

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MYLAN PHARMACEUTICALS INC.,

Petitioner

v.

POZEN INC. and HORIZON PHARMA USA, INC.,

Patent Owners

U.S. Patent No. 9,393,208 to Ault *et al.*

Inter Partes Review IPR2018-00272

DECLARATION OF DAVID C. METZ, M.D.

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1. I, David C. Metz, M.D., have been retained by counsel for Petitioner Mylan Pharmaceuticals Inc. (“Mylan”). I understand that Mylan is petitioning for *inter partes* review (“IPR”) of U.S. Patent No. 9,393,208 to Ault *et al.* (“the ’208 patent”) (Ex. 1001), which is assigned to Pozen Inc. and Horizon Pharma USA, Inc. (“Patent Owners”), to request that the United States Patent and Trademark Office cancel certain claims of the ’208 patent as unpatentable. I submit this expert declaration in support of Mylan’s IPR petition for the ’208 patent.

I. QUALIFICATIONS AND BACKGROUND

A. Education and Experience

2. I am Professor of Medicine in the Department of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania. I am also Associate Chief for Clinical Affairs in the Division of Gastroenterology, Director of the Acid Peptic Disorders Program, Co-Director of the Gastrointestinal (GI) Physiology Lab, Co-Director of the Penn Program for Swallowing Disorders, and Co-Director of the Penn Neuroendocrine Tumor Program.

3. I have been practicing medicine in the field of gastroenterology for over 30 years with a special emphasis on upper gastrointestinal (GI) tract disease states. I am board certified in gastroenterology and in internal medicine, and listed in Best Doctors in America (Northeast Region). The majority of my clinical activity revolves around the treatment of patients with acid-peptic conditions, and I

have designed and conducted many research protocols involving Proton Pump Inhibitors (PPIs). As part of my medical practice, I have thousands of patients under my care.

4. I received a Bachelor of Medicine and Bachelor of Surgery from the University of the Witwatersrand Medical School, in Johannesburg, South Africa, in 1982. A Bachelor of Medicine and Bachelor of Surgery is the South African equivalent of a doctor of medicine degree in the United States. In 1983, I interned at the Johannesburg General Hospital in General Medicine and General Surgery. From 1984 to 1985, I was in private practice, first in South Africa, and later in London, England.

5. From 1986 to 1988, I did an internship and residency in internal medicine at the Albert Einstein Medical Center, Philadelphia, Pennsylvania. From 1989 to 1991, I completed a fellowship in gastroenterology in a combined program with Georgetown University, the Washington Veteran's Affairs Medical Center, and the National Institutes of Health. From 1991 to 1993, I was a senior staff fellow in the Digestive Diseases Branch of the National Institutes of Health, Bethesda, Maryland, where I studied Zollinger-Ellison Syndrome, the prototypical acid hypersecretory condition, the management of which requires, amongst other interventions, therapy with PPIs.

6. In 1993, I became an Assistant Professor of Medicine in the Department of Medicine at the University of Pennsylvania, Philadelphia, Pennsylvania. In 1998, I was promoted to Associate Professor of Medicine. In 2003, I became Professor of Medicine, a position I continue to hold today.

7. In addition to the hospital and administrative appointments noted above, I am also currently Lead Physician for the GI division at the Hospital of the University of Pennsylvania, and have clinical privileges in the Division of Gastroenterology, at Penn Medicine at Radnor, Radnor, Pennsylvania, and Presbyterian Hospital, Philadelphia, Pennsylvania.

8. From 2001 to 2005, I served on the FDA advisory board for gastroenterology, where my duties included participating in advisory meetings that are open to the public for matters pertaining to FDA approval of new drugs, including PPIs.

9. I hold numerous professional society memberships. These include the American Gastroenterological Association (AGA), in which I have held many leadership positions; the American College of Gastroenterology; and the North American Neuroendocrine Tumor Society, in which I am a member of the Board of Directors. I previously represented the AGA on the American Board of Internal Medicine Liaison Committee on Recertification.

