to industry safety and human performance and having expertise in the field of psychology. Reviewing the Germanwings accident the Association updated recommendations originally presented after the JetBlue incident (Aerospace Medical Association, 2015). Mental fitness to fly should be part of the existing aviation medical assessment process with additional emphasis on common and less severe mental illnesses including stress, depression, and anxiety (Aerospace Medical Association, 2015). This assessment by the medical examiner would be improved with additional guidance from the regulating agency,

the FAA, or other appropriate agency. The Association also advocated for measures to improve rapport between pilot and medical examiner through lifestyle questions about stress, mood, and sleep and through the acknowledgment of stigmas and cultural barriers present with mental health issues (Aerospace Medical Association, 2015). Equally important, the group found that pilots, their families, and labor organizations need to be better educated about the prevalence of and possible safety complications due to pilot mental illness (Aerospace Medical Association, 2015). Finally, the Association recommended research and the establishment of clear guidelines and regulation for medical professionals, outlining cases in which obligations to report mental illness to aviation regulatory bodies supersedes patient confidentiality rights (Aerospace Medical Association, 2015).

It is interesting to note, however, that lacking from the Association's recommendations was a call for regular psychiatric evaluation of pilots. Serious mental illness, the Association reported, is rare and not easily predicted, making full psychiatric evaluations prohibitively expensive for those already working as pilots. Evaluations for pilots entering the ranks of the airline industry were not ruled out, however (Aerospace Medical Association, 2015).

Joining the Aerospace Medical Association in its advocacy of addressing mental health in aviation, the European Society of Aerospace Medicine, the European Association for Aviation Psychology, and the European Cockpit Association issued a joint statement supporting the former group's recommendations. The European groups reiterated many of the same recommendations. They also, however, present the idea that, "Just Culture" principles might be extended to pilot mental health (European Society of Aerospace Medicine, European Association for Aviation Psychology and European Cockpit Association, n.d.). These principles might encourage open and honest dialog between pilots, labor organizations and employers without fear of retaliation and unnecessary job loss.

Regulatory Recommendations. In November 2015, the Pilot Fitness Aviation Rulemaking Committee, commissioned by the FAA earlier that year, released its final report. The Committee's recommendations mirrored those of the Aerospace Medical Association, the European Society of Aerospace Medicine, the European Association for Aviation Psychology and the European Cockpit Association. The report included the following specific recommendations:

1. The Federal Aviation Administration (FAA) should ensure all Aviation Medical Examiners (AME) demonstrate knowledge in assessing basic mental health concerns, and enhance AME training on this topic.
2. The ARC does not recommend mandating formal psychological testing during the pilot hiring process nor as part of routine FAA aviation medical examinations beyond those which already exist.
3. Air carriers should develop effective pilot assistance programs.
4. Air carrier operators should be encouraged to implement mental health education programs for pilots and supervisors that improve awareness and recognition of mental health issues, reduce stigmas, and promote available resources to assist with resolving mental health problems.
5. The FAA should assemble and disseminate information on benchmark pilot support programs, which includes pilot assistance programs, to serve as a resource for air carriers to develop new or improve existing programs.
6. Encourage advocacy for a uniform national policy on mandatory reporting of medical issues that affect public safety.

7. The ARC recommends no changes to the guidance found in FAA Order 8900.1, "Procedures for Opening, Closing, and Locking Flight Deck Doors" concerning two persons on the flightdeck and flightdeck access.

8. The ARC believes existing aircraft and flightdeck door design standards are adequate and no changes are required by the FAA. (FAA, 2015, pp. 2-4)

Furthermore, the Committee stressed the importance of utilizing the existing safety management system (SMS) framework to reduce the risks of mental illness on the flight deck (FAA, 2015). Using SMS, the Committee envisioned an environment in which pilots might self-report mental illness concerns, receive treatment and return to the cockpit in a timely fashion.

The FAA responded quickly to the Committee's report, announcing in June 2016, that each of the recommendations had be considered and implementation was underway. Then FAA Director Michael Huerta summed up the agency's commitment to combating the dangers of mental health issues in aviation stating, "We need to do more to remove the stigma surrounding mental illness in the aviation industry so pilots are more likely to self-report, get treatment and return to work" (FAA, 2016, para. 4).

Conclusion

Two years have passed since the Committee issued its report and the FAA responded with its recommendations. As with many actions undertaken by bureaucracies of the magnitude of the FAA and the aviation industry, visible change develops slowly. The medical certification process has not appreciably changed with regard to mental health. What has appeared to change is an emphasis by airlines and labor organizations to address the mental health needs of their employees and members.

Two major airlines, American Airlines and Delta Air Lines, are featured in case studies written by the Center for Workplace Mental Health, a division of the American Psychiatric Association Foundation, for their industry-leading approaches to addressing employee mental health. To a lesser, but still visible degree, one author's employer, a regional carrier, promotes its employee assistance program to new hires during initial training and to all flight crew members during annual fatigue training. The emphasis of this program, however, is on the potential symptoms of mental health challenges, fatigue and substance abuse, and not directly on mental illness. Mental health concerns are addressed, however, as potential challenges that might negatively impact one's work. Unfortunately, these organization-wide employee assistance plans may not be optimized to the unique needs of a pilot group, especially in regard to the medical certification process.

With that concern in mind, some labor organizations have support programs in place to help their members with mental health concerns. The International Federation of Airline Pilots' Associations in its position statement on pilot assistance programs supports the development of these programs within their organization members. They recommend that pilot organizations develop a "holistic approach" to their member's wellbeing, medical certification complications and personal stressors (Pilot Assistance Programs, 2017). Those professional pilot associations with the largest memberships appear to be leading the pack in this regard.

The Air Line Pilots Association; representing Delta Air Lines, United Airlines, and several regional and low cost carriers; the Southwest Airlines Pilots Association and the National Air Traffic Controllers Association contract with a private company, the Aviation Medicine Advisory Service, to provide no and low-cost medical assistance to their members. This company offers confidential assistance to address needs of depression and other physical and mental health concerns (Aviation Medicine Advisory Service, n.d.). Likewise, the pilot groups from individual airlines have established programs to provide support for their members. Delta pilots have access to a Pilots Assistance Network; American pilots, Project Wingman; and FedEx pilots, the Pilot Assistance Team Helpline (Synder, 2016). The ultimate success of these programs according to Snyder is education and confidentiality (2016). Only with those components can initiatives to stem the threat of mental health challenges reach their full potential.

Recommendations

Despite improvements in recent years, mental health remains a threat to aviation safety. As an industry, the airlines, pilot groups and regulators are developing programs to help reduce this threat. Education, awareness and efforts to reduce the stigma of mental health are beneficial. Greater success, however, will require changes beyond the industry. Only as society in general embraces mental health as an important component of overall wellness will pilots and others readily seek help when it is needed.

Preventative medicine and healthy lifestyle choices have become a staple of contemporary wellness. Annual physicals and wellness visits are encouraged for good physical health. Our collective health might improve even more if the same approach was taken with mental health. Annual visits to a mental health professional for a checkup would potentially have a significant positive impact on one's overall health. We might be encouraged to make such visits if major health insurance plans included provisions for such mental health visits. An open dialog about one's mental health would have a profoundly positive affection on one's overall health. Only with the acceptance of mental health as an equally important component of wellness will further progress be made on this front. Additional study of this topic is needed to solidify the relationships between mental and physical health and potential lapses in aviation safety.

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