Titrating Tobacco Treatment Medications Using Total Nicotine Equivalents and Expired Breath Carbon Monoxide: A Path to Increasing Quit Rates and Medical Revenues

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ABSTRACT

Abbreviations: TNE: Total Nicotine Equivalents; EtCO: Expired Breath Carbon Monoxide; NRT: Nicotine Replacement Therapies

Introduction

Smoking remains a persistent global public health problem, contributing significantly to preventable deaths and chronic illnesses. The addictive nature of nicotine makes quitting tobacco a formidable challenge for many individuals.While various tobacco treatment medications have been developed over the years, their effectiveness can vary greatly from person to person. Tailoring tobacco treatment therapy to individual needs is key to increasing quit rates. One promising strategy is the titration of tobacco treatment medications using Total Nicotine Equivalents (TNE) and monitoring of expired breath Carbon Monoxide (EtCO) levels. This article explores the concept of titration in tobacco treatment, exploring the significance of TNE and EtCO measurements, and discusses their implications for tobacco treatment with the goal of enhancing quit rates [1-5].

The Challenge of Treating Tobacco Addiction

Quitting smoking is a complex journey often marked by relapses and withdrawal symptoms. Nicotine, the primary addictive component in tobacco, has a powerful influence on the brain›s reward pathways, making the process of quitting challenging. Smokers and other tobacco users who attempt to quit may experience intense cravings, mood swings, and physical discomfort, which can lead to relapse if not adequately managed. Tobacco treatment medications, such as nicotine replacement therapies (NRTs) and prescription medications like varenicline (Chantix) and bupropion (Zyban), have been developed to aid individuals in their quest to quit smoking. However, these medications should not have a one-size-fits-all approach. Factors such as an individual›s nicotine addiction severity, tobacco use habits, and physiological responses to treatment can

significantly impact their success in quitting. This is where the concept of titration comes into play [6,7].

Understanding Total Nicotine Equivalents (TNE)

Total Nicotine Equivalents (TNE) is a novel approach to comprehending and addressing nicotine addiction. Unlike traditional assessments that focus solely on cigarette consumption, TNE biochemically measures all sources of nicotine intake, including cigarettes, e-cigarettes, and various forms of NRTs. By quantifying TNE, healthcare providers gain a more comprehensive understanding of an individual›s nicotine exposure and addiction level, allowing for the personalization of treatment plans [8-11].

The Calculation TNE Involves the Consideration of Several Factors:

A. Nicotine content in cigarettes or other tobacco products: Different tobacco products contain varying levels of nicotine.

B. Nicotine intake from other sources: Individuals attempting to stop tobacco often use NRTs like nicotine gum, patches, or lozenges. Additionally, some may resort to vaping as an alternative nicotine source. All these sources contribute to TNE.

C. Individual use patterns: Factors such as the number of cigarettes smoked per day, number of puffs, and depth of inhalation, type of e-cigarette vaped and type of nicotine liquid and whether the liquid contains nicotine salts, and any other tobacco product use all play a role in determining TNE.

D. In-office TNE assays: TNE can now be assessed in the medical office in 20 minutes using the power of your smartphone. TNE assessment is reimbursed by third-party payors and private insurance companies, providing sustainable revenues.

Personalized Treatment Through TNE

Titrating Tobacco Treatment Medications Based on TNE Offers Several Advantages in The Effort to Quit Tobacco:

A. Tailored Approach: Calculating TNE allows healthcare providers to gauge the level of nicotine addiction accurately. Armed with this information, they can personalize the treatment approach, determining whether higher doses of NRTs or other medications are necessary.

B. Optimizing NRTs: For individuals using NRTs, TNE can help ensure they receive the appropriate dosage. Some individuals may require higher doses to effectively manage withdrawal symptoms, while others may do well with lower doses.

C. Transition Planning: TNE can guide healthcare providers in creating a gradual transition plan for tobacco-using patients who wish to quit using e-cigarettes or other harm reduction methods. This ensures a safer and more effective path to quitting.

