

# GENERAL INFORMATION BROCHURE ON NEURALLY MEDIATED HYPOTENSION AND ITS TREATMENT

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**This document has been prepared for those who have requested further information about neurally mediated hypotension.**

## **What is neurally mediated hypotension?**

Neurally mediated hypotension is also known by the following names: the fainting reflex, neurocardiogenic syncope, vasodepressor syncope, the vaso-vagal reflex, and autonomic dysfunction. Hypotension is the formal medical term for low blood pressure, and syncope is the term for fainting. Neurally mediated hypotension occurs when there is an abnormal reflex interaction between the heart and the brain, both of which usually are structurally normal.

## **When does neurally mediated hypotension lead to symptoms?**

Neurally mediated hypotension occurs in susceptible individuals in the following settings:

- after prolonged periods of quiet upright posture (such as standing in line, standing in a shower, or even sitting up for long periods),
- after being in a warm environment (such as in hot summer weather, a hot crowded room, a hot shower or bath),
- immediately after exercise,
- after emotionally stressful events (seeing blood or gory scenes, being scared or anxious).
- some individuals get symptoms soon after eating, when blood flow has shifted to the intestinal circulation during the process of digestion.

We are all susceptible to activation of the vaso-vagal reflex that results in a lowered blood pressure (NMH), but each person's susceptibility is affected by his or her genetic make-up, dietary factors, psychological make-up, and acute triggers such as infection and allergy. The clinical problem of NMH occurs when there is sufficiently early triggering of this reflex to cause symptoms.

### **How does upright posture lead to these problems?**

After a normal individual stands up, blood pools in the legs through the effect of gravity. To compensate for the lower amount of blood returning to the heart immediately after standing, the body has a surge of adrenaline (epinephrine). This adrenaline surge leads to a faster heart rate and to more vigorous heart beats (a familiar feeling we all experience when we are frightened, for example). The faster heart rate and more vigorous heart contractions allow the reduced amount of blood returning to the heart to be pumped more efficiently to vital organs (especially the brain).

In individuals with neurally mediated hypotension, there is a miscommunication between the heart and the brain. Just when the heart needs to beat faster, (to pump blood to the brain and prevent fainting), the brain sends out the message that the heart rate should be slowed down, and that the blood vessels in the arms and legs should dilate. These actions take even more blood away from the central part of the circulation where it is needed. In response, individuals feel lightheaded or may faint because not enough blood is getting to the brain. Fainting is helpful, in that it restores a person to the flat position, removing the pooling effect of gravity on the blood, and allowing more blood to return to the heart. Following the lightheadedness or syncope, most individuals feel tired and their mental abilities are somewhat foggy.

### **Which symptoms can be caused by the neurally mediated hypotension?**

Recurrent lightheadedness and fainting are common symptoms, as is an unusual difficulty with prolonged fatigue after a modest amount of physical activity. This post-exertional fatigue can last 24-72 hours, and interferes with many daily activities.

We have also observed that chronic fatigue, muscle aches (or fibromyalgia), headaches, and mental confusion can be prominent symptoms of neurally mediated hypotension even in individuals who do not faint. The mental confusion takes the form of difficulty concentrating, staying on task, paying attention, or finding the right words. Some describe being in a mental fog. It appears that as long as the fainting reflex is activated whenever the person stands or sits upright for a period of time, then the blood pressure is improperly regulated, and these symptoms are the result. Some develop worse fatigue after such activities as reading and concentrating, and this may be due to the fact that for some, the veins of the arms and legs dilate, thereby allowing more blood to pool, rather than constricting in response to mental tasks.

### How is neurally mediated hypotension diagnosed?

Neurally mediated hypotension cannot be detected with a routine blood pressure or heart rate screening. The diagnosis can be made using a prolonged standing test or more commonly using a tilt table test. Many hospitals and academic centers throughout the world perform tilt table testing. It allows careful measurement of the heart rate and blood pressure responses to the head-up position at a 70-degree angle, in an almost standing position. The usual reason for performing a tilt table test in the past had been for the evaluation of recurrent fainting. Many people with neurally mediated hypotension develop adaptations to keep from fainting, such as crossing their legs, fidgeting, or sitting or lying down when they get lightheaded or tired, but the tilt table test prohibits them from performing those natural defenses. As a result, lightheadedness, nausea, and fainting often occur during the tilt table test. Fatigue and malaise often occur for a few days after the test is performed.

### What causes neurally mediated hypotension?

The answer to this question isn't well understood at present, but we suspect neurally mediated hypotension has genetic origins in many people, because it is not uncommon for us to find several individuals with neurally mediated hypotension in the same family. No gene for this condition has been identified. It is likely that we all could develop neurally mediated hypotension provided that the conditions were sufficiently severe: for example, if we did not take in enough fluids or salt, were subjected to extremely prolonged periods of upright posture, or to very warm environments. The reflex response which results in lowered blood pressure simply occurs at an earlier point in some individuals.

One of the most common, and treatable problems identified in those with neurally mediated hypotension is a low salt (sodium) intake in the diet. Salt helps us retain fluid in the blood vessels, and helps maintain a healthy blood pressure. Salt has received bad press in the last couple of decades because a high salt diet in some individuals with high or high-normal blood pressure can contribute to further elevations in blood pressure, and thereby to heart disease and stroke. This has led to general health recommendations to cut down on salt. As we are finding, this general recommendation isn't right for all people.

An average adult blood pressure is 120/70, and a blood pressure is considered elevated if it is above 140/90. Individuals can have neurally mediated hypotension at a wide range of resting blood

pressures. It may be slightly more common in those whose systolic blood pressure [the top number] is in the 90-110 range, but we also see it in those whose resting blood pressure is high. For individuals with neurally mediated hypotension, a low salt intake may be unhealthy, and may move them from feeling good to developing the symptoms of fatigue and lightheadedness described earlier. In experimental work earlier this century, severe short-term salt depletion led to fatigue and mental dulling in the adult research subjects.

### **How is neurally mediated hypotension treated?**

Neurally mediated hypotension is most often treated with a combination of increased salt and water intake in conjunction with drugs that regulate blood pressure. Some drugs work by allowing the kidneys to retain sodium and others block the body's response to adrenaline, which can kick-start the blood pressure abnormality. In addition, it is important to review your current medications with your doctor to ensure that these medications do not include drugs or vitamins that have the potential to make neurally mediated hypotension worse.

We want to emphasize, however, that the treatments require persistence, commitment and the willingness to try several possible drugs and combinations over an extended period of time. Because there is a risk of serious side effects with some of the drugs such as elevated blood pressure, elevated sodium levels, lowered potassium levels, or depression, careful monitoring by a physician is required. Among the drugs that have been found to help improve tilt table responses in patients with NMH are fludrocortisone (Florinef), beta-blockers (e.g., atenolol), disopyramide (Norpace), fluoxetine (Prozac), sertraline (Zoloft), ephedrine, pseudoephedrine, theophylline, methylphenidate (Ritalin), and midodrine. Your treating physician should work with you to determine the best possible combination for your personal situation. In general, however, the first step in treating this problem is to increase fluid intake. We cannot stress this enough. Our patients who have discovered the importance of drinking fluids regularly throughout the day seem to do better than those who don't take this task seriously.

For those who have been on a low salt intake we recommend an increase in the amount of salt they add to their food. The Appendix to this document contains a list of high salt foods, but specific foods are now conveniently labeled with sodium content for you to check. For some mildly affected individuals, an increased intake of salt and fluids may be all that is needed. Most of those with chronic fatigue syndrome and more severe symptoms require one of several medications in

addition to the increased salt and fluid intake. The increased salt and fluid intake continue regardless of which of these medications is added.

To be successful, though, the increased salt intake must be accompanied by a sufficient increase in the intake of water and other fluids (minimum of 2 liters of fluid per day). The Appendix also describes some of the drugs used for treating neurally mediated hypotension.

### **Does treatment cure the problem?**

It needs to be emphasized that, when successful, the medications for neurally mediated hypotension do not cure the problem. Rather, they help control symptoms. When medications are stopped and when salt intake is reduced, symptoms frequently reappear. Many of the adolescents and adults with the problem also have symptoms resurface or worsen at busy or stressful times (making an oral presentation in class, having company over for Thanksgiving, rushing for a meeting on a hot day and forgetting to drink). Many women describe a worsening of symptoms in the days around the start of a menstrual period.

The question of what happens over the long term has not been adequately studied, and the optimal duration of medical treatment is still being worked out. Unfortunately, despite appropriate doses of the available medications for neurally mediated hypotension, some individuals with abnormal tilt table tests do not experience an improvement in symptoms, and some are intolerant of the medications. This emphasizes the need for more research on this problem. Many women who have NMH describe an improvement in symptoms when they have been pregnant, and often describe pregnancy as the time when they felt the best ever. The improvement may be due to an expansion of blood volume that occurs with pregnancy.

