



# NHS NEWS

## DEAR COLLEAGUES

Despite the difficulties COVID has caused, we are still busy conducting research and publishing our findings. We are excited to share some of our latest findings in this newsletter. Keeping you, our loyal participants, up-to-date on our work is very important to us. Without your continued enthusiastic participation, this important research would be impossible. In this issue, look for some tips to encourage your healthy lifestyle habits in the new year!

We especially want to thank the dedicated nurses who have participated in many of our sub-studies, including stool and saliva collections, COVID survey, investigations into cognitive change and a detailed look into shingles.

The next new NHS questionnaire will be coming your way in the summer of 2023.

As always, we wish you all good health and thank you most sincerely for your long-running dedication to the study.

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## Lower Sodium and Higher Potassium in the Diet are Associated with Lower Risk of Heart Disease and Stroke

The role of sodium or “salt” in the diet for heart disease prevention has long been debated by scientists. A new study conducted by Nurses’ Health Study (NHS) investigators provides strong evidence that limiting sodium and increasing potassium leads to better cardiovascular health (Ma Y et al. *NEJM* Jan 2022).

### *Why did the authors choose to investigate this question?*

Sodium and potassium are essential to maintain electrolyte balance. Studies consistently show that diets high in sodium and low in potassium can raise blood pressure, but their relationship with heart attack and stroke risk is controversial. Thus, NHS investigators aimed to further understand whether less sodium and more potassium in the diet would lead to better heart disease outcomes.

### *What challenges influenced how the authors conducted their study?*

Measuring dietary sodium is very difficult because sodium can be hidden in many foods, particularly processed foods and restaurant meals. The Nutrition Facts label on processed foods indicates the sodium content. Restaurant meals almost always contain added sodium, and many restaurants do not disclose nutrition facts for their menu items. Thus, you may be unaware of the amount of sodium in a meal, and the amount can vary greatly by restaurant.

Potassium was recently added to the Nutrition Facts label, making it easier for you to find out how much potassium is in prepared foods. However, potassium is found naturally in many whole foods that have no nutrition labels, including fruits, vegetables, and seafood. It is important to note that potassium from supplements, not foods, can lead to health problems. Thus, potassium supplements should be avoided unless directed by your doctor.

To overcome these challenges in measuring sodium and potassium in the diet, the authors used 24-hour urine samples from NHS participants to estimate the amount in their diet. A subgroup of participants provided urine samples collected over at least two full 24-hour periods, enabling an accurate estimate of sodium and potassium in the diet.

### *What did the authors find?*

The authors combined data from over 2,000 NHS participants with four other studies to investigate greater than 10,000 healthy adults from the U.S. and Europe. They compared individuals with high and low levels of sodium and potassium and found that participants with the highest levels of sodium in the urine were 60% more likely to have a heart attack, stroke or coronary artery procedure than those with the lowest sodium levels. Those with the highest

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levels of potassium had a 31% lower risk of cardiovascular events than those with lowest levels.

How can I change my lifestyle based on the study findings?

In general, reducing your use of the salt shaker, intake of store-bought packaged foods and frequency of eating out will help decrease sodium, while increasing intake of fruits, leafy greens, starchy vegetables, beans, low-fat dairy, and seafood will help boost potassium in your diet. Check out **Box 1** to see whether your diet includes common sources of sodium and potassium – maybe you’ll even get some new ideas about how you can change your diet to reduce your heart disease risk!

**BOX 1:** Common sources of sodium and potassium in the diet. Data are derived from the U.S. Department of Agriculture FoodData Central database.

SODIUM			POTASSIUM		
Top sources: processed foods, restaurant meals, baked goods, and cheese			Top sources: fruit, vegetables, dairy, and seafood		
Recommended Daily Value (DV): less than 2,300 mg per 2,000 daily calories			Recommended DV: at least 4,700 mg per 2,000 daily calories		
FOOD ITEM	SERVING SIZE	% DV	FOOD ITEM	SERVING SIZE	% DV
Pizza	1 slice	~15-40%	Banana	1 medium	8%
Cheese	1 oz	~10-25%	Cantaloupe	1 cup	9%
Fast food hamburger	1 patty	~30-45%	Dried apricots	1/2 cup	16%
Turkey and cheese	1 sandwich	~40-65%	Orange juice	1 cup	11%
Soup	1 cup	~25-50%	Squash, winter	1 cup	5-12%
Processed meats	3 oz	~40-80%	Spinach	2 cups, raw	7%
Marinated chicken	1 breast	~10-35%	Avocado	1 half	7%
Bread/baked goods	1 slice	~10-35%	Sweet potato	1 medium	12%
Condiments	1 tbsp	~10-60%	Black beans	1/2 cup	7%
Savory snacks	1 cup	~10-20%	Low-fat milk	1 cup	8%
Table salt	1 tsp	101%	Low-fat yogurt	1 cup	12%
			Salmon	3 oz	9%



Obtaining Health Claims Information

We are planning to obtain health claims information for Nurses’ Health Study participants on costs, diagnostic tests, and treatments to expand the research we can do. This new information will help to identify optimal prevention strategies for chronic diseases, and potentially ways to reduce healthcare costs.