10. I have held several editorial positions for peer-reviewed medical journals, including Gastroenterology and the American Journal of Gastroenterology. I also serve as a reviewer for several medical journals. I have lectured by invitation over 400 times, and have published over 100 scientific articles in peer-reviewed journals, and over 100 abstracts. I lecture annually to the second year students at the Perelman School of Medicine at the University of Pennsylvania on the pathophysiology of the stomach. I also lecture annually on the physiology and pathophysiology of gastroduodenal diseases and upper GI bleeding at the premier board review course for Gastroenterology in Washington, D.C.

11. A copy of my *curriculum vitae*, which lists my publications and describes my qualifications in detail is Exhibit A, attached hereto.

B. Materials Considered

12. In forming my opinions set forth in this declaration, I considered and relied upon my education, background, and years of experience in the practice of medicine in the field of gastroenterology, including treating many patients and conducting numerous clinical trials, as well as the materials listed on Exhibit B, or identified in this declaration, and cited herein.

C. Scope of Work

13. I have been retained by counsel for Mylan in connection with this matter. I am being compensated for my consulting work at the rate of \$700 per hour. My compensation in this case is in no way dependent on the outcome of the case.

II. SUMMARY OF OPINIONS

14. It is my opinion that the person of ordinary skill in the art would have been motivated to administer a combination dosage form containing the NSAID naproxen and the PPI esomeprazole, prior to the earliest patent application filing date to which the '208 patent claims priority, September 9, 2008, that results in the pharmacokinetic and pharmacodynamic (or "PK / PD") values recited in the claims. The person having ordinary skill in the art would have known that the combination of naproxen and esomeprazole at the claimed dosages had been patented in the same multilayer structure as the dosage form described and claimed in the '208 patent.

15. To the extent the Patent Owners argue that the precise PK / PD values in the claims were not known prior to the '208 patent was filed, it is my understanding that Mylan's expert on PK / PD, Dr. Michael Mayersohn, explains in his declaration supporting Mylan's petition (Ex. 1003), that a person having ordinary skill in the art would have been motivated to target the claimed PK / PD

values recited in the claims because these values were known to be in the effective range. Dr. Mayersohn also explains that the person having ordinary skill would have had a reasonable expectation of success because it would have been routine to make and test the prior art formulation at the claimed dosages of 500 mg naproxen and 20 mg esomeprazole because the prior art formulation is already claimed for these dosages. *See* Ex. 1003. Therefore, the method of administration recited in the claims is anticipated or obvious over the prior art to the person having ordinary skill.

16. It is also my opinion that there is no evidence of unexpected results or industry skepticism for the claimed method of administration because the formulation that results in the claimed pharmacokinetic and pharmacodynamic values, and a method for administering it were already patented. And even if the Patent Owners could establish that a long-felt, unmet need has been met, that need would have been met by the prior art patents on the same drug.

III. LEGAL STANDARDS

17. Counsel has informed me of certain legal principles to guide me in my analysis. Counsel has informed me that Mylan carries the burden of proving unpatentability by a preponderance of the evidence, and that this means Mylan must show that unpatentability is more probable than not.

18. Counsel has informed me that the question of whether the claims of a patent are anticipated or obvious is to be considered from the perspective of the person of ordinary skill in the art. Whether an invention would have been anticipated or obvious is ascertained at the time the invention was made.

19. Counsel has informed me that an obviousness analysis involves ascertaining the scope and content of the prior art, the level of the person of ordinary skill in the pertinent art, the differences between the claimed invention and the prior art and whether there are additional factors present that may nevertheless weigh against obviousness such as unexpected results attributable to the invention or whether the invention has met a long-felt, but unmet need.

20. Counsel has informed me that under the existing law an invention may be found obvious:

When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.

21. Counsel has informed me that a prior art reference may anticipate a claimed invention if the prior art reference discloses each of the claim elements either expressly or inherently. A claim element is inherent in the anticipating

reference if that element, or characteristic, is the natural result that flows from the reference's explicit limitations.

22. Counsel has also informed me that when a composition is claimed in terms of its function, property, or characteristics that it possesses, and that composition is in the prior art, that the claimed invention may be anticipated or obvious in view of the prior art reference.

IV. PERSON OF ORDINARY SKILL IN THE ART

23. The field of art here involves the knowledge of a medical doctor and that of a pharmacologist or pharmacokineticist with experience in dosage form design and evaluation. Thus, the hypothetical person of ordinary skill in the art is a collaboration between a pharmacologist or pharmacokineticist having a Ph.D. degree or equivalent training, or a M.S. degree with at least 2 years of some experience in dosage form design and in *in vitro* and *in vivo* evaluation of dosage form performance, and a medical doctor having at least 2 years of practical experience treating patients in the gastroenterology field.

