

The Use of Methylcobolamin (B12) Injections to Support Methylation Problems in Autistic-Spectrum Children

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Methylation is a vital biochemical reaction in the body that supports the cardiovascular, hormone, immune, and detoxification systems, DNA/RNA structure and function, and other key metabolic systems. There are some very effective therapies that support this reaction namely methylcobolamin (injection, oral, sublingual), as well as other methylating supplements such as DMG and TMG. However, according to James Neubrandner, M.D. the pioneer in methylcobolamin therapy, the subcutaneous injection route is the most effective.

The most commonly studied and referenced chemical reactions in this methylation system are re-methylation and trans-sulfuration.

- **Re-Methylation (or methylation)** - this pathway involves the conversion of homocysteine to methionine. Production of methionine, an amino acid, is the rate-limiting step for the conversion of other necessary proteins that affect the heart and blood vessels, muscle tissue, immune and nervous systems. The conversion of homocysteine to methionine can occur by direct transference of a methyl (CH₃) group from methylcobalamin (B12) or betaine (trimethylglycine or TMG).
- Homocysteine sits at a junction of two different biochemical reactions. Because of its position in this biochemical matrix it has the capacity to impact all methylation and sulfur group transference processes in the body. The most recognized impact of homocysteine is increased risk for cardiovascular disease. However, in children with autism a faulty methylation system affects other functions as well particularly cognitive function including concentration, attention, and language.
- **Trans-Sulfuration** - this pathway involves degrading homocysteine to two different amino acids - taurine and cysteine. Taurine is most commonly known for cardiac support and liver support, detoxification, bile acid formation and cholesterol excretion. Cysteine has direct influence on glutathione production. Glutathione is a potent anti-oxidant and has protective effects against DNA/RNA damage, as well as being involved in heavy metal and chemical detoxification and immune function. Many children on the autistic-spectrum have dysfunctions with regards to taurine and cysteine production.

There are many intermediary steps involved in these two important biochemical reactions. What is important is to keep the big picture in mind when referencing these pathways. Envision a wheel that is constantly spinning in a clockwise direction. Homocysteine is at 6 o'clock and Methionine is at 12 o'clock. The goal is to get from 6 o'clock to 12 o'clock and then from 12 o'clock to 6 o'clock. Certain other chemicals will impact this wheel at specific points. If any one of these intermediary steps is blocked then the wheel slows down causing biochemical imbalance. This causes a backlog of chemical information that has deleterious effects on other dependent systems, ie. immune, hormone, detoxification, and DNA structure and function.

Methylcobolamin (MB-12), Folic Acid, and Betaine (TMG) are responsible for taking homocysteine from 6 o'clock to methionine at 12 o'clock. SAME (s-adenosylmethionine) the body's "universal methyl donor" helps take methionine from 12 o'clock to homocysteine at 6 o'clock. Along the way other important chemicals are being spun off in different directions to support the many dependent biochemical reactions which are required by the immune, cardiovascular, hormone, and detoxification systems.

The problem with many autistic-children is that this system does not operate properly. This has an enormous negative impact on their health such as increased chronic infections, inability to detoxify chemicals and heavy metals, and neuro-cognitive problems such as language processing, attention, and concentration. Genetic susceptibility certainly plays a role. However, for many the problem does not manifest until a child's system is negatively impacted by nutritional deficiencies, digestive problems from yeast, bacteria, parasites, malabsorption from digestive inflammation, chemical pollutants, and heavy metal toxins from vaccines or environmental exposures.

Methylcobolamin (MB-12) Therapy

The process of methylcobolamin (MB-12) injections is very simple. Injections are given to your child in the buttocks area every 3 days using a pre-filled insulin syringe and needle. The procedure is virtually painless. The most difficult part of the process is for you the parent to overcome your fear of giving the injection. Yes! That's right - Mom, Dad, Grandma or Grandpa - whoever it might be will be giving the injection. Luckily, there are very good instructions available for performing this procedure. Instructions for "dispensing and disposal" of Methyl-B12 can be downloaded from Dr. Neubrandner's website at (www.drneubrandner.com). Look under the 'download' link. Listed below is general information you need to know with regards to methylcobolamin (MB-12) therapy. More detailed information can be found at www.drneubrandner.com. Of course, our office will be available to assist you in this process as follow-up consults will be necessary to track the progress of your child.