### **What other things can I do to get better?**

Where practical, avoid circumstances which might bring on symptoms. For example, shop at non-peak hours to avoid long lines. Take shorter showers and baths and aim for a cooler water temperature. Avoid saunas, hot tubs, and lying on a hot beach. Avoid standing still for prolonged periods in hot environments, and on very hot days. Flex your legs muscles and shift your weight when you are standing still. You may also want to avoid alcohol because it often leads to dilation of the veins, and this can steal blood away from the central circulation. Most with neurally mediated hypotension are quite intolerant of alcohol. Caffeine intake (including caffeine in soft drinks) affects

some people with NMH in an adverse way, so examine whether caffeine is helping you or making symptoms worse.

Certain postures and physical maneuvers are helpful in raising blood pressure when sitting for a prolonged time, mainly by helping use contraction of the leg muscles to pump blood back to the heart and by compressing the abdomen to reduce the amount of blood that pools in the intestinal circulation. Dr. Wouter Wieling in Amsterdam and his colleagues have emphasized the importance of these small changes, as even a small increase in blood pressure can help maintain an adequate blood flow to the brain. Many patients have adopted these postures without knowing why. The helpful maneuvers include:

- standing with one's legs crossed
- squatting
- standing with one leg on a chair
- bending forward from the waist (such as leaning over a shopping cart)
- sitting in the knee-chest position
- sitting in a low chair
- leaning forward with hands on the knees when sitting.

Some of these are less conspicuous than others. Sitting in a low chair (such as a camping stool) is helpful because it causes the legs to be brought up toward the abdomen, and probably reduces the amount of blood pooling in the intestinal circulation. For similar reasons, avoid sitting in a high chair with the legs dangling freely, as there is no resistance to blood pooling unless the muscles are actively contracting. One young woman found she could sit longer without symptoms if she put her feet on a low foot rest (this probably required more leg muscle contraction than regular sitting, and may have also compressed the abdomen better).

We have adopted another recommendation from the Dutch group, namely to elevate the head of the bed slightly by 10-15°, a position that appears to help the body retain fluid at night rather than lose fluid into the urine. Depending on one's level of comfort with this form of dress, waist-high support hose can prevent some of the excessive pooling of blood in the legs (knee-high support socks may not work as well), as can garments that increase abdominal compression (these work by preventing excessive amounts of blood pooling in the intestinal circulation).

Exercise is important in regaining the effects that fitness brings in counteracting NMH. Because exercise can make NMH symptoms worse in the period before effective treatment of the NMH has been found, it must be done carefully at first. When you and your doctor feel you are ready, begin a regular regimen of exercise, finding something that does not make you lightheaded and doing it for brief periods at first, increasing gradually but relentlessly. For example, one girl who had been ill for several years began doing better once two of the NMH medications were working for her. She began on a treadmill, but this made her lightheaded, so she switched to a reclining exercise bike. Although she started with only 2 minutes a day, she increased this in small increments and was up to 30 minutes 3 times a week after about three months. Remember to warm up slowly before, and cool down gradually after exercise.

Attention to other medical conditions is crucial to ensuring that the NMH treatments are as effective as they can be. In particular, preventing activation of even mild asthma and allergies has been important in keeping our patients from developing a worsening of symptoms. Endometriosis in women with lower abdominal pain can aggravate NMH, as can sinusitis, anxiety disorders, infections of any sort, and all of these need appropriate medical attention when present. Allergies to food proteins (most commonly cow=s milk protein) have been identified by our colleague Dr. Kevin J. Kelly (now at St. Christopher=s Hospital in Philadelphia) as being common in those with NMH, and substantial improvements can result from strict exclusion of offending foods. Given the potential dangers of unsupervised diets, be sure to discuss these issues with your doctor.

Again, we want to emphasize strongly that a key part of the therapy is to increase fluid intake. Those who force themselves to drink extra fluids every couple of hours seem to do better than those who aren't as serious about increasing their fluid intakes. Keep in mind that prolonged periods of sleeping (more than 12 hours) may interfere with your ability to attend to your fluid needs on as regular a basis as would be ideal.