24. For the purposes of this report, I will be offering my opinion from the perspective of the physician described above as of September 9, 2008, i.e., a medical doctor in the field of gastroenterology with at least 2 years of experience treating patients.

V. BACKGROUND ON NSAID-RELATED GASTRIC INJURY

25. Non-steroidal anti-inflammatory drugs, commonly referred to as “NSAIDs,” are a class of drugs used to treat pain and inflammation, including pain and inflammation associated with arthritis. The class includes aspirin, naproxen, ibuprofen, and diclofenac. NSAIDs are among the most commonly prescribed medications in the world and have been in use for a long time. Naproxen was first approved by the FDA in 1976 under the trade name Naprosyn. Ex. 1020, 1.

26. NSAIDs can cause a variety of side effects that vary in severity. Chronic use of NSAIDs to treat chronic conditions such as arthritis can increase the risk of more serious gastric (stomach) injury, such as stomach erosions and ulcers, and more serious complications such as bleeding, perforation, or obstruction that can lead to hospitalization or death. These NSAID-induced side effects are commonly called NSAID-related injury or gastropathy.

27. Long-term NSAID use may cause systemic injury by reducing the amount of prostaglandin in a patient’s body, which is a chemical required for proper maintenance of the stomach’s protective mucosal layer. This reduction decreases the stomach’s protective layer and increases the risk of gastric injury. This injury can be reduced by controlling acid in the stomach through concomitant administration of a prophylactic acid inhibitor with the NSAID.

VI. U.S. PATENT NO. 9,393,208 (Ex. 1001)

28. I have read U.S. Patent No. 9,393,208 (“the ’208 patent”), entitled “Method for Delivering a Pharmaceutical Composition to Patient in Need Thereof.” The ’208 patent was filed on September 3, 2009, and claims priority to provisional application no. 61/095,584, filed on September 9, 2008. The inventors are listed as: Brian Ault, Mark Sostek, Everardus Orlemans, and John Plachetka.

29. The ’208 patent “is directed to a method for delivering a pharmaceutical composition to a patient in need thereof, comprising: administering to said patient a pharmaceutical composition in unit dose form comprising naproxen . . . and esomeprazole.” Ex. 1001, 1:13-17.

30. The ’208 patent explains that “[o]ver 15 million Americans take nonsteroidal anti-inflammatory drugs (NSAIDs) each day as a treatment for pain or inflammation,” and that “NSAIDs are associated with a high incidence of gastrointestinal complications, including gastritis, dyspepsia, gastroduodenal ulcers, perforations, and bleeding.” *Id.* at 1:19-24.

31. The ’208 patent also explains that proton pump inhibitors (“PPI”), such as esomeprazole, are effective at improving NSAID tolerability, and work by inhibiting stomach acid secretion. *Id.* at 1:27-37. Cited as one example is the prior art U.S. Patent No. 6,926,907 (discussed in detail below), which “is directed to [a] dosage form comprising a [PPI and] . . . an NSAID,” and “can be effective in

improving NSAID tolerability through dosages of esomeprazole and naproxen that produce the desired pharmacodynamic response and pharmacokinetic values.” *Id.*

32. According to the ’208 patent, “[t]here is a need for a clinically effective therapy that delivers to a patient in need thereof . . . esomeprazole . . . for a duration sufficient to achieve an intragastric pH of about 4 or greater and a plasma level of naproxen that is efficacious.” *Id.* at 1:42-48.

33. The ’208 patent describes a series of embodiments in the form of pharmacokinetic and pharmacodynamic values that result from administering a unit dose form (i.e., a single tablet) containing naproxen and esomeprazole in the AM and PM. *Id.* at 6:17-23:49.

34. The ’208 patent contains one example. Example 1 describes a 9-day study of “twice daily oral administration of three PN400 formulations (enteric coated naproxen 500 mg combined with non-enteric coated esomeprazole 10, 20, or 30 mg) versus the effect of twice daily oral administration of a separate 500 mg non-enteric coated naproxen tablet and once daily oral administration of a separate EC[, i.e., enteric coated,] esomeprazole (20 mg) capsule (Nexium® 20 mg capsule).” *Id.* at 24:8-15. The study measured 24-hour intragastric pH and certain pharmacokinetic parameters.

