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Activity description	Practicing evidence-based medicine (EBM) is important in today's health care environment because this model of care offers clinicians a way to enrich quality, provide patient satisfaction, reduce costs and improve outcomes. A common implementation of EBM involves the use of clinical practice algorithms during medical decision-making to encourage optimal care. This widely recognized practice is designed to address the persistent problem of clinical practice variation with the help of actionable information at the point of care. These e-newsletters will enable health care professionals (HCPs) to put new EBM into practice.
Target audience	This activity is designed to meet the educational needs of physicians, PAs, nurses, nurse practitioners and other HCPs who have an interest in EBM.
Learning objectives	At the end of this educational activity participants should be able to: • Discuss colorectal cancer screening and colon polyp surveillance in order to promote optimal outcomes. • Review recommendations for the optimal use of triple inhaler therapy for chronic obstructive pulmonary disease (COPD). • Illustrate the positive and negative health aspects of caffeine. • Apply medical management principles grounded in evidence-based medicine regarding treatment options for intermediate-risk prostate cancer (IRPC). • Compare physical therapy versus steroid injection for knee osteoarthritis.

Accreditation statement

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Credit designation statements

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Nurse practitioners
The American Academy of Nurse Practitioners Certification Program (AANPCP) accepts credit from organizations accredited by the ACCME and ANCC.

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Colorectal cancer screening and colon polyp surveillance

Colorectal cancer (CRC) screening update

Most providers continue to view colonoscopy as the "gold standard" for CRC screening. This assumes that most, if not all CRCs can be avoided with a screening colonoscopy program. Interestingly, there has never been a prospective randomized trial demonstrating a reduction in CRC mortality with colonoscopy screening. There are multiple observational and cohort studies which have suggested a reduction in both the incidence and mortality of colonoscopic CRC screening. However, it is the magnitude of this reduction that is often not well understood. For example, based on a comprehensive literature review, the U.S. Preventive Services Task Force (USPSTF) estimated that 57% of CRC deaths can be avoided with colonoscopy, compared to 52% with yearly fecal immunochemical test (FIT) or stool DNA testing (Figure 3).[1]

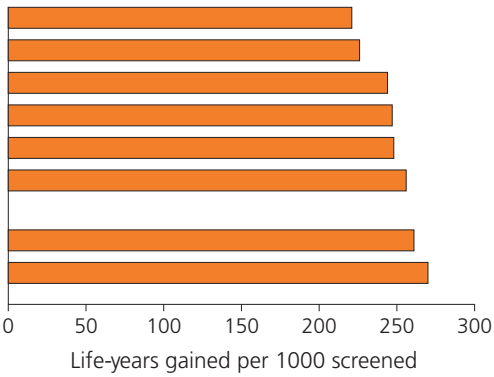
Since these results are similar, patients should make preference-based decisions. New West Physicians recently completed a pilot looking at an unbiased shared decision-making tool to help patients choose their preferred test, while at the same time increasing overall screening rates. Patients were presented with the tool that incorporated the above data, as well as the false positive and negative rates and complication rates of the three screening options. Surprisingly, only 27% of the patients chose colonoscopy. The USPSTF guideline is currently under revision, but the 2016 guideline lists all three of the above as acceptable screening options (along with the others we rarely use such as flexible sigmoidoscopy with FIT, and CT colonography). Based on the results of the pilot at New West, we are launching a phase II pilot which will enroll 10,000 patients to see if the results are consistent with phase I in a much larger patient population. This pilot will also use an updated shared decision-making tool which is a professionally produced interactive video that can be pushed to patients when they are making a decision around CRC screening.

The cost-effectiveness of the screening modality is also important to consider when screening large segments of the population. Stool FIT is clearly the most cost-effective and many countries around the globe screen with FIT and reserve colonoscopy for positive FIT tests. A recent meta-analysis of over 120,000 patients showed that the sensitivity of stool FIT was 91% for the detection of cancer.[2] Stool DNA (Cologuard) has variable reimbursement but the cost is ~$500 in many health plans. At this cost, whether or not it is cost-effective is a function of what the costs are for a colonoscopy in any given market. At a frequency of every three years, the stool DNA cost equivalent over the ten-year span of the colonoscopy interval would be ~$1,650. Colonoscopy reimbursement (anesthesia, GI and facility combined) in most commercial health plans is well above this, and therefore stool DNA would be cost-effective. For our Medicare markets, this will be a market-specific calculation as the cost-effectiveness will vary with the colonoscopy reimbursement. It could vary from cost-effective to cost-neutral to cost-ineffective in different markets. If the cost of the stool DNA test is reduced significantly, it would become cost-effective in all markets.