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### **SUGGESTIONS FOR A HIGH SODIUM DIET**

An adult requires between 2000 and 3000 milligrams (mg) of sodium to maintain health. Although health advice in the last two decades has suggested that a low salt intake helps prevent heart disease and stroke, many individuals with neurally mediated hypotension, including those who begin with a low normal blood pressure, cannot tolerate this low salt diet. We believe that individuals with neurally mediated hypotension need to take in much higher amounts of salt.

The exact amount needed is different for each individual, and is often affected by your taste for salty foods, but it is difficult to take too much, provided that you have access to lots of fluids if you become thirsty. A few have been unable to tolerate an increase in sodium intake without developing increased agitation, but this is uncommon.

Table salt is also an excellent source of sodium, as it has 2300 mg of sodium per teaspoon. Salt tablets are a way of getting adequate amounts of salt without dramatically changing the taste of your foods. If you elect to increase your sodium intake with salt tablets, a good place to start is with one 450 mg tablet three times a day, working up to two tablets (900 mg) three times a day. Some of our patients report better tolerance of a buffered salt tablet (Thermotabs, which contain 450 mg sodium chloride and 30 mg potassium chloride; available from Menley and James, 1-800-321-1834). Salt tablets are available without a prescription.

As for fluid intake, be sure to drink at least 2 liters of fluid a day. Some people find sports drinks (which have the advantage of a higher sodium content) to be a good source of fluids. CeraLyte-70 is a special rehydration fluid designed to provide optimal absorption of salt and fluid from the gut, and it contains 2.2 grams of sodium chloride per liter of fluid. It can be obtained at many pharmacies, or by calling toll-free 1-888-237-2598 (1-888-CERALYTE).

**The following are high salt foods to help with your needs:**

**Breads and cereals: Mg sodium**

- Noodles, potatoes, rice from instant mixes 500
- Wheaties (1 cup) 400
- Waffles (one) 355
- All Bran (2 cup) 285
- Cheerios (1 cup) 260
- Rice Krispies (1 cup) 260
- Saltine crackers (6) 200

**Dairy Products:**

- Parmesan cheese (1 oz.) 450
- Processed cheese and cheese spreads (1 oz.) 320
- Cottage cheese (2 cup) 230

**Fruits and vegetables:**

- Dill pickle (1) 1430
- Tomato juice (8 oz) 800
- Sweet pickle (1) 570
- Frozen vegetables with special sauces (2 cup) 375
- Canned tomato sauce and puree (1/4 cup) 370
- Canned vegetables (2 cup) 245

**Meat, poultry, fish:**

- Enchilada (the whole...) 1300
- TV dinner (1) 1200
- Sweet-n-sour pork (1 serving) 1100
- Lasagna (1 serving) 1000
- Soup, canned (1 cup) 895
- Fish-n-chips (1 serving) 750
- Hamburger (1) 690
- Hot dog (1) 550

- Tuna, canned (2 cup) 535
- Corn beef (1 oz) 530
- Fried chicken (1 serving) 530
- Pizza, cheese (1 slice) 500
- Pork-n-beans, chili (1 cup) 460
- Luncheon meat (1 slice) 300
- Bacon (4 slices) 280

**Snacks, condiments:**

- Pretzel Stix (at Giant), 1 tray (28 g) 1460
- Soysauce (1 tbsp) 870
- Olives, green (4) 600
- Salted nuts (2 cup) 420
- Olives, ripe (4) 400
- Fruit pie (1/8 pie serving) 355

**INFORMATION ON MEDICATIONS USED FOR TREATING NMH**

**1. FLORINEF**

**Formal (generic) name:** fludrocortisone

**Type of drug:** a mineralocorticoid steroid

**Action:** Florinef acts in the kidney to help the kidney retain sodium that would otherwise be lost in the urine. It helps the body avidly retain the salt you eat. It does so at the expense of losing potassium into the urine, so it is important to take in adequate amounts of potassium each day (a list of foods high in potassium is appended). In addition, we now recommend potassium supplements when people start on Florinef, regardless of the serum potassium level, and especially if individuals remain on the drug for several months. A sustained release potassium preparation (such as K-Dur 10 mEq or K-Dur 20 mEq, or Slow-K 8 mEq) given once daily has been well tolerated by our patients.

**Common confusions:** Cortisone and fludrocortisone differ. Florinef has none of the anti-inflammatory properties of cortisone or prednisone, and it has no effect on blood sugar as cortisone does. Florinef is not a muscle building (anabolic) steroid.