35. The ’208 patent states that “[t]he PN400 tablet is a multilayer tablet comprising an inner core of naproxen surrounded by a first layer comprising an

enteric coating and a second layer comprising non-enteric coated esomeprazole.”

Id. at 24:18-21. According to the specification, the PN400/20 tablet contains 500 mg naproxen and 20 mg esomeprazole.

36. The '208 patent contains seven (7) claims. Claim 1 is representative and recites:

1. A method for delivering a pharmaceutical composition to a patient in need thereof, comprising:

orally administering to the patient an AM unit dose form and, 10 hours ($\pm 20\%$) later, a PM unit dose form, wherein:

the AM and PM unit dose forms each comprises:

i) naproxen, or a pharmaceutically acceptable salt thereof, in an amount to provide 500 mg of naproxen, and

ii) esomeprazole, or a pharmaceutically acceptable salt thereof, in an amount to provide 20 mg of esomeprazole;

said esomeprazole, or a pharmaceutically acceptable salt thereof, is released from said AM and PM unit dose forms at a pH of 0 or greater,

the AM and PM unit dose forms target:

- i) a pharmacokinetic (pk) profile for naproxen where:
 - a) for the AM dose of naproxen, the mean C_{max} is 86.2 $\mu\text{g/mL}$ ($\pm 20\%$) and the median T_{max} is 3.0 hours ($\pm 20\%$); and
 - b) for the PM dose of naproxen, the mean C_{max} is 76.8 $\mu\text{g/mL}$ ($\pm 20\%$) and the median T_{max} is 10 hours ($\pm 20\%$); and
- ii) a pharmacokinetic (pk) profile for esomeprazole where:
 - a) for the AM dose of esomeprazole, the mean area under the plasma concentration-time curve from when the AM dose is administered to 10 hours ($\pm 20\%$) after the AM dose is administered ($\text{AUC}_{0-10, \text{am}}$) is 1216 $\text{hr} \cdot \text{ng/mL}$ ($\pm 20\%$),
 - b) for the PM dose of esomeprazole, the mean area under the plasma concentration-time curve from when the PM dose is administered to 14 hours ($\pm 20\%$) after the PM dose is administered ($\text{AUC}_{0-14, \text{pm}}$) is 919 $\text{hr} \cdot \text{ng/mL}$ ($\pm 20\%$), and
 - c) the total mean area under the plasma concentration-time curve for esomeprazole from when the AM dose is administered to 24 hours ($\pm 20\%$) after the AM dose is administered (AUC_{0-24}) is 2000 $\text{hr} \cdot \text{ng/mL}$ ($\pm 20\%$); and

the AM and PM unit dose forms further target a mean % time at which intragastric pH remains at about 4.0 or greater for about a 24 hour period after reaching steady state that is at least about 60%.

37. Claims 2-7 recite additional elements that relate to the intragastric pH levels, the length of administration of the dosage forms, structural aspects of the dosage form, and chemical makeup of the tablet.

VII. SCOPE AND CONTENT OF THE PRIOR ART REFERENCES

A. U.S. Patent No. 8,557,285 (Ex. 1005)

38. U.S. Patent No. 8,557,285 (“the ’285 patent,” Ex. 1005) issued on October 15, 2013, from application no. 13/215,855, filed on August 23, 2011. The ’285 patent claims priority to a provisional application filed on June 1, 2001. Ex. 1005, cover page. John Plachetka is listed as the inventor.

39. The ’285 patent concerns treatments for the risks of gastrointestinal ulcers and bleeding associated with long-term treatment with NSAIDs. *Id.* at 1:30-47. The ’285 patent specification also recognizes that the problem of NSAID-induced gastropathy (such as the development of gastroduodenal ulcers and other gastric injury) was well known in the art. *Id.*

40. The ’285 patent notes that “more potent and longer lasting inhibitors, such as proton pump inhibitors, are thought to be more protective during chronic administration of NSAIDs than shorter acting agents” because gastric acidity was

known to play such a significant role in the development of gastroduodenal lesions.
Id. at 1:48-51, 1:36-47 (citing studies of effective treatment with acid inhibitors).