Figure 3. Benefits, harms, and burden of colorectal screening strategies over a lifetime

A Benefit: Life-years gained per 1000 individuals screened

Screening method and frequency	Model estimates, life-years gained per 1000 screened		
	Middle	Low	High
Flexible sigmoidoscopy every 5 years	221	181	227
FIT-DNA every 3 years	226	215	250
FIT every year[a]	244	231	260
HSgFOBT every year	247	232	261
CT colonography every 5 years[b]	248	226	265
Flexible sigmoidoscopy every 10 years plus FIT every year[a]	256	246	270
FIT-DNA every year	261	246	271
Colonoscopy every 10 years[a]	270	248	275



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EDUCATIONAL FORUM

Colon polyp surveillance update

One of the concerns with colonoscopy is the high rate of detection of unimportant polyps, including hyperplastic polyps and small tubular adenomas. Over the past decade, the detection of small tubular adenomas has increased such that they are currently found on over a third of all colonoscopies. These patients are then placed on an accelerated surveillance regimen, typically at five years. There is no evidence base to support a reduction in colorectal cancer (CRC) rates using this approach, and these patients are therefore exposed to the risks and costs of colonoscopies that may not be indicated. Earlier this year, the U.S. Multi-Society Task Force on CRC updated their polyp surveillance guidelines.[3] That document, as well as a recent European Society of GI Endoscopy update,[4] form the basis for the following recommendations.

As noted, there are multiple large cohort studies that have estimated the percent reduction in CRC incidence with screening colonoscopy. The largest looked at over 1.3 million individuals and estimated the reduction in incidence on long-term follow-up at 66%. Because the reductions in risk and mortality extend for a long period of time following a colonoscopy that did not reveal CRC (up to 10–15 years), the important question which needs to be addressed is how often is repeat colonoscopy indicated in patients with one or two small tubular adenomas, as this is the most frequent abnormality found on colonoscopy. These adenomas are referred to as "non-advanced adenomas." Interestingly, in several studies that examined future CRC risk in these patients, it was found to be the same or up to 32% lower than the general population. This reduced risk is likely because these individuals have had a colonoscopic exam that did not reveal a CRC or advanced adenoma, and therefore this may selectively represent a "lower risk population." The updated U.S. guidelines therefore states that:

"New evidence suggests that most adenoma patients (such as those with 1–2 small adenomas) are at lower than average risk for subsequent CRC than the general population after baseline polypectomy."

Nonetheless, despite the above statement of equal to or lower than average risk, the consensus guideline then goes on to state that:

"For patients with 1–2 tubular adenomas <10 mm in size completely removed at a high-quality examination, we recommend repeat colonoscopy in 7–10 years (strong recommendation, moderate quality of evidence). We suggest that physicians may reevaluate patients previously recommended an interval shorter than 7–10 years and reasonably choose to provide an updated recommendation for follow-up between 7 and 10 years after the prior examination that diagnosed 1–2 adenomas, <10 mm."

It thus appears we have finally gotten over the hurdle of every five-year surveillance in these individuals and we should no longer be recommending this for our patients with 1–2 small adenomas. Unfortunately, when considering a recommendation for 10-year rather than seven-year surveillance, the guideline states:

"We considered a recommendation of 10 years alone rather than a range of 7- to 10-year follow-up after removal of 1–2 adenomas, <10 mm in size, given that evidence supports that these patients are at lower than average risk for CRC. The 7- to 10-year range was chosen because of ongoing uncertainty regarding whether the observed lower than average risk for CRC could be reduced further by exposure to surveillance, and also because we cannot rule out the possibility that exposure to surveillance colonoscopy in some studies contributed to the low risk of CRC observed in these patients."

