High-Dose Nicotine Patch Therapy and Combination Nicotine Replacement Therapy

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High-Dose Nicotine Patch Therapy (NPT)

What is "High-Dose" Nicotine Patch Therapy (NPT)?

- High-dose NPT involves using multiple nicotine patches to individualize and maximize the level of nicotine replacement, providing a constant concentration in the body, to improve control of withdrawal symptoms.

What is the rationale for High-Dose NPT?

- Many patients are underdosed at standard nicotine patch doses. The rationale for high-dose NPT is to provide more complete replacement of blood nicotine levels to control withdrawal symptoms during early cessation of cigarette smoking (Benowitz et al, 1998).
- Individualizing the nicotine patch dose is warranted because of the baseline intra-individual variability in nicotine and cotinine concentrations among smokers who smoke a similar number of cigarettes per day (Sachs & Benowitz, 1996).
- At standard doses, none of the current NRT formulations achieve nicotine levels like those seen during typical smoking and tolerability as high as 63mg of nicotine has been demonstrated (Zevin 1998).

What is the effectiveness of High-Dose NPT?

- High-dose NPT has been shown to be safe and well tolerated in patients who smoke more than 20 cigarettes per day (Dale et al, 1995; Fredrickson et al, 1995).
- High-dose NPT may be particularly appropriate and helpful for heavy smokers who have failed single-dose patch therapy (Dale et al, 1995; Hughes, 1995).
- Clinical trials examining the efficacy of high-dose patch therapy have produced mixed results (Fiore et al, 2000; Jorenby et al, 1995; Tonnesen et al, 1999). Although modest to substantial benefits with nicotine patch increases up to 25mg and 44mg, respectively, have been reported, other published data indicate no incremental benefit with doses between 21 to 42mg.

What are the dosing guidelines for High-Dose NPT?

- Hurt et al (2003) have developed guidelines for implementing and tailoring high-dose NPT. (Would suggest including abbreviated dosing guidelines here or in an appendix to this document or listing a website where the guidelines can be found for reference. – This statement as written doesn't answer the question it asks i.e. what are the dosing guidelines for high-dose NPT?)

What cautions need to be taken when considering use of High-Dose NPT?

- Higher doses of nicotine patch can increase the production of and response to nitric oxide in the bypass grafts in patients who have had coronary artery bypass surgery, producing vasodilation (Clouse et al, 2000). High dose NPT should be used with caution in pregnant women, in patients with coronary artery disease within two weeks post MI, and those with serious or worsening angina pectoris.

Bottom line: While there is a clear rationale for high-dose NPT, evidence for its efficacy has been mixed. If a provider and health care facility choose to use it, the most appropriate patients for high-dose NPT are heavy smokers who have already failed approved first-line therapies.

Combination Nicotine Replacement Therapy (CNRT)

What is Combination Nicotine Replacement Therapy (CNRT)?

- CNRT involves the use of nicotine patches to provide a constant concentration of nicotine in combination with another faster-acting form of NRT (gum, lozenges, inhaler, or nasal spray) to relieve breakthrough cravings and withdrawal symptoms.

What is the rationale for CNRT?

- The rationale for combination NRT is that smokers may need the combination of a slow delivery system to achieve a constant concentration of nicotine to relieve cravings and nicotine withdrawal symptoms and a faster-acting preparation that can relieve breakthrough cravings and withdrawal symptoms.

What is the effectiveness of CNRT?

- The empirical support for combination NRT is much more extensive and appears to be of greater benefit than that for high-dose NPT (Silagy et al, 2002). Four of the five published studies that have examined the efficacy of combination NRT have tested the combination of nicotine patches and nicotine gum and found that this combination provides incremental efficacy compared with either product alone. Although less information is available on other CNRT, the combination of the nicotine patch and nasal spray has also shown clinical benefit in increasing long term abstinence rates over a single form of NRT (Blondal 1999). At this time, no published study has tested the efficacy of other NRT combinations.
- The PHS clinical practice guidelines (Fiore et al, 2000) issued a B level of support for some NRT combinations, including (name which ones). This level of endorsement implies that evidence for such use is suggestive but not definitive. The guidelines indicate that patients should be encouraged to use combination NRT if they are unable to quit using a single type of first-line pharmacotherapy.
- Clinical trials examining the efficacy of high-dose NPT have produced conflicting results, supporting the notion that the improved success produced by combination nicotine medications may depend on the use of two distinct delivery systems: a steady-state delivery system and a self-administered, faster acting system. However, it is unclear whether the apparent superiority of combination therapy is due to the sensory effects provided by multiple types of delivery systems, to a greater percentage of nicotine substitution resulting from the higher blood nicotine concentrations, to the additional acute blood concentration increases provided by the faster-acting formulation, or to some combination of these and other factors.

What are the dosing guidelines for CNRT?

- Specific guidance regarding dosing of CNRT remains to be clarified, for example, the recommended number of pieces of nicotine gum while also wearing the patch. Empirically-based dose instructions for combination NRT need to be developed to maximize the benefits and minimize the risks.
- Experts have suggested the following dosing guidelines (currently not included in product labeling): Dose the patch as described. Prescribe any of the other NRT products on an as needed basis when acute withdrawal symptoms and urges to use tobacco occur. Adjust dose of patch if frequent use of other NRT: goal is to minimize need for active dosing.

What cautions need to be taken when considering use of CNRT?

- Combination NRT should be used with caution with pregnant women and individuals with cardiovascular disease within two weeks post-MI, or with serious or worsening angina pectoris.

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