41. The '285 patent goes on to note that it would have been well known to the person of ordinary skill in the art, prior to the claimed priority date of June 1, 2001, that unit dosage forms combining NSAIDs and PPIs were present in the art and were effective at reducing NSAID-induced gastropathy, even in the absence of coordinated release:

Recognizing the potential benefits of PPIs for the prevention of NSAID-induced gastroduodenal damage, others have disclosed strategies for combining the two active agents for therapeutic purposes.

Id. at 2:26-29 (emphasis added).

42. According to the '285 patent applicant, however, the earlier-patented formulations had two drawbacks: (1) no coordinated release; and (2) no reduction in gastric acid levels before release of the NSAID:

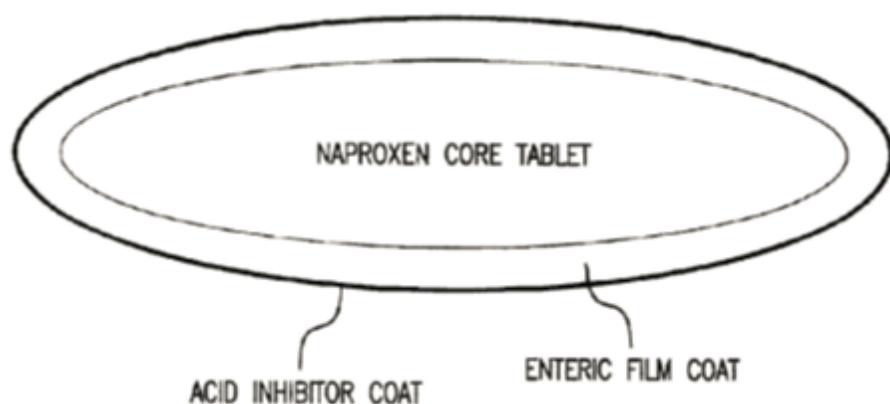
However, these suggestions do not provide for coordinated drug release or for reducing intragastric acid levels to a non-toxic level prior to the release of NSAID (U.S. Pat. Nos. 5,204,118; 5,417,980; 5,466,436; 5,037,815).

Id. at 2:29-33.

43. According to the Detailed Description of the Invention in the '285 patent, the “present invention is based upon the discovery of improved pharmaceutical compositions for administering NSAIDs to patients.” *Id.* at 6:16-18. The “compositions include acid inhibitors that are capable of raising the pH of the GI tract . . . and provide for the coordinated release of therapeutic agents, i.e., for the sequential release of acid inhibitor followed by [NSAID].” *Id.* at 6:19-23; *see also, e.g., id.* at Abstract, 1:20-26, 5:50-53.

44. Regarding the mechanism for formulating the claimed dosage forms, the '285 patent concedes that “[m]ethods for making appropriate formulations are well known in the art.” *Id.* at 6:44-46 (citing a leading treatise, Remington’s Pharmaceutical Sciences (16th ed. 1980)).

45. Figure 2 of the '285 patent depicts a schematic example of the claimed composition:



46. “FIG. 2 illustrates a three layer dosage form. An acid inhibitor . . . is released immediately after ingestion by a patient in order to raise the pH of the [GI] tract to above a specific pH, e.g., above 4. The innermost layer contains naproxen. Thus, the dosage form has a naproxen core, an enteric film coat and an acid inhibitor film coat.” *Id.* at 6:5-10.

47. The '285 patent also teaches the administration of the disclosed formulation to patients. In particular, the specification describes “administering [the] coordinated release . . . dosage form to achieve pain and symptom relief with a reduced risk of developing gastrointestinal damage” *Id.* at Abstract; *see also, e.g., id.* at 1:20-26, 3:14-16, 3:23-26, 5:20-22, 5:30-33, 5:57-62.

48. The '285 patent contains four (4) claims.

49. Claim 1 recites:

1. A pharmaceutical composition in unit dosage form comprising therapeutically effective amounts of:
 - (a) esomeprazole, wherein at least a portion of said esomeprazole is not surrounded by an enteric coating; and
 - (b) naproxen surrounded by a coating that inhibits its release from said unit dosage form unless said dosage form is in a medium with a pH of 3.5 or higher; wherein said unit dosage form provides for release of said esomeprazole such that upon introduction of said unit dosage form into a medium, at least a portion of said

esomeprazole is released regardless of the pH of the medium.