In this author's opinion, taking a group of patients with a lower than average risk of CRC and subjecting them to more intense surveillance in hopes of further reducing risk is highly unlikely to be cost-effective and has the potential to cause harm from unnecessary colonoscopies. These resources would likely be better utilized to increase the screening rate in non-screened individuals. Interestingly, in contrast to the U.S. guideline, the European guideline recommends a return to a 10-year interval for patients who are found to have 1–4 small adenomas, <10 mm in size, or one sessile serrated polyp <10 mm in size, irrespective of histology unless high grade dysplasia is present. The more conservative European guideline is based on a 13-year follow-up study of 16,000 post-polypectomy patients showing that those with three or more nonadvanced adenomas had no increased risk of CRC incidence compared to those without adenomas.[5] Based upon the literature as well as the 7–10 year accepted range in the new U.S. guideline, we should feel comfortable recommending 10-year surveillance in our patients with 1–2 small adenomas.

Another area of confusion for many providers is the appropriate surveillance interval for patients who are found to have advanced adenomas on their baseline colonoscopy. In these individuals the confusion arises as surveillance can range from one year up to five years, and is based on size, number and histologic appearance of the polyp, as well as whether the resection was intact or piecemeal. The surveillance of high-risk adenomas is another area where the evidence lags behind the recommendations. There is a large European trial of polyp surveillance well under way which may help answer many of the outstanding questions. Fortunately, the new U.S. guideline has simplified follow-up of these patients and the link to the follow-up algorithm of high-risk adenomas is included with this article. The follow-up of serrated polyps is unfortunately still complex and is also included in the algorithm.

Algorithm link:
https://journals.lww.com/ajg/_layouts/15/oaks.journals/ImageView.aspx?k=ajg:2020:03000:00019&i=F1&year=2020&issue=03000&article=00019&type=Fulltext

Triple inhaler therapy for COPD — optimal use

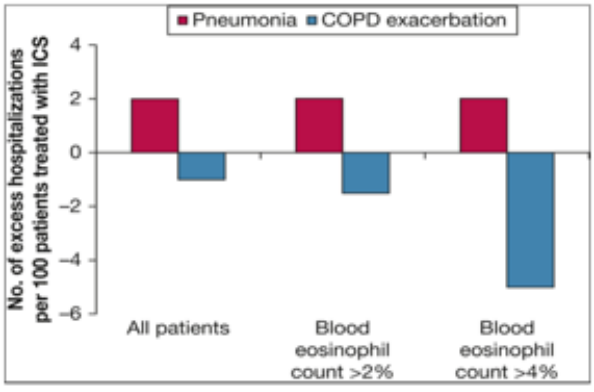
It is estimated that only 30% of COPD patients on triple inhaler therapy meet the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines for use. In an observational study, UK investigators looked at dual inhaler therapy (LABA/LAMA) versus triple inhaler therapy (LABA/LAMA/ICS) in a primary care data base.[6] A cohort of 7,000 patients on triple therapy was propensity matched to 2,000 patients on dual therapy. Using a moderate to severe exacerbation definition as one requiring hospitalization or systemic corticosteroid therapy, the yearly rate was approximately 45% in each group. It has been consistently demonstrated in COPD inhaler trials that the use of inhaled corticosteroids increases the rate of bacterial pneumonia. This was once again observed in this trial with 4% of the triple inhaler group requiring hospitalization for bacterial pneumonia, compared to 2% of the dual inhaler group. On the other hand, in the over 2,400 patients with either frequent exacerbations or eosinophilia, triple therapy was associated with significantly fewer exacerbations than dual therapy. The GOLD guidelines recommend the consideration of triple inhaler therapy for the subset of patients with:

- Asthmatic COPD
- Eosinophilia
  - For patients with one exacerbation per year, ICS recommended if the blood eosinophil level is >300 per microliter.
  - For patients with two or more exacerbations per year, ICS is recommended if the blood eosinophil count is >100 per microliter.

When triple inhaler therapy is confined to this subpopulation of COPD patients, the frequency reduction in moderate to severe exacerbations outpaces the increase in bacterial pneumonia for an absolute benefit to the patient, as reflected in the table below. Inappropriate utilization of ICS therapy in patients with COPD is associated with greater harm than benefit, and adherence to the GOLD guidelines is recommended.

ICS use in COPD guided by eosinophil percentage

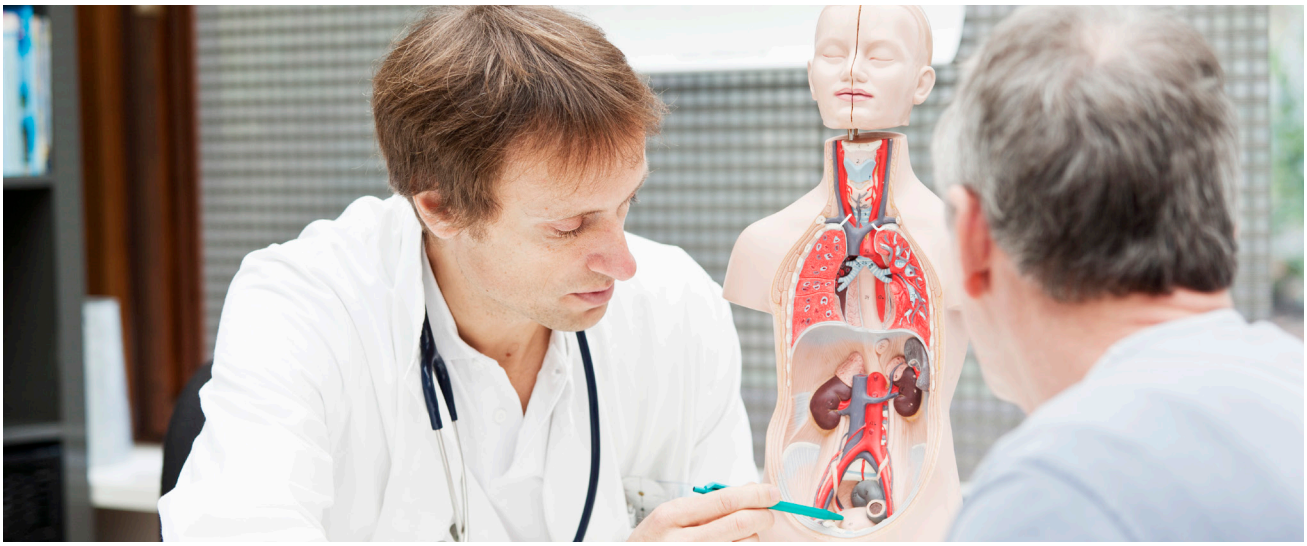
http://dx.doi.org/10.1016/j.chest.2017.05.020



Caffeine and health

A common patient discussion for most of us surrounds the health risks of caffeine. A recent review in the ***New England Journal of Medicine*** reviewed the positive and negative health aspects of caffeine, and merits review as caffeine is arguably the most frequently ingested drug in the world.[7] In terms of positive effects, caffeine has been demonstrated to reduce fatigue, increase alertness and reduce reaction time. These benefits have led to improved performance in distance driving, working an assembly line, etc. Caffeine also increases the effect of commonly used analgesics. With respect to adverse effects, it can reduce sleep efficiency and quality and increase anxiety. All of these effects vary widely from person to person due to large variations in individual metabolism. There is a well-recognized caffeine withdrawal syndrome consisting of headache, fatigue, depressed mood and occasional flu-like symptoms which can last for two to nine days. Caffeine can be toxic and even lethal in very high doses, but this is usually from misuse of supplements, as it would take about 75 cups of coffee to reach a toxic serum level.

Another common area of discussion is the interplay of caffeine and chronic diseases. Most of these observations come from population studies which are subject to the usual confounding. In terms of cardiovascular disease, there is a short-term modest blood pressure increase, but tolerance develops within a week of regular consumption and blood pressure levels then return to normal. The risk of sustained hypertension is not not increased by daily caffeine use. Cholesterol levels are increased by cafestrol in coffee, but only with consumption of unfiltered coffee. Cafestrol levels are highest in boiled and French press coffee, moderate in espresso style drinks, and minimal in filtered coffee. High consumption of unfiltered coffee (six cups of French press coffee daily) can raise LDL cholesterol by as much as 18 mg/dl. This level of cholesterol elevation could contribute to an increased risk of cardiovascular (CV) disease. Studies of consumption of up to six cups daily of filtered coffee, however, have not been associated with an increase in MI or stroke rates even in high-risk populations. In fact, at consumption levels of 3–5 cups daily, a reduced risk of CV events has been observed. There is not an association between coffee consumption and atrial fibrillation. Interestingly, both caffeinated and decaffeinated coffee consumption at moderate levels has been associated with a decreased risk of Type 2 diabetes. There are no associations between caffeine ingestion and an increased incidence of cancers. There is a mild protective effect for multiple cancers including skin, breast, prostate, endometrial and hepatic cancers. In terms of GI effects, caffeine can worsen esophageal reflux but does not have a clear relation to either dyspepsia or peptic ulcer disease. Caffeine has a beneficial effect on reducing gallstones and seems to also have a protective effect against hepatic cirrhosis. Neurologically, although there is no protective effect against Alzheimer's disease, there is a strong protective effect against Parkinson's disease. With respect to pregnancy, there are some data that caffeine in moderate to high doses may reduce fetal growth rates and increase the rate of pregnancy loss. Lastly, there are consistent international data that all-cause mortality is reduced with consumption of both caffeinated and decaffeinated coffee. Because there are some adverse effects to caffeine ingestion, recommendations are to limit caffeine to 400 mg daily, or 200 mg for pregnant and lactating women. Click the link to view a good infographic summary (Figure 2): **https://www.nejm.org/doi/10.1056/NEJMra1816604**



Comparative treatment options for intermediate-risk prostate cancer (IRPC)

Historically, treatment options for prostate cancer include radical prostatectomy (RP) and external beam radiation therapy (EBRT). Classically, recurrence with RP occurred at the surgical margins while recurrence associated with EBRT arose in the central portion, the site of origin of the cancer. Most recently, promising results have been noted with brachytherapy (percutaneous placement of radioactive seeds within the prostate). Brachytherapy seems to offer better cure at both the margins of the tumor and at its point of origin. Initially, brachytherapy was only offered in combination with EBRT.[8] More recently for intermediate-risk prostate cancer the addition of EBRT was shown to add no benefit.[9] Researchers at Kaiser Permanente compared treatment outcomes in 1,503 patients with intermediate-risk prostate cancer over 10 years resulting from RP, EBRT or brachytherapy.[10] Patients were studied retrospectively using a propensity score matching system. Patient characteristics and treatment outcomes are summarized in the table below. As can be seen from the data, in this study EBRT and brachytherapy were equally effective.

Importantly, there were no significant differences in metastases-free or prostate cancer-specific survival between the three treatment options after adjustment for age and comorbidities. Brachytherapy showed improvements in biochemical markers of prostate cancer. This study adds to growing information suggesting that intermediate-risk prostate cancer can effectively be treated with brachytherapy alone. This is important, as many of our patients may prefer brachytherapy and it is not often provided as an option. The advantages are that treatment is usually complete in two visits at a cost that can be as much as 50% lower than EBRT. Androgen-suppression therapy does not provide added benefit when added to brachytherapy, whereas androgen-suppression therapy does add benefit when used along with EBRT. In terms of the toxicity of the treatment, this also favors brachytherapy. The authors of the Kaiser paper also point out that the current higher reimbursement favors intensity-modulated radiation therapy and therefore fewer patients may be directed to brachytherapy.[11] Providers should strongly consider recommending brachytherapy as one option for their patients with intermediate-risk prostate cancer. It is prudent to identify a high-quality provider of brachytherapy in each geography and have that practice be available to our patients.

Parameter	Treatment modality		
	Radical prostatectomy	External beam RT	Brachytherapy
Patient number	819	574	110
Therapy	Surgery	Median dose 75.3 Gray	Iodine-125
Follow-up (years)	10	9.6	9.8
Use of androgen suppression Rx (%)	0.6	59	12.7
Added external RT (%)	0	0	14
No biochemical failure Amer Urologic Assoc (%)	57.1	N/A	N/A
No biochemical failure Phoenix criteria (%)	N/A	57	80.2
Overall survival	85.5	75.5	78.3
Prostate Ca-free survival	96.6	96.2	95.4

Rx= adjunctive therapy; RT= radiation therapy

Physical therapy versus intraarticular steroid injection for treatment of knee osteoarthritis

Both physical therapy and glucocorticoid intraarticular knee injections confer clinical benefit for the treatment of knee osteoarthritis pain and function. A recently published study in the *New England Journal of Medicine* compared the two treatment modalities in a randomized clinical trial.[12] Patients with osteoarthritis in one or both knees were randomly assigned to receive a glucocorticoid injection (triamcinolone acetate, 40 mg, plus lidocaine) or undergo physical therapy. Patients in the glucocorticoid cohort could receive up to three injections during the one-year trial period; those in the physical therapy cohort could undergo up to eight sessions in the first four- to six-week period plus up to three additional sessions at the time of the four-month and nine-month reassessments. Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scores were used as the primary outcome, with higher scores (up to 240) indicating worse pain, function and stiffness. Additional measures were used for secondary outcomes.

Data for at least three study time points were available for 78 patients in each group and analyzed. The mean patient age was 56 years. Patients who received physical therapy had significantly lower WOMAC scores at one year than those who received glucocorticoid injections, 37.0±30.7 versus 55.8±53.8, p=0.008. Ninety percent of the physical therapy patients and 74% of the cortisone injection patients had clinically significant improvement in pain. Secondary outcome analyses demonstrated that patients who received physical therapy had a median score of "quite a bit better" on the global rating of change scale compared to the glucocorticoid injection group median score of "moderately better." Patients in the physical therapy group also performed better on the alternate step test and timed up and go test.

Although improvements were seen among most patients in both cohorts, patients who underwent physical therapy had less pain and less functional disability at one year than patients who received glucocorticoid injections. Discussing treatment options with patients, physical therapy appears to be superior, but glucocorticoid injections could be offered to those patients who do not have an initial response to physical therapy.

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Kenneth Roy Cohen, MD, FACP

Dr. Kenneth Cohen is an experienced physician leader, practicing internist, and researcher who has attained national recognition for health care quality improvement. He was one of the founding physicians of New West Physicians, which is the largest primary care group practice in Colorado and now part of OptumCare. He served as Chief Medical Officer from 1995 - 2020. He now serves as the Executive Director of Clinical Research for UHG R&D and Senior National Medical Director for OptumCare. Dr. Cohen has received awards of recognition and distinction for teaching, including the Lutheran Medical Center Physician of the Year award in 2011. Under his stewardship New West Physicians was awarded the AMGA Acclaim award in 2015 and the Million Hearts Hypertension Champion Award in 2017. He is a Clinical Associate Professor of Medicine and Pharmacy at the University of Colorado School of Medicine. Dr. Cohen holds degrees from Dickinson College and Hahnemann University. He is a Fellow of the American College of Physicians and a member of the Phi Beta Kappa and Alpha Omega Alpha honor societies.

John Hitt, MD, MBA

Dr. Hitt has been a physician executive for more than 25 years. Most recently he was the CMO of Ativa Medical a medical device startup company and an independent health care consultant. Previously, he was CMO at Maricopa Integrated Health System (MIHS) and a key member of the senior leadership team having responsibility for Medical Staff Services, Grants and Research, Academic Affairs, Risk Management, physician contracted services and the activity of Residency Program Directors, Clinical Department Chairs, and Medical Staff.

Dr. Hitt has over 25 years of experience in quality and performance improvement, clinical integration, academic and medical staff affairs. He served as the Chief Medical Quality Officer for Hennepin Health System, a premier Level 1 Adult and Pediatric Trauma Center. He was a physician leader for VHA (now Vizient). He was the national Medical Director for Disease Management at Caremark International and the VP of Medical Affairs at the University of Minnesota Hospital.

Dr. Hitt is a graduate of the University of Virginia where he played Division 1 soccer. He received his Medical Doctorate from the Medical College of Georgia in 1984 (AOA honors) and completed his Internal Medicine and Infectious Disease Fellowship training at the University of Minnesota Hospital and Clinics. Dr. Hitt completed his MBA at the Carlson School of Management at the University of Minnesota in 2003. He is the proud father of seven children.

Geoffrey Heyer, MD

Dr. Heyer is board certified in neurology with special certification in child neurology and in headache medicine. Prior to joining our team, Dr. Heyer was an associate professor of neurology and pediatrics at The Ohio State University and Columbia University Medical Center, specializing in autonomic disorders, headache, and pain management. He has published over 50 peer-reviewed research papers and numerous editorials, clinical reviews, and textbook chapters. He also co-authored a textbook on childhood stroke and cerebrovascular disorders.

Dr. Heyer received his medical degree from Columbia University, College of Physicians and Surgeons. He completed his neurology and child neurology residencies at Columbia-Presbyterian Medical Center. He has additional research training from the Mailman School of Public Health, Columbia University.

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