- Methylcobolamin (MB-12) injections are a prescription item only. We order the MB-12 from Hopewell (800-792-6670 `begin_of_the_skype_highlighting` 800-792-6670 `end_of_the_skype_highlighting`) Wellness (800-227-2627 `begin_of_the_skype_highlighting` 800-227-2627 `end_of_the_skype_highlighting`), or other affiliated and certified pharmacies. See www.drneubrandner.com for list of certified pharmacies.
- The pharmacy will send you pre-filled syringes with the exact amount of methylcobolamin needed for your child at each dose. These certified pharmacies supply the exact concentration of methylcobolamin solution of 25mg/ml. This is necessary to achieve the therapeutic benefits of MB-12 therapy according to Dr. Neubrandner's research.
- The pharmacy provides methylcobolamin in pre-filled Becton Dickinson 3/10cc insulin syringes, item #328438.
- The dose is based on your child's weight in kilograms. Weight in pounds divided by 2.2 equals weight in kilograms (150 lbs , 2.2 = 70 kg). The dose of MB-12 is 64.5 mcg x Kg. 64.5 mcg x 70 kg = 4515 mcg per dose. Rounded off becomes 4500 mcg per pre-filled syringe.
- The injection must be given in the subcutaneous fat of the buttocks. Other "fat" areas, ie. abdomen, deltoids (shoulder) do not give the same effect. A 30 degree angle or **less** is best and will ensure that the medicine is not given in the muscle.
- It is recommended that other biomedical changes such as beginning heavy metal detoxification, dietary changes, or new supplements NOT be started during the first 5 weeks of MB-12 shots.
- Ideally TMG/DMG or Folinic Acid should not be started at the same time as MB-12 (during the first 5 weeks). These supplements have been known to increase the potential onset of side effects (see below) if started too early. If your child is taking DMG already it is okay to continue although it will be important to watch for increase side effect potential (see below). If your child is taking TMG it is highly recommended to discontinue when starting MB-12.
- Most children respond favorably during the first 5 weeks of treatment, ie. increased eye contact, language, social interactions. However, some children need to take longer to respond. It is recommended that children continue this therapy for at least 12 to 24 months.
- In my practice approximately 60 to 70% of children respond favorably during the first 5 weeks. This means positive changes are happening that is obvious to you as the parent or caregiver. Approximately, 15 - 20% of children are more subtle in their response and not until the "Parent Designed Report Form" is filled out (see below) that positive changes are recognized. Less than 10% of children do not respond during the first 5 weeks of MB-12 injections.
- Any biomedical therapy, ie., dietary changes, supplements, heavy metal detoxification can cause negative reactions. It is very difficult to tell if your child will react negatively to MB-12 therapy. It is more likely your child will respond favorably than adversely. If you have concerns about negative reactions contact our office.
- Each parent **MUST** fill out the "[Parent Designed Report Form](http://www.drneubrandner.com)" from Dr. Neubrandner's website at www.drneubrandner.com. **This form must be filled out at the end of the 1st 5 week cycle.** Look under the 'download' link on Dr. Neubrandner's website for this document. We also have copies of this form at our office. Please call **951-693-2267 `begin_of_the_skype_highlighting` 951-693-2267 `end_of_the_skype_highlighting`** for a copy.
- Dr. Neubrandner reports that side effects such as hyperactivity and increased stimming, disrupted sleep patterns, and mouthing objects may be necessary in order to see the greatest benefits. It is reported that if these side effects are seen the parents who "push through" report that the effects eventually lessen and their children greatly improve. These side effects may last anywhere between 2 to 6 months. In my experience 4 to 6 weeks is common.
- As indicated by Dr. Neubrandner all side effects need to be classified as tolerable versus intolerable. Take hyperactivity for example. A tolerable side effect of hyperactivity may be that your child is more hyperactive at home, but in their therapy sessions they are more focused, or they are more sociable, better eye contact,

etc. An intolerable side effect of hyperactivity could be that they go out of balance, ie. "bouncing off the walls 24/7" that they cannot focus at all.

- Many children improve in 3 areas - Cerebral Cortex Function (90%), Speech and Language Function (80%), Emotion and Socialization Function (70%) with the use of MB-12.
- A minimum 15 minute appointment (phone is okay) is required 2 to 3 weeks after starting MB-12. This is to ensure your child is doing okay on the medication and to allow us to make any necessary changes.
- An initial prescription will be sent to a certified pharmacy for #10 pre-filled syringes. This supply will last 30 days (with an expiration date of 90 days). **The injections are given every 72 hours.**
- Refill requests should be called to the prescribing pharmacy. Please allow 72 hours for prescription refill authorization.

RECAP (very important)

****To continue to receive Methyl-B12 (MB-12) prescriptions for your child the following criteria need to be met:**

1. An office appointment is necessary.
2. A 15 minute phone consultation 2 to 3 weeks after starting the MB-12.
3. At the end of 5 weeks the **Parent Designed Report Form** (PDRF) must be completed and a copy sent to our office. A follow-up review will be scheduled to go over the PDRF questionnaire. This follow-up is usually scheduled for 30 to 45 minutes.

To learn more about how this therapy can benefit your child please contact our office at 951-693-2267
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material from Dr. Neubrandner's website at www.drneubrandner.com

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