50. Claim 4 recites:

4. The pharmaceutical composition of claim 1, wherein naproxen is present in said unit dosage form in an amount of between 200-600 mg and esomeprazole in an amount of from 5 to 100 mg per unit dosage form.

B. U.S. Patent No. 6,926,907 (Ex. 1004)

51. U.S. Patent No. 6,926,907 (“the ’907 patent,” Ex. 1004) issued on August 9, 2005, from application no. 10/158,216, that was filed on May 31, 2002. The ’907 patent claims priority to the same provisional application as the ’285 patent. Ex. 1004, cover page. Like the ’285 patent, John Plachetka is the only named inventor.

52. My review of the ’907 patent indicates that the specification of the ’907 patent is nearly identical to the specification of the ’285 patent. Suffice it to say that the ’907 patent discloses the same pharmaceutical composition and methods of treatment disclosed in the ’285 patent. *See, e.g.*, Ex. 1004, 5:12-14 (“The present invention is based upon the discovery of improved pharmaceutical compositions for administering NSAIDs to patients.”); *id.* at 5:14-19 (“In addition to containing one or more NSAIDs, the compositions include acid inhibitors that are capable of raising the pH of the GI tract . . . and provide for the coordinated

release of therapeutic agents, i.e., for the sequential release of acid inhibitor followed by [NSAID].”); *id.* at 5:40-41 (“Methods for making appropriate formulations are well known in the art.”); *id.* at Fig. 2; *id.* at 5:1-7 (“FIG. 2 illustrates a three layer dosage form. An acid inhibitor . . . is released immediately after ingestion by a patient in order to raise the pH of the [GI] tract to above a specific pH, e.g., above 4. The innermost layer contains naproxen. Thus, the dosage form has a naproxen core, an enteric film coat and an acid inhibitor film coat.”); *id.* at Abstract (describing “administering [the] coordinated release . . . dosage form to achieve pain and symptom relief with a reduced risk of developing gastrointestinal damage”); *id.* at 3:5-12; *id.* at 6:6-7 “[n]aproxen is particularly useful when contained in tablets or capsules in an amount of from 250 to 500 mg”); *id.* at 7:12-13 (“typical amounts are: esomeprazole, 5-100 mg”).

53. Claim 1 of the '907 patent recites:¹

1. A pharmaceutical composition in unit dosage form suitable for oral administration to a patient, comprising:

(a) an acid inhibitor present in an amount effective to raise the gastric pH of said patient to at least 3.5 upon the administration of one or more of said unit dosage forms;

¹ The '907 patent contains a certificate of correction. The claim recitation above contains the corrections that appear on the certificate.

(b) a nonsteroidal anti-inflammatory drug (NSAID) in an amount effective to reduce or eliminate pain or inflammation in said patient upon administration of one or more of said unit dosage forms; and wherein said unit dosage form provides for coordinated release such that:

i) said NSAID is surrounded by a coating that, upon ingestion of said unit dosage form by said patient, prevents the release of essentially any NSAID from said dosage form unless the pH of the surrounding medium is 3.5 or higher;

ii) at least a portion of said acid inhibitor is not surrounded by an enteric coating and, upon ingestion of said unit dosage form by said patient, is released regardless of whether the pH of the surrounding medium is below 3.5 or above 3.5.

54. Claims 5, 9, and 10, and 11 recite:

5. The pharmaceutical composition of claim **1**, wherein said acid inhibitor is a proton pump inhibitor selected from the group consisting of: omeprazole, esomeprazole, lansoprazole, pantoprazole and rabeprazole.

9. The pharmaceutical composition of claim **1**, wherein said NSAID is selected from the group consisting of:

aspirin; acetaminophen; ibuprofen; flurbiprofen;
ketoprofen; lornoxicam; naproxen; oxaprozin; etodolac;
indomethacin; ketorolac; and nabumetone.

10. The pharmaceutical composition of claim **9**, wherein said NSAID is naproxen present in an amount of between 50 mg and 1500 mg.

