Winnipeg Regional Health Authority | Office régional de la santé de Winnipeg
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EXECUTIVE SUMMARY – LOW COPPER

Name of Expert Review Group:

Medicine RD Network

Rationale:

A low copper diet is part of the current diet compendium. The purpose of this review is to:

1. Review current literature to determine best practice guidelines and provide recommendations for the treatment and nutrition management of Wilson's Disease.
2. Determine the need for a low copper diet.
3. Determine if the WRHA Adult Criteria for the Menu Database (2008) low copper diet criteria requires any modification based on new research.

Guidelines:

1. Maintain a low copper diet for all newly diagnosed Wilson's Disease patients, for at least 1 year, in conjunction with copper chelation therapy.

2. Under a physician's advice, if the Wilson's Disease is stable and optimally responding to medical therapy, the diet may be liberalized to avoid liver and other organ meats; and restrict the frequency of shellfish ingestion to ≤1 time per week. Chocolate, mushrooms, and nuts are allowed.

3. Enteral feeds should not exceed 1.5 mg copper per day to prevent overload.

4. Distilled water should be used for drinking and for enteral feeding flushes.

5. The current low copper diet should be updated to reflect new literature reviewed.
   "Non-compliant":
   - liver/other organ meats
   - shellfish
   - dried peas/beans/lentils
   - nuts/seeds
   - mushrooms
   - chocolate/cocoa
   - mineral water
   - oral supplements (Exception:With dietitian consultation, supplements may be allowed on an individualized basis).

Evidence Review:

The mainstay of treatment for Wilson's Disease is copper chelation therapy through the use of various chelating agents including D-penicillamine, zinc, trientine, tetrathiomolybdate[1-9]. Some literature suggests possible benefit of adjunctive antioxidant therapy(Vitamin E, curcumin)[7].

A normal copper intake is about 1.0 mg per day[1,2].

A low copper diet continues to be recommended in the literature[1-9], based on review articles (using the quality criteria review checklist), practice guidelines of both the EASL (Grade 11-3,B,2) and AASLD (Class 1,LevelC), and PEN (Grade B), but is less restrictive than in the past[1,2]. The low copper diet, based on literature reviewed, consists of avoiding the highest copper content foods[1-9]. Diet therapy accompanies medical treatment for Wilson's Disease but is not recommended as sole treatment, as diet alone cannot control copper accumulation[8,9].
Consultation with a dietitian is adviseable.

Foods of high copper content include: liver & other organ meats[1-3,6,9]
shellfish[1-4,6,9]
nut & seeds[3,4,6,9,10]
chocolate[3,4,6,9]
mushrooms[3,4,9]
beans,peas,lentils[10]

Shellfish are not as high in copper as liver; therefore after 1 year, one meal per week containing shellfish may be acceptable[1,2].

For enterally fed patients, copper content should not exceed 1.5 mg copper per day and will require dietitian direction to meet estimated requirements while still restricting copper[1,2].

Avoid multivitamin supplements containing copper[1,3].

Water sources should be checked for copper content. While most drinking water is relatively free of copper, water accessed through copper pipes with accompanying low ph, will leach copper from the pipes. Flushing pipes may help lower copper content of water before use for cooking or consumption. Distilled water will ensure low copper content for both drinking and enteral flushes. It is good practice not to use water containing over 0.1 ppm copper. Do not use cookware or storage containers containing copper[1-3,5,9].

Anticipated Impact:

Minor modifications to the "non-compliant" list in the 2008 WRHA Adult Criteria for the Menu Database for the low copper diet were made.

Practice Change:

None

Diets Included in the Review:

Low Copper Diet

Summary:

A low copper diet accompanied with medical treatment for newly diagnosed Wilson's Disease patients continues to be recommended for at least one year after diagnosis. The diet may be liberalized with dietitian and physician advice.

References:

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4. Cdn Liver Foundation. Nutrition and Liver Disease. Wilson's Disease. 2015.

5. Kodama,H et al. Inherited Copper Transport Disorders:Biochemical Mechanisms, Diagnosis, and Treatment. Current Drug Metabolism.2012;42:237-250.

6. British Liver Trust. Dietary Advice for Specific Liver Conditions. Handout Resource. PEN. Dietitians of Canada. New Resource. 2015-03-03.

7. European Association for the Study of the Liver (EASL).EASL Clinical Practice Guidelines: Wilson's Disese. J of Hepatol. 2013;56:671-685.

8. Bandmann,O,Weiss,KH, and Kater,SG. Wilson's disease and other neurological copper disorders. Review. www.thelancet.com/neurology.2015 Jan;14:103-113.

9. Roberts,E.A., and Schilsky,M.L.Diagnosis and treatment of Wilson's Disease: An update. AASLD Practice Guidelines. AASLD American Assoc for the Study of Liver Diseases.Hepatolgy. 2008 June;47(6):2089-2111.

10. Dietitians of Canada. PEN.Food Sources of Copper. Canadian Nutrient File 2010.www.hc-sc.gc.ca/fn-an/nutrition/fiche-nutri-data/index-eng.php.(Accessed 2012). Last updated 2012-05-14.

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These recommendations have been reviewed by:
