Clinical Roundtable Monograph

# 5-ASA Dose-Response: Maximizing Efficacy and Adherence

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A CME Activity
Approved for
1.0 *AMA PRA
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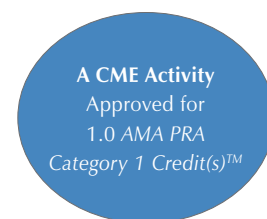
Release date: February 2010
Expiration date: February 28, 2011
Estimated time to complete activity: 1.0 hour

Abstract

Mesalamine (5-aminosalicylic acid; 5-ASA) represents the cornerstone of first-line therapy for mild-to-moderate ulcerative colitis (UC). Current guidelines suggest that the combination of oral and rectal therapies provide optimal symptom resolution and effectively maintain remission in the majority of these patients. Although effective, most oral 5-ASA formulations have a high pill burden and rectal therapies are associated with low adherence. Recent research has examined patterns of compliance, as well as the efficacy of different dose levels of 5-ASA in terms of symptom resolution, the maintenance of remission, and improvements in quality of life. The ASCEND I, II, and III trials found that doses of 4.8 g/day are more effective than 2.4 g/day doses in patients with moderate disease, those with previous steroid use, and those with a history of multiple medications. The benefits of effective long-term 5-ASA therapy include the avoidance of more costly and potentially toxic drugs (such as corticosteroids and biologic therapies), as well as improvements in quality of life, reductions in the need for future colectomy, and a lower risk of developing colorectal cancer.

Target Audience: This activity has been designed to meet the educational needs of gastroenterologists involved in the management of patients with ulcerative colitis.

Statement of Need/Program Overview: According to the American College of Gastroenterology guidelines, treatment for UC should induce and maintain remission of symptoms and mucosal inflammation to improve patients' quality of life. Aminosalicylates (5-ASAs) are recommended for the induction and maintenance of remission in patients with mild-to-moderate disease. Administration of 5-ASA therapy represents a challenge to community physicians due to the varying manifestations of UC throughout the colon and the need to select the drug delivery system best suited to each patient. The possibility of a 5-ASA dose-response that correlates improved efficacy and sustained response to escalated dosing has been investigated in both the induction and maintenance settings of disease, but research has been somewhat inconclusive. However, more recent data have identified specific populations among patients with mild/moderate disease who benefit markedly from dose increases. Whatever their findings in terms of efficacy, researchers note no change in the excellent safety profile of 5-ASA products, regardless of the dose, allowing for the continued research of varying regimens in different populations. A discussion among UC thought leaders regarding data on novel formulations of 5-ASA products could address concerns regarding systemic absorption rates, delivery of 5-ASA throughout the colon, and novel formulations that reduce pill burden, simplify dosing schedules, and increase mucosal concentration of drug, thus providing an excellent educational opportunity for physicians attempting to choose the right agent and dose for their individual patients.

Educational Objectives: After completing this activity, the participant should be better able to:

1. Describe the current unmet needs in the use of 5-ASA therapy for mild-to-moderate ulcerative colitis.
2. Summarize the latest research on dose-response to higher concentrations of 5-ASA drug and its efficacy.
3. Discuss the importance of achieving and sustaining remission and the effect of this goal on long-term outcomes.
4. Review methods to ensure patient adherence.

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Michael A. Safdi, MD: Dr. Safdi discloses the following. Consultant: Procter & Gamble, Centocor, Shire. Contracted research: Procter & Gamble, Centocor, Abbott Laboratories, Shire, UCB, Inc.

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Current Treatment Landscape of Mild-to-Moderate Ulcerative Colitis

Michael A. Safdi, MD

5-ASA Efficacy

According to the American College of Gastroenterology (ACG) treatment guidelines, ulcerative colitis (UC) is classified as mild in patients who have fewer than 4 bowel movements daily with minimal bleeding and no significant urgency or abdominal pain.[1] Studies that have compared 2.4 g and 4.8 g doses of mesalamine have determined that patients with mild disease will improve just as readily on lower doses as on higher doses.[2] For moderate disease, defined as 4–6 daily bowel movements with greater urgency and tenesmus,[1] patients do tend to improve more readily on the 4.8 g/day dose.[3,4]

The optimal number of doses per day for treating mild-to-moderate UC is an area of some discussion. The first available 5-ASA formulation, sulfasalazine, was first given in the early 1950s and required division into multiple daily doses because of the risk for adverse events such as nausea and headache. The multiple daily dosing strategy carried over into the development of subsequent 5-ASA therapies, and questions remain as to whether once-daily dosing is as effective as twice-daily dosing in the initial induction phase of therapy. Currently, two oral therapies are approved for once-daily administration (one for induction of remission and one for maintenance). However, empiric practitioner evidence suggest that all current 5-ASA formulations may be administered effectively in a once-daily regimen. It appears that taking the prescribed medication regularly is more important than dividing the doses.

Importantly, mucosal healing has been documented with 5-ASA therapy, even though the trial endpoints to prove this have varied considerably among the different studies. The goal of induction therapy for UC should be to resolve UC patients' symptoms as quickly as possible. Swift and successful induction of clinical remission encourages patient trust of their physician and is important in fostering a functional long-term relationship for the effective treatment of this chronic disease. With this in mind, an anxious patient with moderately active disease should be started on a combination of oral and topical medications. However, this regimen needs to be adjusted for the realistic needs of each patient's situation. For college students living in a dormitory environment, nightly enemas are not feasible. Patients who travel 3 or more days per week for work may need to take enemas for fewer days per week or take them on weekends only. For these patients, oral therapy alone will induce remission, but it may do so more slowly. Overall, 5-ASAs have been proven to achieve remission in approximately 70% of UC patients.[1]

In clinical practice, disease extent is not as important as symptom severity when making treatment decisions. Although it is true that patients with proctitis or left-sided disease will most likely gain benefit from topical therapy, in reality, most patients prefer oral therapy. I begin by prescribing combination therapy in the hopes that eventually remission can be maintained with oral therapy only. There are patients who will continue to need enemas or suppositories once or twice weekly to maintain remission and when these individuals realize that rectal therapy can make the difference between asymptomatic remission and symptomatic flares, they are usually happy to comply.

Patient Relation Strategies to Improve 5-ASA Adherence

It is important to consult with patients frequently at the beginning of therapy. In my practice, I usually schedule an appointment approximately 2 weeks after the initiation of therapy, and then again at the three-month point. This juncture is crucial because three months is often the point at which patients will begin to forget drug therapy, or purposely interrupt their regimen. Over the first several years, I will see patients every 6 months and eventually drop down to annual visits if treatment is going well. It is crucial that physicians do a better job of explaining the importance of adherence. For each patient, we must find an effective way to communicate that continuous drug therapy is important. When I treat young people who are distracted by their cell phones, I suggest that they use the phone to set an alarm. They can choose the time of day that is most convenient to take their medication, then set the alarm to remind themselves on a daily basis.

As discussed later in his section, Dr. Seymour Katz recommends that patients stay on the same dose of 5-ASA that

allowed them to achieve remission for maintenance. This is an area of ongoing investigation, particularly if the patient started with 4.8 g daily. My preference is to try and lower the dose gradually if the patient has had a solid remission without inflammation for over a year.

Alternatives to 5-ASA Therapy

Physicians often move their patients to corticosteroids almost immediately after oral 5-ASAs fail to resolve bleeding, urgency, or tenesmus symptoms. We should try to convince the patients that these medications may take up to 4 weeks to work. However, long-term steroid use carries a high risk of adverse events.[1] Although moon facies and acne are mostly reversible, these can be devastating side effects for a young, single individual. In addition, it is not beneficial to plant the seed in a patient that steroids are the only effective option for them. I will frequently emphasize the severe adverse effects of osteonecrosis, osteoporosis, hypertension, and cataracts to help persuade the patient and family to give their treatment time to work. Furthermore, many physicians believe that if steroids are used to induce remission, it is unlikely that 5-ASAs will maintain remission effectively. This may not be true in the case of patients who have been prematurely switched to steroid therapy without an adequately long enough course of appropriate doses of 5-ASA products, including combination oral and topical therapy if necessary.

The immunosuppressives azathioprine and 6-MP are effective,[5] but they have an even slower onset of action than 5-ASAs. However, these agents do appear to work, even though the evidence in UC is not as strong as it is with Crohn's disease. In the long term, these agents increase patients' baseline risk of lymphoma by up to four times.[1] As with all medicine, the risks versus the benefits of any individual therapy in terms of efficacy and quality of life must be discussed fully with the patient and family. Methotrexate

is more commonly considered in the treatment of Crohn's disease, but it also has efficacy in UC.[6] Methotrexate has a faster onset of action than other therapies, but has not been studied extensively in UC.

Anti-tumor necrosis factor (TNF) agents such as infliximab and adalimumab represent the newest additions to the UC arsenal.[7,8] There is excellent published trial evidence that infliximab is effective in inducing improvement in 70% of patients. The other 2 agents have not submitted data on efficacy in UC at this time. They work quickly, and are effective in achieving and maintaining remission as well as inducing mucosal healing. However, they are expensive agents with unknown long-term safety profiles. There is some evidence that they may increase the incidence of certain neoplasms, including the lymphoma that we see with azathioprine and 6-MP.

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Challenges in Effective 5-ASA Administration

Gary R. Lichtenstein, MD

The classic symptoms of UC include diarrhea, abdominal discomfort, and hematochezia. These symptoms remind patients to be adherent with medical therapy, and normally patients do comply better with therapy during active disease periods. However, during the maintenance phase, adherence drops considerably. In a study by Kane and colleagues,[1] researchers examined pharmacy refill records for 94 patients with clinically quiescent UC who were prescribed maintenance doses of mesalamine. After analyzing 6 months' worth of refill data, the investigators found that only 40% of patients were adherent to drug therapy (defined as the consumption of at least 80% of dispensed drug supply). The study showed that male gender, the use of multiple concomitant medications, and single status were significantly associated with lower drug adherence. This community-based study produced much lower rates of compliance than has been found in clinical trials, where patients are under more strict supervision. It is not surprising that compliance is low among patients in remission: without the daily reminder for the need for medication—in the form of troubling symptoms—patients tend to feel comfortable and begin to skip doses, particularly those that are normally taken in the middle of the day.

Lowering Pill Burden and Optimizing Daily Regimens

Pill burden is another important consideration in adherence. If an individual is mandated to take medication on a 4-times daily (QID) basis, the chances are that they will be less likely to adhere to therapy. In an important adherence review by Claxton and colleagues,[2] the researchers identified 76 studies across a range of diseases where compliance was measured using electronic monitoring. They found that dose-taking compliance declined as the number of daily doses increased: the mean compliance rate for QID dosing was only 51%, while the rate for once-daily dosing was 79% ($P<.001$ among dose schedules).

The use of multiple daily dosing in UC was originally based on the pharmacokinetics of sulfasalazine, where peaks and troughs occurred quickly. The QID dosing schedule for this drug was difficult for patients to follow, but since it was the only regimen available at the time, it set the standard for UC care. However, sulfasalazine had a host of other drawbacks in addition to the need for multiple dosing. With sulfasalazine, 30% of patients experienced adverse events and 50% stopped medical therapy. Twenty percent of the 5-ASA in sulfasalazine was absorbed systemically and excreted in the urine.

In 1977, Azad Khan and colleagues[3] discovered that the active moiety of sulfasalazine was 5-ASA, and since then, multiple 5-ASA agents have been developed. When delayed-release mesalamine was developed, it offered three-times-daily (TID) dosing. Because the majority of individuals tolerate mesalamine extremely well, it is the first drug used in mild-to-moderate disease, and it serves as the cornerstone of the armamentarium for UC.

There are currently several mesalamine formulations that are designed with once-daily administration, including MMX mesalamine, which is approved for induction therapy, and extended-release mesalamine granules, which are approved for maintenance therapy. The QDIEM Study[4] recently compared once-daily and twice daily dosing of delayed-release mesalamine as maintenance therapy for 1,023 patients with UC in remission. Sandborn and colleagues found that once-daily dosing was as effective as twice-daily dosing for maintenance therapy, and patients on both regimens had low rates of withdrawals due to adverse events, implying that many, if not all, mesalamine formulations can be effectively dosed once daily.

Long-Term Benefits of Improved Adherence

When counseling patients, there are several benefits to adherence that should be emphasized. The first is that medication will eradicate active symptoms. In addition, it is important to discuss the effect of drug therapy on lowering the risk of colorectal cancer. Velayos and colleagues[5] were among the first researchers to perform a meta-analysis examining the role of 5-ASA therapy in reducing cancer or dysplasia among patients with UC. They analyzed 9 studies, enrolling a total of 1,932 subjects. The researchers found a pooled odds ratio (OR) of 0.51 for the protective association between 5-ASA use and colorectal cancer (95% confidence interval [CI]: 0.37–0.69), and the same OR for the combined endpoint of colorectal cancer and dysplasia (95% CI: 0.38–0.69).
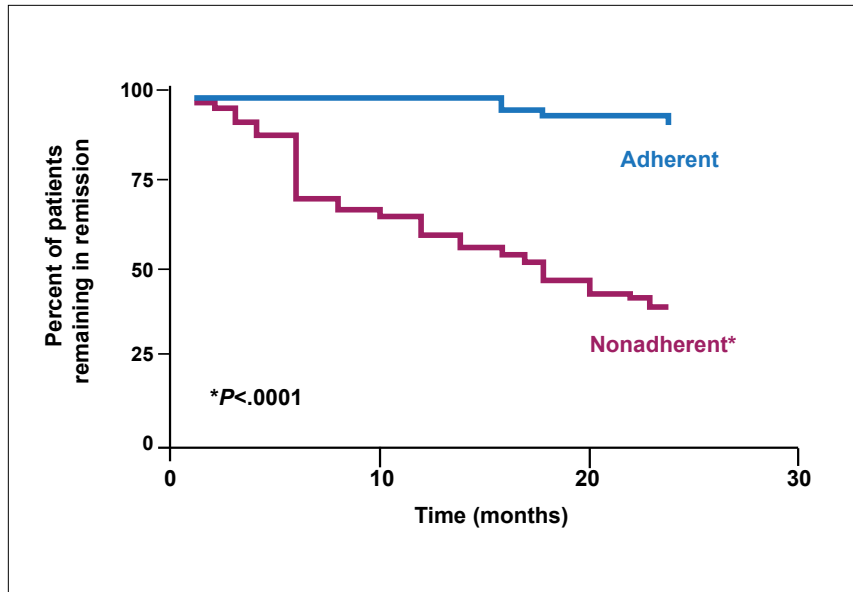
Figure 1. Adherence in patients remaining in remission.

Adapted from Kane S, et al. *Am J Med.* 2003;114:39-43.

Another key benefit to maintenance therapy is that patients are much more likely to relapse if they stop taking their prescribed medication. Kane and colleagues[6] followed 99 patients who had UC in remission for at least 6 months. The researchers assessed patients for adherence (defined as refilling at least 80% of prescribed medication) and for disease recurrence at 6, 12, and 24 months. They found that patients who were not adherent with medication had more than a five-fold risk of recurrence than adherent patients (Figure 1).

Patients who maintain remission also have reduced risks of hospitalization and surgery. A study by Frøslie and associates[7] enrolled 740 patients newly diagnosed with UC or Crohn's disease between 1990 and 1994. The researchers performed clinical and endoscopic evaluations on each patient at 1 year and 5 years, and analyzed the impact of mucosal healing on a variety of factors. They found that mucosal healing was significantly associated with less inflammation (*P*=.02), less of a need for steroid use (*P*=.02), and a lower risk of future colectomy (*P*=.02).

5-ASA-Refractory/Steroid-Dependent Disease

It is important to optimize 5-ASA therapy, whether it involves maximizing the dose of oral therapy or adding a topical agent. If symptoms fail to improve on optimized mesalamine therapy, physicians often contemplate the addition of corticosteroids. Steroids work rapidly and are relatively safe in the short term. However, corticosteroids are well recognized to have significant potential problems and many patience develop steroid dependence. In a natural history study of steroid use conducted in Olmsted County, Minnesota, which followed 173 patients with CD and 185 patients with UC, rates of steroid-dependence after 1 year of treatment were 28% among CD patients and 22% among UC patients.[8]

Osteonecrosis is a rare but serious complication of steroid therapy. It is characterized by the death of bone cells and can lead to cortical decompression or hip replacement. In a study by Vakil and colleagues,[9] 7 (4.3%) of 161 patients developed this complication over a 10-year follow-up period of corticosteroid treatment for inflammatory bowel disease. The mean duration of steroid treatment was 42 weeks, and surgery for the disease was required in 4 of the 7 patients. Osteoporosis is another potential side effect of corticosteroid use,[10] and can lead to fractures and significant pain, morbidity, and mortality. The National Cooperative Crohn's Disease Study[11] found that the cosmetic side effects of moon face, acne, and striae occurred at alarming rates in patients on steroid therapy, in 47%, 30%, and 6% of patients, respectively. Whereas moon face and acne can be resolved, striae can only be removed with plastic surgery.

For patients refractory to conventional 5-ASA therapy, it is tempting to try a first-pass, rapidly metabolized steroid such as budesonide. However, a placebo-controlled study by Lindgren and colleagues[12] found only nonsignificant decreases in relapse rates for patients receiving budesonide enemas versus those receiving placebo enemas. Overall, budesonide has not been embraced as an accepted therapy for UC. There are several novel agents under investigation, but it is too early to gauge their usefulness.

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Utilizing Higher 5-ASA Concentrations to Improve Efficacy

Seymour Katz, MD

ASCEND I-III Trials

5-ASA therapy has a well-documented history of preventing relapse in UC and several older studies have supported the use of permanent maintenance therapy at dose levels of up to 4.8 g/day.[1] Most recently, the ASCEND trials investigated the dose-response effect of 5-ASA therapy in the induction and maintenance of remission. In ASCEND I,[2] 301 patients with mild-to-moderate disease were given either 2.4 g/day or 4.8 g/day of delayed-release oral mesalamine. The primary endpoint was overall improvement, which was defined as either complete remission or a response to therapy at week 6. Among all study participants, 51% of patients who received the lower dose experienced improvement, compared with 56% of those who received the higher dose, which was not a statistically significant difference. However, when results were stratified by disease severity, the researchers found that patients with moderate disease had a more substantial dose response than the overall study population. In the moderate disease subgroup, 57% of patients achieved treatment success with the 2.4 g/day dose, compared with 72% who received the 4.8 g/day dose (P=.0384). Thus, patients with more severe disease benefitted much more from higher doses than from lower ones.

The ASCEND II[3] trial focused solely on patients with moderately active UC. The trial enrolled 386 patients who were randomized to receive the same doses as in ASCEND I, and the same endpoints were used. The trial confirmed that the higher dose is more effective than the lower dose in these patients: 72% achieved treatment success at week 6 at the higher dose, compared with 59% at the lower dose (P=.036). The investigators concluded that patients with moderate UC were significantly more likely to achieve success when they received 4.8 g/day than when they received 2.4 g/day of mesalamine.

In ASCEND III,[4] 772 patients with moderate UC were randomized to receive 2.4 g/day versus 4.8 g/day doses of mesalamine, and there was no statistically significant difference between the higher and lower dose regimens in terms of overall improvement. Whereas 70% of patients at the higher dose level achieved success, 66% of patients did at the lower dose. However, in a subgroup analysis, the researchers found that patients with difficult-to-treat disease responded better to higher doses than to lower doses. Difficult-to-treat patients included those previously treated with corticosteroids, oral 5-ASAs, rectal therapies, or other UC medications, as well as those receiving multiple medications simultaneously. The results from ASCEND III are meaningful for those of us in clinical practice, as these difficult-to-treat patients are often the ones that we see most frequently in our offices. This is a very important subgroup that benefits from higher doses, and a longer duration of therapy, in order to enter remission (Figure 2).

It is important to consider the definitions of overall improvement that were included in the ASCEND trials. Overall improvement was based on the Physician's Global Assessment, which includes the parameters of rectal bleeding, stool frequency, a sigmoidoscopy score, and a clinical assessment. A patient functional assessment score was also used, which involved patient-reported assessments of symptoms. Overall, the researchers found that the 4.8 g/day dose was noninferior to the 2.4 g/day dose.

When Dr. Lichtenstein pooled the data from the ASCEND trials,[5] he focused on the results for improvements in stool frequency and rectal bleeding. In this analysis, improvement was considered a decrease from baseline of more than one point, and clinical remission was defined as a score of 0 for stool frequency and bleeding. In all, his analysis included 1,220 patients, 618 of whom received 2.4 g/day of mesalamine and 602 who received a 4.8 g/day dose. At 3 weeks of treatment, a slightly higher percentage of high-dose patients had improvements in rectal bleeding: 76% of patients on the higher dose improved, compared with 72% on the lower dose. However, for the symptom of stool frequency, 73% of patients on higher doses experienced improvements, versus 64% of those on the lower doses (P=.003). There was also a small but measurable difference in remission rates for the 2 dose groups: 25% in the higher-dose group achieved remission, compared with 20% in the lower-dose group. At 6 weeks, the 4.8 g/day group also had more improvement in rectal bleeding: 83% achieved improvement, compared with 79% in the 2.4 g/day group. While the different doses appeared to produce similar response rates for the original endpoints, this analysis

Figure 2. Previous therapy subgroups of combined ASCEND I, II, and III trials.

†Includes oral 5-ASAs, rectal therapies, steroids, or immunomodulators.

One delayed-release mesalamine HD 800 mg tablet has not been shown to be bioequivalent to 2 delayed-release mesalamine 400 mg tablets.

Adapted from Hanauer SB, et al. *Am J Gastroenterol.* 2008;103(S1):S424. Abstract 1085.
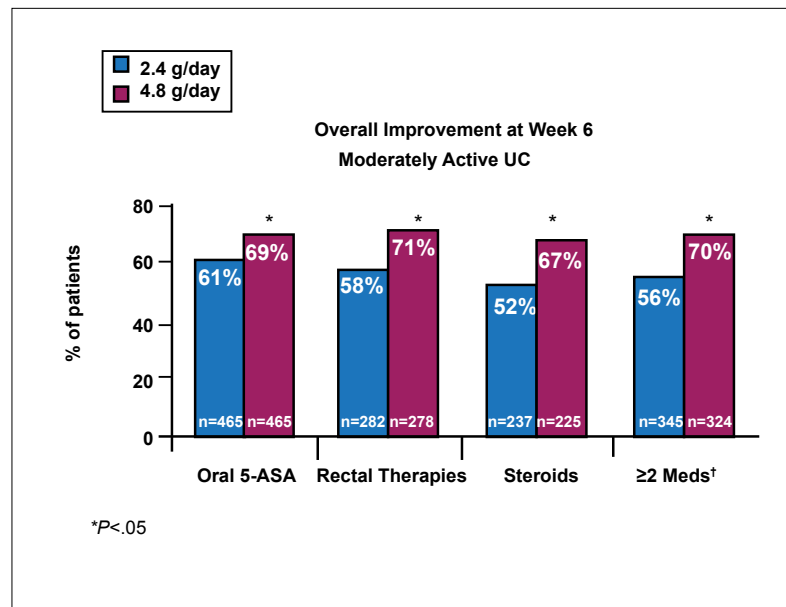
showed that there are some discernible differences for specific symptoms at different dosing levels. In 2007, when trials of Multi Matrix (MMX) mesalamine were published,[6,7] the authors found no significant differences in response rates for 2.4 g/day doses and 4.8 g/day doses. However, it is important to note that these results were not broken out into disease severity or treatment history analyses.

In 2008, Irvine and colleagues examined the effect of mesalamine on the quality of life (QoL) of UC patients by analyzing the combined results of ASCEND I and ASCEND II.[8] They found that mesalamine improved QOL significantly across dose levels, with a mean increase of 29.6 and 39.7 points on the Inflammatory Bowel Disease Questionnaire (IBDQ) at 3 and 6 weeks, respectively (*P*<.0001). They found that QoL improvements were greater for patients with moderate disease than for those with mild disease.

Other Dose-Response Considerations

In an effort to further understand the impact of UC on patients' QoL, we surveyed 772 patients, 51% of whom had experienced 3 to 10 disease flares in the preceding 2 years.[9] We found that, among QoL factors, UC had the greatest impact on patients' personal life, with 55% of respondents reporting a moderate or severe impact. For 49% of participants, UC had a moderate/severe impact on work life, and 39% of patients reported that UC had a moderate/severe impact on interactions with friends and family members. This study highlighted the need to provide support systems for patients, so we not only treat the symptoms of UC, but help patients contend with the strain that this disease places on their lives. In my practice, I am impressed by the inci-

dence of depression among my UC patients. It is extremely important to address depression and other QoL concerns in clinical practice.

Although guidelines recommend the use of 5-ASAs at doses up to 4.8 g/day before switching to second-line therapies,[10] many physicians tend to dismiss 5-ASA therapy before reaching maximum recommended dosing. In a recent study, we tracked the use of 5-ASA therapy before the initiation of immunosuppressant therapy in 2,599 patients with UC.[11] We determined the most recent dose of delayed-release mesalamine that was filled prior to each patient's first dose of immunosuppressive therapy. Among all patients, the mean daily dose of delayed-release mesalamine was 3.48 g/day before switching to immunosuppressant therapy. However, 39% of all patients followed had been taking mesalamine at a most recent daily dose of 2.4 g/day or lower. These findings highlight the need to optimize 5-ASA therapy, with higher doses and longer durations of therapy, before moving on to more risky and costly drugs. I recommend that physicians provide the highest doses of 5-ASA therapy for at least 12 weeks before giving up on these agents, unless symptoms become truly unbearable before the end of that period.

One of the main problems in current treatment practices for UC is that physicians work very hard at attaining remission, but are they are less willing to work with patients to maintain remission. Kane and colleagues[12] provided data showing that if patients do not adhere to maintenance therapy, they will relapse. In my practice, I recommend high-dose, maintenance therapy, because of the general principal that whatever puts a patient into remission will keep him/her in remission.

Another key component to the UC treatment plan is the addition of rectal 5-ASA therapies. Although compliance can be very poor with topical therapies, there is a large body of evidence to show that the use of combination therapy provides a faster induction of remission than oral therapies alone.[13-15] Often, quick results can be provided with the daily use of a 1-g mesalamine enema.

Although the need for it seems obvious, many physicians lack a system for tracking UC patients who are in remission. In my experience, the most effective way to maintain remission is to see patients in the office and have a direct conversation with them. Because patients often stop therapy when they begin to feel better, postcards and phone calls from nurse practitioners are simply not enough to encourage adherence. In addition, treating physicians should keep themselves up-to-date on the latest studies to support their suggestions for drug therapy, as IBD patients tend to be extremely well-educated on the available research and require convincing arguments in order to follow physician directives.

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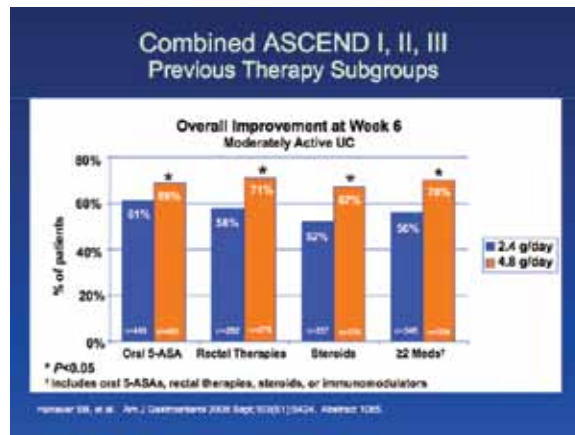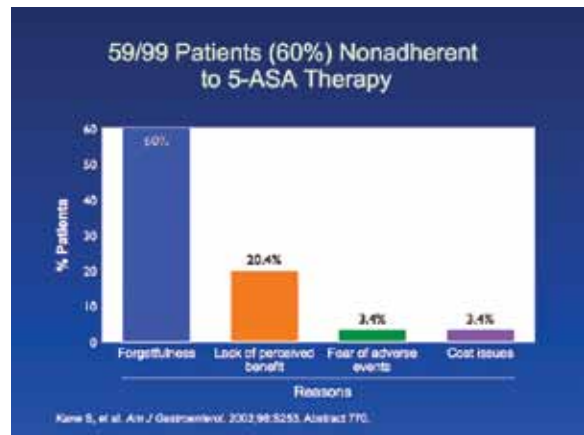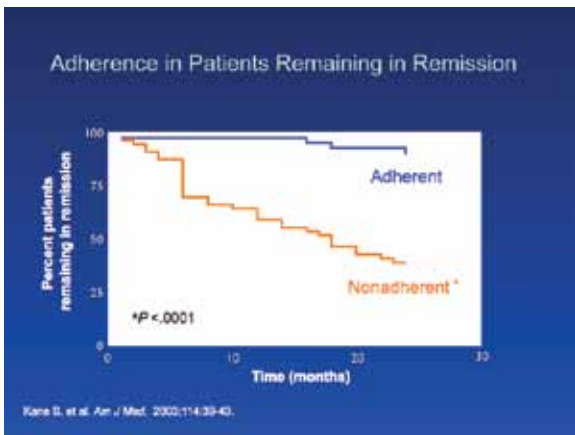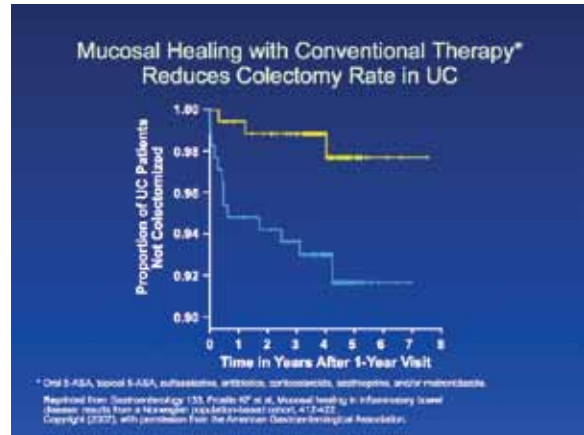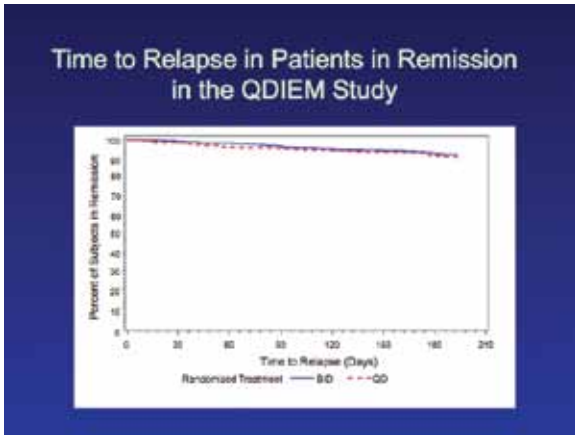
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Notes