D. Realistic Goal Setting: Understanding TNE enables both healthcare providers and patients to set realistic goals for reducing nicotine intake over time. This gradual reduction can increase the likelihood of successful quitting.

Monitoring Progress with Expired Breath Carbon Monoxide (CO) Levels

Expired breath Carbon Monoxide (CO) measurements play a useful role in assessing a smoker›s progress towards quitting. CO is a toxic gas found in cigarette smoke, and its presence in the breath indicates recent tobacco use. Monitoring CO levels provides an objective and non-invasive way to track a patient›s smoking status throughout their quitting journey. When an individual quits smoking, their expired breath CO levels gradually decrease over time. This reduction serves as a tangible indicator of progress, motivating individuals to remain smoke-free. By regularly assessing expired breath CO levels, healthcare providers can gauge the effectiveness of treatment and make necessary adjustments to the patient›s therapy plan [12-15].

The Role of Expired Breath CO Measurements

A. Objective Feedback: Expired breath CO measurements provide healthcare providers and patients with objective feedback on smoking status. This objectivity helps individuals stay accountable to their progress and encourages them to adhere to their quit plan.

B. Motivation: Seeing a decline in CO levels can serve as a powerful motivator for individuals attempting to quit. It offers tangible evidence of the benefits of quitting, such as improved oxygenation and reduced health risks.

C. Timely Adjustments: If a patient›s CO levels remain elevated despite their quit attempts, healthcare providers can use this information to adjust the treatment plan promptly. This may involve modifying the medication dosage, providing additional counseling, or exploring alternative treatment options.

D. Long-term Success: Regular CO monitoring doesn›t just measure short- term success but can contribute to long-term smoking cessation. Individuals who continue to track their CO levels after quitting are more likely to remain committed to a smoke-free lifestyle.

Combining TNE and Expired Breath CO Monitoring

The integration of TNE and expired breath CO measurements into tobacco treatment programs can have a profound impact on quit rates. This combined approach maximizes the benefits of both personalized treatment and objective progress tracking.

A. Personalized Treatment Plans: The calculation of TNE enables healthcare providers to develop personalized treatment

plans that address everyone's unique nicotine addiction severity. Patients receive tailored guidance on the choice and dosage of smoking cessation medications.

B.   Objective Monitoring: Expired breath CO measurements provide an objective means of tracking progress with combustible traditional cigarettes. Patients can see the direct correlation between their efforts and the reduction in CO levels, which can enhance their motivation to stay smoke-free.

C.   Adaptability: The combination of TNE and CO monitoring allows for the timely adjustment of treatment strategies. If a patient›s TNE and CO levels remain inappropriately high or low, healthcare providers can modify the treatment plan to better address their needs, increasing the likelihood of successful quitting.

D.   Enhanced Quit Rates: Ultimately, the synergy between TNE and CO monitoring can lead to higher quit rates. When tobacco using patients receive personalized treatment and see tangible evidence of their progress, they are more likely to remain committed to quitting [16-18].

Conclusion

Titrating tobacco treatment medications using Total Nicotine Equivalents (TNE) and monitoring expired breath Carbon Monoxide (EtCO) levels represents a promising strategy for increasing quit rates among smokers. This personalized and objective approach allows healthcare providers to tailor treatment plans to individual needs, providing a more effective path to smoking cessation. As we continue to combat the global tobacco epidemic, integrating TNE and EtCO measurements into tobacco treatment programs can help save lives and reduce the devastating health consequences of smoking. Empowering individuals with the tools and knowledge to quit successfully is a vital step towards a tobacco-free future. We encourage clinicians to visit IntelliQuit.org or email matt@IntelliQuit. org IntelliQuit – Custom Fit the Quit provides consultation services to medical centers and health care providers. Treating patients' tobacco addiction, generates sustainable revenues while improving population health and increasing quit rates. IntelliQuit will show you how.

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