11. The pharmaceutical composition of claim **10**, wherein said naproxen is present in an amount of between 200 mg and 600 mg.

55. Claims 22 and 23 recite, respectively:

22. A method of treating a patient for pain or inflammation, comprising administering to said patient the pharmaceutical composition of any one of claims **1-14**.

23. The method of claim **22**, wherein said pain or inflammation is due to either osteoarthritis or rheumatoid arthritis.

C. Howden 2005 (Ex. 1006)

56. Howden, C.W., “Review article: immediate-release proton-pump inhibitor therapy -- potential advantages” *Aliment Pharmacol. Ther.* 22(3): 25-30 (2005) (Ex. 1006) (“Howden 2005”) was published in 2005, prior to the earliest priority date for the ’208 patent.

57. Howden 2005 is a review article that states in the summary that it

reports an overview of the PK and PD values of immediate-release omeprazole² in the form of Zegerid[®] powder for oral suspension and the potential advantages over delayed-release PPIs. Ex. 1006, 1. Howden 2005 reports that Zegerid[®] is available in two strengths, 40 mg or 20 mg omeprazole per unit dose. *Id.* at 2. Howden 2005 discloses the PK data of T_{\max} , C_{\max} , and AUC on day 1 and day 7 of administration for Zegerid[®]. *Id.* at 2-3. Howden 2005 also discloses the results of PD studies with Zegerid[®]. *Id.* at 3-4.

**D. EC-Naprosyn Prescribing Information
(Ex. 1009)**

58. EC-Naprosyn was approved in 1994, and was available prior to the earliest priority date for the '208 patent. Ex. 1008. The EC-Naprosyn prescribing information is dated 2007. Ex. 1009.

59. EC-Naprosyn is a delayed-release tablet. Ex. 1009, 1. The “EC” stands for enteric coated. The enteric coat in EC-Naprosyn does not dissolve

² Omeprazole is a PPI that contains a mixture of an R- and S-enantiomer (mirror images of the chemical compound). Esomeprazole is the S-enantiomer of omeprazole, and is also written as S-omeprazole, or (-)-omeprazole. *See* U.S. Patent No. 5,877,192, issued on March 2, 1999 (“the ’192 patent”) (Ex. 1007). The ’192 patent discloses that esomeprazole is more effective than omeprazole. Ex. 1007, Abstract.

below a pH of 6. *Id.* at 2. EC-Naprosyn contains the active ingredient naproxen in 375 mg or 500 mg strengths. *Id.* at 1. EC-Naprosyn is indicated for the treatment of rheumatoid arthritis, osteoarthritis, ankylosing spondylitis and juvenile arthritis. *Id.* at 8. EC-Naprosyn is also recommended for administration of 500 mg twice a day (i.e. BID). *Id.* at 24. The PK values of C_{\max} , T_{\max} , and AUC_{0-12hr} for EC-Naprosyn were also known. *Id.* at 4.

E. Other Art that Informs Person of Ordinary Skill's Knowledge

1. Zegerid (omeprazole) Powder for Oral Suspension Prescribing Information (2004) (Ex. 1010)

60. The Zegerid (omeprazole) Powder for Oral Suspension Prescribing Information (2004) (“Zegerid Label”) (Ex. 1010) was published in 2004, prior to the earliest priority date for the '208 patent. As of the '208 patent's priority date, a person of ordinary skill would have been familiar with Zegerid[®] as an effective treatment available on the market. Zegerid[®] is indicated for treatment of duodenal ulcer, gastroesophageal reflux disease, and treatment and maintenance of erosive esophagitis. Ex. 1010, 10.

61. As explained above with respect to Howden 2005, the Zegerid[®] label discloses that Zegerid[®] is a powder for oral suspension that contains omeprazole as its active ingredient. *Id.* at 4. The Zegerid[®] label also reports the PK values following oral 20 mg once-daily dosing for 1 and 7 days. *Id.* at 5. The Zegerid[®]

label also reports clinical results of the effect of Zegerid[®] 20 mg on intragastric pH on day 7, i.e. PD values. *Id.* at 6-7.