5-ASA Dose-Response: Maximizing Efficacy and Adherence

CME Post-Test: *Circle the correct answer for each question below.*

1. According to the American College of Gastroenterology (ACG) treatment guidelines, ulcerative colitis (UC) is classified as mild in patients who have fewer than __ bowel movements per day with minimal bleeding and no urgency or abdominal pain.

   a. 4
   b. 6
   c. 2
   d. 3

2. True or false? The immunomodulators azathioprine and 6-MP are effective, with a faster onset of action than 5-ASAs.

   a. True
   b. False

3. According to Dr. Safdi, ___ months is the crucial point at which UC patients discontinue maintenance therapy for UC.

   a. 6
   b. 3
   c. 2
   d. 9

4. In a review by Claxton and colleagues that examined compliance patterns across a variety of disease states, what was the mean compliance rate for QID dosing?

   a. 79%
   b. 37%
   c. 51%
   d. 43%

5. True or false? Kane and colleagues found that patients who were not adherent with medication had more than a five-fold risk of UC recurrence than adherent patients.

   a. True
   b. False

6. Yearly monitoring of BUN/creatinine should be performed on patients taking 5-ASA to look for what complication?

   a. Interstitial nephritis
   b. Severe dehydration
   c. Congestive heart failure
   d. Hepatitis

7. In ASCEND I, which UC patient group was found to have a significant dose response to higher doses of delayed-release oral mesalamine?

   a. Patients with mild UC
   b. Patients with bloody stools but no urgency upon defecation
   c. Patients with moderately active UC
   d. Patients with high quality of life scores

8. In ASCEND III, difficult-to-treat patients were defined as:

   a. Highly nonadherent patients
   b. Patients with the most severe symptoms
   c. Patients with a history of depression
   d. Those previously treated with UC therapies

9. True or false? Studies of Multi Matrix System mesalamine found a strong dose response at 4.8 g/day for the entire patient cohort.

   a. True
   b. False

10. Dr. Katz recommends high doses of 5-ASA for how many weeks before moving on to alternate therapies?

   a. 12
   b. 16
   c. 8
   d. 6

Evaluation Form   5-ASA Dose-Response: Maximizing Efficacy and Adherence

PIM is committed to excellence in continuing education, and your opinions are critical to us in this effort. To assist us in evaluating the effectiveness of this activity and to make recommendations for future educational offerings, please take a few minutes to complete this evaluation form. **You must complete this evaluation form to receive acknowledgment for completing this activity.**

Please rate your level of agreement by circling the appropriate rating:
1 = Strongly Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Agree

Learning Objectives
After participating this activity, I am now better able to:

1. Describe the current unmet needs in the use of 5-ASA therapy for mild-to-moderate ulcerative colitis.	1 2 3 4 5
2. Summarize the latest research on dose-response to higher concentrations of 5-ASA drug and its efficacy.	1 2 3 4 5
3. Discuss the importance of achieving and sustaining remission and the effect of this goal on long-term outcomes.	1 2 3 4 5
4. Review methods to ensure patient adherence.	1 2 3 4 5

Based upon your participation in this activity, choose the statement(s) that apply:
❏ I gained new strategies/skills/information that I can apply to my area of practice.
❏ I plan to implement new strategies/skills/information into my practice.

What strategies/changes do you plan to implement into your practice? _____

_____

What barriers do you see to making a change in your practice? _____

_____

Which of the following best describes the impact of this activity on your performance?
❏ I will implement the information in my area of practice.
❏ I need more information before I can change my practice behavior.
❏ This activity will not change my practice, as my current practice is consistent with the information presented.
❏ This activity will not change my practice, as I do not agree with the information presented.

Please rate your level of agreement by circling the appropriate rating:
1 = Strongly Disagree   2 = Disagree   3 = Neutral   4 = Agree   5 = Strongly Agree

The content presented:

Enhanced my current knowledge base	1 2 3 4 5
Addressed my most pressing questions	1 2 3 4 5
Promoted improvements or quality in health care	1 2 3 4 5
Was scientifically rigorous and evidence-based	1 2 3 4 5
Avoided commercial bias or influence	1 2 3 4 5

Would you be willing to participate in a post-activity follow-up survey?   ❏ Yes   ❏ No

Please list any topics you would like to see addressed in future educational activities: _____

_____

If you wish to receive acknowledgment for completing for this activity, please complete the post-test by selecting the best answer to each question, complete this evaluation verification of participation, and fax to: (303) 790-4876.

Post-test Answer Key

1	2	3	4	5	6	7	8	9	10

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For Physicians Only: I certify my actual time spent to complete this educational activity to be: _____
❏ I participated in the entire activity and claim 1.0 credits.
❏ I participated in only part of the activity and claim _____ credits.

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