**Common side effects:** To reduce the chance of Florinef causing an elevated blood sodium level, make sure to drink lots of fluids while taking Florinef. Some individuals complain of headache after Florinef and some develop worse CFS symptoms (more lightheadedness or fatigue), abdominal discomfort of a new type or severity, new chest discomfort, or tearfulness and depression. The latter occurs in fewer than 1 in 20 patients, but patients need to be aware of this when they start on the drug, and to know to stop Florinef if such depressed mood occurs.

Some have found that minor side effects will disappear after a couple of weeks, and it is worth persevering with the medication provided that the side effects are minor. Some develop worse acne on Florinef. The tablet has a tiny amount of lactose in it, and may cause discomfort to those who are extremely allergic to milk protein. Special pharmacies can compound the drug without lactose (we refer patients to Abrams Royal Pharmacy, 8220 Abrams Rd., Dallas, TX 75231; Tel: 214-349-8000; Fax: 214-341-7966; e-mail: [bscarbro@ix.netcom.com](mailto:bscarbro@ix.netcom.com)).

With high doses, or even low doses over a long period of time, Florinef can lead to an elevation of blood pressure (BP). For this reason, we recommend that BP be monitored carefully, especially in the weeks after starting on the drug, and monthly once a stable dose is achieved.

**Suggested doses for CFS patients:** Patients with chronic fatigue syndrome who also have neurally mediated hypotension often have medication sensitivities and appear to benefit from a gradual increase in their Florinef dose. We recommend beginning with a week of increasing salt and fluid after tilt testing before starting on Florinef to ensure better tolerance of the drug. Once you are ready to start, begin with 1/4 tablet per day (0.025 mg). If the 1/4 tablet dose is tolerated for 4-7 days, increase to 2 tablet for 4-7 days, then to 3/4 tablet or a full 0.1 mg tablet. Doses above this amount may be necessary, but we usually do not increase the dose to more than 0.2 mg per day. Some patients report that splitting the dose (half in the morning and half with the evening meal) provides a more even effect, but occasionally people have to return to a once a day morning dose because the Florinef causes them to develop insomnia.

**Comments:** It is important to be sure that you are taking an adequate amount of fluid. We recommend checking the serum electrolytes about 2-4 weeks after each dosage increase.

**Use in pregnancy:** consult with your doctor.

## 2. TENORMIN

**Formal (generic) name:** atenolol

**Type of drug:** a beta-blocker

**Action:** Atenolol blocks the effects of adrenaline (epinephrine), and acts both to decrease the heart rate and to prevent the forceful heart contractions that kick-start the Afainting reflex@ in neurally mediated hypotension.

**Common side effects:** Some individuals complain of headaches or fatigue after atenolol, and others have worse lightheadedness or worse CFS symptoms in general. Like other beta-blocker drugs, atenolol can lead to constriction of the airways in individuals with a history of asthma. If cough or wheezing develop soon after starting the drug, it may need to be stopped. For those with mild asthma, our impression has been that an inhaled steroid (eg, Azmacort, Flovent) may allow patients to tolerate the beta-blocker without increased airway reactivity. Atenolol can also cause emotional depression. Atenolol is less likely than other beta-blocker drugs (such as propranolol [Inderal]) to lead to nightmares, confusion, and hallucinations. Atenolol and other beta-blocker drugs can interfere with the body=s ability to correct low blood sugar, so the drug must be used with extreme caution (if at all) in diabetics. The activity of the drug can be decreased when it is used in conjunction with non-steroidal anti-inflammatory drugs such as ibuprofen (Motrin).

**Doses:** The usual starting dose of atenolol for older adolescents and adults is 50 mg per day, but doses of up to 100 mg per day are used. We usually aim for 1 mg of atenolol for every kg of body weight. For example, an individual weighing 62 kg (136 lb) would likely do well with between 50 and 75 mg of medication per day.

**Use in pregnancy:** consult with your doctor.

### 3. NORPACE

**Formal (generic) name:** disopyramide

**Type of drug:** an anti-arrhythmic, anti-cholinergic drug

**Action:** Norpace blocks the response to adrenaline (epinephrine), and prevents the forceful heart contractions that occur in neurally mediated hypotension.

