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## Social Networks, Asthma and Much More...

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The enormous number of people who use the Internet worldwide (an estimated 2 billion people) [1] and their increasing daily contact with social networks raises concerns about possible effects on physical and psychological health, with numerous recent studies focusing on the effects of social networks on psychophysical health [2-10].

Bronchial asthma is an increasingly common disease in the industrialized world, and psychological factors have been seen to play a role in increasing or reducing its severity [4].

The increased prevalence of asthma observed in developed countries at the end of the last century has raised concerns about the burden of this disease on society and individuals. Up to 37% of teenagers, for instance, are affected by asthma symptoms, making it one of the most common chronic diseases in childhood [2].

One of the main questions about the effects of social networks on psychophysical health is whether or not these represent a new source of psychological stress or a way to enhance self-esteem. The relationship between social network use and psychophysical health remains controversial, and research in this area raises numerous challenges. Social networking sites are designed to share information about oneself with others, including likes/dislikes, hobbies, and personal thoughts. While on the one hand, this information could make people aware of their limitations and shortcomings, possibly lowering self-esteem, on the other, it could represent

selective and, therefore, positively biased aspects of the self, which could raise self-esteem [3,4].

Several studies and expert opinions have suggested that use of social media in general might have a beneficial effect on children and adolescents by enhancing communication, social connection, and even technical skills [5].

However, Internet use may also promote negative psychosocial well-being [6], including depression and loneliness. Researchers recently proposed a new type of depression, termed *Facebook depression*, which develops when preteens and teens start to experience symptoms of depression after spending long periods on social media sites. Teens and young adults with Facebook depression are at risk of social isolation and may seek online help, possibly leading to substance abuse, unsafe sexual practices, or aggressive or self-destructive behaviors.

Social media sites are also increasingly being used as online venues for the exchange of health-related information and advice. Nearly 60% of American adults and 80% of Internet users have sought health information online [7].

From a public health point of view, social networks are already showing potential benefits in terms of driving health care system reforms and improving patient networking. Some studies have demonstrated the effectiveness of social networks in disseminating public health messages, such as food safety, sex education, and general health [8].

The potential of social networks for health research is relevant to both researchers and participants. A systematic review of published research articles focusing on the use of social networks for youth health research [3-5, 7,8] revealed numerous advantages, namely ease of access to youth, ease of intervention, cost effectiveness in recruitment, and reliable screening venue of mental status and high-risk behaviors. Therefore social networks may become a valuable platform for accessing, recruiting, and delivering health interventions in a cost-effective manner to youth populations as well as hard-to-reach minorities or underserved populations.

In 2010, we reported the first case of asthma exacerbation possibly triggered by the use of Facebook in which a young boy experienced asthma symptoms when connected to the personal profile of his former girlfriend [9]. We concluded that social networks in general could be a new source of psychological stress and trigger exacerbations in depressed asthmatic individuals, and suggest that triggers of this type be considered in the assessment of asthma exacerbations. The underlying hypothesis is that stressful life events may alter the psychological, immunological, and endocrine systems via mechanisms that are still largely unknown.

The association between psychological disorders and asthma has been observed in several epidemiological studies, particularly with respect to anxiety and depression [10]. In the context of social networks, a virtual emotional stressor might trigger an asthma exacerbation, especially in an individual with poorly controlled asthma because of a concurrent depressive state, as in the case we reported [9]. In clinical practice, asthmatic patients, and younger patients in particular, should undergo a thorough psychological evaluation, with consideration of potential virtual stressors. While the effect of social networks on asthma and on health in general cannot be considered exclusively negative, most of the data currently

available suggest that certain aspects could act as psychological triggers for some diseases, including asthma. However, the potential positive effects of social networks on self-esteem should not be ignored.

Social network interactions may also have a role in asthma management. Care for asthma patients has shifted from physician-managed care to guided self-management in recent years. However, the effectiveness of written self-management plans and symptom diaries may be hampered by false reports, recall bias, and by both patient and doctor reluctance. Nonetheless, several studies have recently shown that a web-based self-management system for asthma is well tolerated and feasible and is as effective as and has similar costs to traditional management systems.

The role of the social media in the medical and health care sectors, including asthma, is far reaching, and many questions remain unanswered in terms of governance, ethics, professionalism, privacy, confidentiality, and information quality. Future research is required to understand the synergies between social media and evidence-based practice, and it is also necessary to develop institutional policies that benefit patients, clinicians, public health practitioners, and industry alike.

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#### Conflicts of Interest

The authors declare that they have no conflicts of interest.

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#### Icatibant Exposure During Pregnancy in a Patient With Hereditary Angioedema

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**Key words:** Icatibant. Pregnancy. Hereditary angioedema. C1-inhibitor deficiency. Bradykinin B2 receptor antagonist.

**Palabras clave:** Icatibant. Embarazo. Angioedema hereditario. Deficiencia de C1 inhibidor. Antagonistas del receptor B2 de la bradicinina.

During pregnancy, women with angioedema due to hereditary deficiency of C1 inhibitor (C1-INH-HAE) type I/II can experience changes in the frequency and location of acute attacks. A number of case series have reported an overall increase in the mean rate of attacks during pregnancy, although individual patients actually experienced a decrease or no change in frequency [1-4]. The most common location of attacks during pregnancy is the abdomen, which accounts for a higher proportion of attacks than in nonpregnant patients with C1-INH-HAE [3,4]. Although rare, laryngeal attacks do occur during pregnancy and, due to the potential for airway obstruction, they can be life-threatening [4].

The only therapeutic option currently available for pregnant women with C1-INH-HAE type I/II is plasma-derived C1 esterase inhibitor (pdC1-INH) concentrate, and its use in this setting is supported by substantial retrospective and observational data [4,5].

Icatibant is a bradykinin B2 receptor antagonist indicated for the treatment of acute angioedema attacks in adults with C1-INH-HAE [6,7]. There are no clinical data on the use of icatibant during pregnancy in humans, and as such, this drug should be used only if the benefit to the patient outweighs any potential risk to the fetus. The case reported here corresponds to a patient enrolled in the Icatibant Outcome Survey (IOS; Shire, Zug, Switzerland [NCT01034969]), an international observational study that monitors the safety and effectiveness of icatibant treatment. IOS is conducted in accordance with the Declaration of Helsinki and the International Conference on Harmonisation Good Clinical Practice, and approval was obtained from the ethics committees at all participating centers. This is the first case report of the use of icatibant during pregnancy to treat an attack of C1-INH-HAE.

A 31-year-old woman with C1-INH-HAE type I self-treated an angioedema attack with icatibant during pregnancy. The patient had been diagnosed with C1-INH-HAE type I at the age of 20 years based on a positive family history, clinical manifestations of cutaneous angioedema since the age of 16, and laboratory analyses showing low functional and antigenic levels of plasma C1-INH (C1-INH concentration <10%, functional C1-INH 13%, and C4 concentration 12% of normal values). The patient experienced very few angioedema attacks before her first pregnancy (approximately 1 cutaneous attack