We will request health claims data derived from the Centers for Medicare and Medicaid Services (CMS) or healthcare insurance provider for participants in the Nurses’ Health Studies. These data will include billing claims from hospitals, skilled nursing facilities, physicians (inpatient and outpatient), drug prescriptions, date of services, billing codes for type of services, codes for diagnosis and diagnostic test performed, and number of payments made by Medicare. These data are derived directly from CMS or your healthcare insurance provider and, thus, we will not be requesting any information from you, your doctors or hospitals. We will not receive any of your medical records from Medicare or your insurance provider; the available data only pertain to billing/claims. We have previously used Medicare claims data from a select group of NHSI participants, but now we seek consent using this opt out option from all NHS and NHSII participants enrolled in Medicare or other health

insurance plan. Adding this information to the Nurses’ Health Study will enhance the utility and value of the many years of questionnaire data that you have graciously provided since the start of the study.

To link health claims data with our Nurses’ Health Study data, we will use your available Social Security Number and date of birth. We will never receive your true Medicare beneficiary or health insurance provider ID. All the claims data we receive will be maintained by the Nurses’ Health Study in the same secure and confidential manner as the data you have provided to us directly. We will not share any information about you with Medicare, your health insurance provider or anyone else.

If you have any questions about these health claims studies, or wish to be excluded from such studies, now or any time in the future, please send an email to [nhsmedicare@channing.harvard.edu](mailto:nhsmedicare@channing.harvard.edu) or write us at Nurses’ Health Study/Medicare studies, 181 Longwood Ave, Boston, MA 02115. If you prefer not to participate in this health claims-based research, your decision will not affect your standing as a valued member of the Nurses’ Health Study.

# Recent Findings

## Staying Active Lowers Risk of Early Death

Staying physically active is one of the most important things you can do to maintain your health. There is some controversy, however, about how much is optimal and whether too much physical activity can be harmful. One thing is clear – understanding the right amount and best types of activity to reduce your risk of early death is complicated.

NHS participants are helping researchers overcome these challenges by repeatedly providing information about their activity levels for decades. Investigators have utilized this information to investigate the impact of long-term physical activity habits on premature death.

In two recent publications (Lee DH et al. *Circulation* Aug 2022 and *Eur J Epidemiol* March 2021), investigators found that long-term physical activity habits lower risk of premature death, even with as little as 20-74 minutes (min) of activity per week. Benefits were stronger for those who engaged in 150-299 min/week of moderate activities or 75-149 min/week of vigorous activities, who had a ~20-30% reduced risk of premature death. Risk was slightly further reduced for participants with up to 600 min of moderate and 300 min of vigorous activities per week. Activity above these levels did not give further benefit but was not harmful.

The U.S. physical activity guidelines recommend at least 75 min of vigorous or 150 min of moderate activities per week.

MODERATE ACTIVITIES	VIGOROUS ACTIVITIES
<ul style="list-style-type: none"><li>• Brisk walking</li><li>• Zumba</li><li>• Power Yoga/Tai Chi</li><li>• Elliptical</li><li>• Weightlifting</li></ul>	<ul style="list-style-type: none"><li>• Jogging/Running</li><li>• Bicycling</li><li>• Swimming</li><li>• Tennis</li><li>• Hiking</li></ul>

Occasional activities like gardening, mowing the lawn, skiing, golfing, kayaking, and light housework all contribute to your total activity too! If you are unsure whether you are healthy enough to incorporate physical activity into your daily routine, talk to your doctor about ways you can safely become more active.



## Flavonoids to Prevent Cognitive Decline

Have you heard the advice to “eat the rainbow”? Eating a variety of fruits and vegetables in different colors can help increase flavonoids in your diet. Flavonoids are a diverse group of plant chemicals that give plants their vibrant colors and are found in many plant foods, including fruits, vegetables, grains, roots, flowers, tea, and wine.

NHS investigators recently sought to understand whether more flavonoids can help prevent the onset of cognitive decline, or dementia. The anti-inflammatory and anti-oxidative properties of flavonoids have been proposed to prevent the development of several chronic diseases, including neurological disorders. Researchers used dietary questionnaires collected from study participants over 20 years to estimate flavonoids in their diets (Yeh TS et al. *Neurology* Sep 2021). Participants who consumed the most flavonoids had better cognitive function later in life compared to those who consumed the least flavonoids.

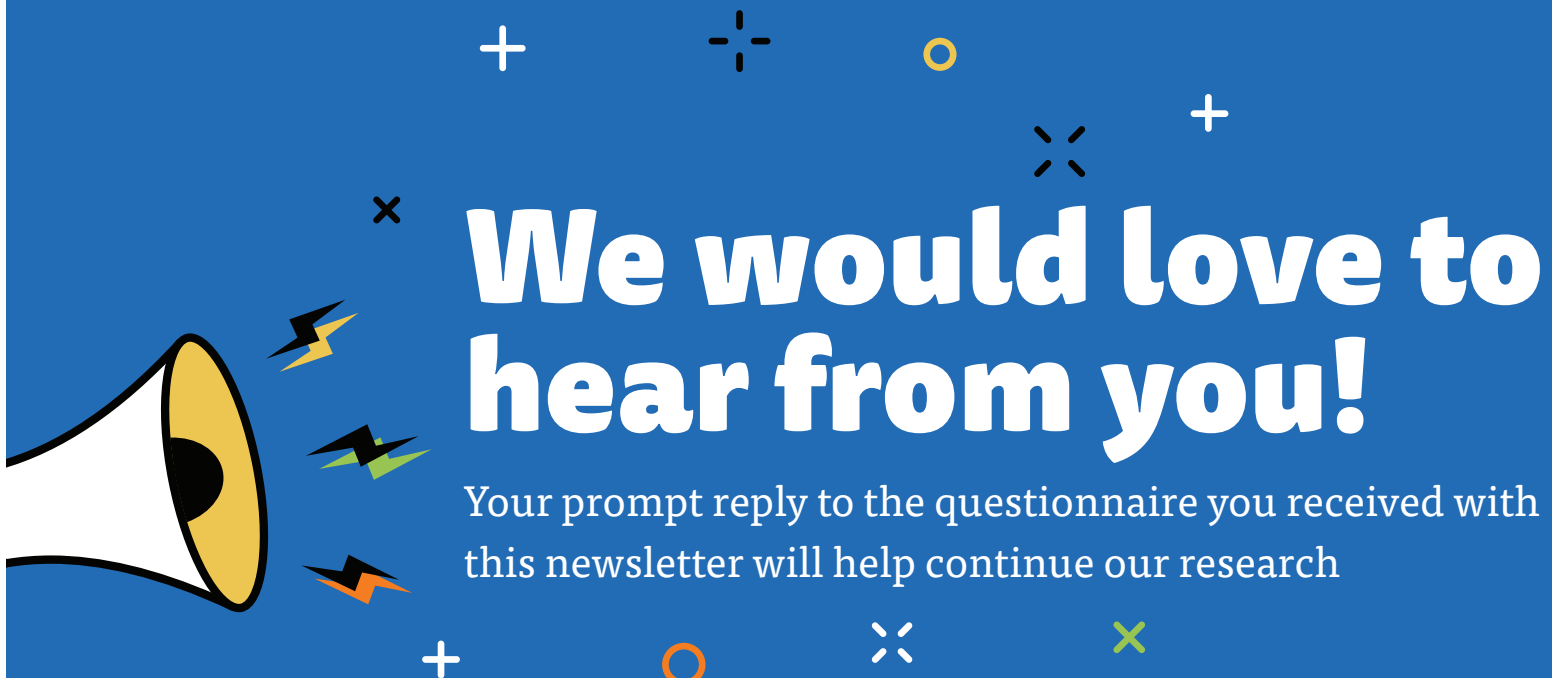
So, how can you add more flavonoids into your diet? Berries, citrus fruits, or 100% orange juice (up to 1 glass per day) will give you large doses of flavonoids. To ensure you get a wide range of flavonoids, aim for at least five servings of fruits and vegetables daily.

## NHS researchers among top 20 scientists

Research.com recently released their ranking of the “World’s Best Medical Scientists”. Six past and current NHS investigators were among the top 20, including Walter Willett, who topped the list. The other NHS scientists were Graham Colditz, JoAnn Manson, Frank Hu, Meir Stampfer, and David Hunter.

We appreciate the attention that this list shines on the NHS and the valuable contributions of the nurse-participants. You can view the full list at [research.com/scientists-rankings/medicine](https://research.com/scientists-rankings/medicine).





## How many are we?

The most common question we get from the nurses is, “How many of us are left?” Here’s a rundown of the current statistics of members of the original Nurses’ Health Study, started in 1976, and NHSII which began in 1989.

	NHS	NHSII
Born	1921 – 1946	1946 – 1964
Original Number	121,701	116,680
Now Deceased	~62,500	~ 6,200
Still active in the study	~ 53,000	~ 105,000
Completed 2021 questionnaire	~30,000	~ 73,000

## Friends of the Nurses’ Health Study

At a time when industry and federal funding has been drastically reduced, philanthropy is more important than ever. We are deeply grateful to many dedicated participants who made donations or who chose to honor their Nurses’ Health Study legacy in their estate plans.

### MAKE A TAX-DEDUCTIBLE DONATION TODAY:

To make a gift online: visit [nurseshealthstudy.org/donations](https://nurseshealthstudy.org/donations)

To donate by mail: Make your check payable to *Friends of the Nurses’ Health Study* and mail it to the address on the right.

If you need assistance or would like to speak to someone about supporting our work, please contact Danielle Hernon at 617-424-4334 or [dhernon@bwh.harvard.edu](mailto:dhernon@bwh.harvard.edu)

To report name or address changes, please visit [nurseshealthstudy.org](https://nurseshealthstudy.org). Letters and feedback are welcome!



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