**Side effects:** Some individuals complain of headaches or fatigue after Norpace, and others have worse lightheadedness. Other possible side effects are dry mouth, constipation, blurred vision, and impaired urination. This drug can activate glaucoma in some individuals. Norpace should not be taken with erythromycin, other anti-arrhythmics, phenothiazines, trimethoprim-sulfamethoxazole, cisapride, or other Class 1a anti-arrhythmic agents because of the potential for triggering serious heart rhythm abnormalities. For similar reasons, it should be used with great caution in those on tricyclic antidepressants. Due to its ability to reduce the forcefulness of the heart's pumping action and to trigger arrhythmias, its use should be considered very carefully in those with heart disease. Use of the drug by those already taking beta-blockers or calcium channel blockers requires similar caution.

**Doses:** typically the dose is 100-200 mg of the CR (sustained release) preparation twice daily, although much higher doses are sometimes tolerated, and lower doses are sometimes effective. It is preferable to take it on an empty stomach, an hour before or two hours after eating, but it can be taken with food to reduce stomach irritation. Some individuals with medication sensitivities need to have the drug started at 100 mg each morning for a week, with increases of 50 or 100 mg per week (using the 150 mg CR capsule).

#### **SUGGESTIONS FOR A HIGH POTASSIUM DIET FOR THOSE ON FLORINEF**

An adult requires between 1,600 to 2,000 mg. of potassium per day to maintain health. However, those who are taking Florinef will have a higher need because the drug depletes potassium. Unlike sodium, manufacturer's are not required to list the amount of potassium on food labels. For this reason, it is important that you become familiar with the food items listed below. Generally, good sources of potassium include milk, meats, and fruits, and vegetables. Below is a more complete list of potassium content of various foods.

## Beans/Peas mg. of

### Potassium

- Pork and Beans (12/ cup) 335
- Lima Beans (2 cup) 480
- Blackeye Peas, Kidney Beans, Lentils (2 cup) 350

### Cereals:

- Bran buds, All Bran (2 cup) 380
- Fiber One, Grape Nuts (2 cup) 240
- Raisin Bran (2 cup) 175
- Pancakes, Aunt Jemima, whole wheat (3 cakes) 380

### Dairy Products:

- Milk (1 cup) 400
- Yogurt (1 cup) 400 - 500
- Instant Breakfasts (Carnation, Delmark, Slimfast, made with milk) - 1 cup 600 - 800
- Hot Cocoa made with milk (1 cup) 600 - 800
- Instant Chocolate Pudding (2 cup) 200 - 300
- Simple Pleasures frozen dessert (2 cup) 200 - 300
- Ice Cream/Ice Milk (1 cup) 200 - 400

### Miscellaneous:

- Molasses, Blackstrap, 1 Tbsp 585
- Spaghetti Sauce, 2 cup 475
- Cream soups made with milk (1 cup) 300 - 450
- Tomato, Minestrone, Vegetable soups (1 cup) 200 - 300
- Split Pea Soup (1 cup) 400

## Fruits: mg. of

### Potassium

- Apple juice/Apple cider (1 cup) 300
- Apricot Nectar (1 cup) 286
- Avocado (2) 550 - 750
- Banana (1 Banana) 451
- Honeydew melon/Canteloup (1 cup) 460 - 500
- Kiwi (1 Kiwi) 250
- Nectarine (1 Nectarine) 288
- Orange or Grapefruit juice (2 cup) 200
- Orange (1 Orange) 240
- Pineapple (1 cup) 270
- Plum (1 medium) 110
- Prunes, cooked (2 cup) 370
- Raisins (1 oz. box) 220
- Strawberries (1 cup) 250

### Meats:

- Beef, Chicken, Pork, Lamb, Fish, and Shellfish
- (except imitation crab, 3 2 oz. cooked)
- (about the size of a deck of cards) 200 - 400
- Chili with beans, 1 cup 500
- Enchiladas (chicken, 8.25 oz. entree) 624
- Hamburger helper, 1 serving 440
- Lasagna, Stouffers, 8 oz. entree 363
- Pizza, Lean Cuisine, 5.1 oz. entree 300

### Vegetables:

- Asparagus (2 cup cooked) 280
- Broccoli, Carrots or Mixed Vegetables
- (frozen, cooked (1 cup) 300 - 350
- Brussel Sprouts, Zucchini, Collards, Kale,

- Parsnips, frozen cooked (1 cup) 450 - 600
- Carrot, 1 whole, raw 233
- Cauliflower, Corn, Peas and Carrots
- (frozen, cooked (1 cup) 200 - 300
- Cucumber, 1 whole 430
- Tomato, 1 medium, raw 270
- Potato, 1 large, baked 600
- Sweet Potato, 1 large, baked 400
- V-8 Tomato juice cocktail (1 cup) 570

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