2. Goldstein (Ex. 1011)

62. Goldstein, J.I. *et al.*, “A Single Tablet Multilayer Formulation of Enteric-Coated Naproxen Coupled with Non-Enteric-Coated OMEPRAZOLE Is Associated with a Significantly Reduced Incidence of Gastric Ulcers vs. Enteric-Coated Naproxen: A Prospective, Randomized, Double-Blind Study,” *Gastroenterology* 134(4):A-19 (2008) (“Goldstein”) (Ex. 1011) is an abstract that was published in April 2008, and prior to the earliest priority date for the ’208 patent.

63. Goldstein discloses that “[c]o-prescribed enteric-coated (EC) proton pump inhibitors (PPIs) reduce the incidence of gastric ulcers (GUs) associated with NSAID use” and that “[l]ong-term adherence to such co-therapy such co-therapy is suboptimal and new approaches are needed to help ensure full medical benefit.” Ex. 1011, 4. Goldstein reports the results of a 6-month study that compared the twice-daily administration of a unit dosage form consisting of non-EC omeprazole 20 mg and EC naproxen 500 mg with EC naproxen 500 mg alone. *Id.* Goldstein states that the study “demonstrates that non-EC omeprazole + EC naproxen in a single tablet formulation significantly reduce the incidence of GUs [gastric ulcers] and DUs [duodenal ulcers].” *Id.* Goldstein also discloses that “[t]his approach

may add to the treatment armamentarium for patients at risk of NSAID-associated GU, and address adherence to GPA co-therapy.” *Id.*

3. Hochberg (Ex. 1012)

64. Hochberg et al., “A novel, single-tablet formulation that delivers immediate-release omeprazole followed by enteric-coated (EC) naproxen significantly reduces the incidence of gastric ulcers compared with EC naproxen alone: results of a prospective, randomized, double-blind, 6-month study including patients with OA and RA,” EULAR 2008, Paris, France (June 11-14, 2008) (“Hochberg”) (Ex. 1012) is a poster presentation from June 2008, and was published prior to the earliest priority date.

65. Hochberg discloses the same study described in Goldstein. Hochberg discloses the pharmacokinetic profile of PN200, a “single-tablet formulation of a non-enteric-coated PPI and an enteric-coated (EC) NSAID,” specifically the “sequential delivery of omeprazole 20 mg + EC naproxen 500 mg.” Ex. 1012, Fig. 1.

VIII. UNPATENTABILITY OF THE '208 PATENT

A. Claims 1-7 of the '208 Patent Are Anticipated or Obvious over the '285 Patent

1. The method of claim 1 is anticipated by or obvious over the '285 patent

66. Claim 1 of the '208 patent recites a method of treating osteoarthritis, rheumatoid arthritis, or ankylosing spondylitis by administering an oral

formulation of naproxen and esomeprazole. The '285 patent describes and claims a pharmaceutical composition for the treatment of osteoarthritis, rheumatoid arthritis, or ankylosing spondylitis that contains naproxen and esomeprazole. Ex. 1005, 5:20-29. From the clinician's perspective, the person of ordinary skill would know how to administer the composition claimed in the '285 patent and understand that the composition is necessarily intended for administration for the treatment of the conditions cited.

67. The '208 patent further recites the oral formulation of naproxen and esomeprazole is administered twice a day (an AM dose, and a PM dose 10 hours plus or minus 20% apart, i.e., from 8 to 12 hours later). The '285 patent specification discloses that the pharmaceutical composition is given twice daily. *See* Ex. 1005, Examples 9 and 10. The person of ordinary skill would understand that twice daily means administration of an AM and a PM unit dose, where the PM unit dose is given within the window of 8 to 12 hours after the AM dose. And in addition to the '285 patent's disclosure of the composition and explanation of how to administer it, the '907 patent claims methods of administering the composition that encompass these elements of the '208 patent. Ex. 1004 ('907 patent), 23:8-12, Examples 9 and 10 (same examples as in the '285 patent specification).

68. Further, claim 1 of the '208 patent recites that the method consists of administering 500 mg naproxen and 20 mg esomeprazole. Ex. 1001, 46:39-44.

Claims 2, 3, and 4 of the '285 patent recite that the esomeprazole is a unit dosage form containing from 5 to 100 mg and naproxen in an amount between 200 to 600 mg. Ex. 1005 ('285 patent), 22:19-28. The dosages claimed in the '208 patent fall within the ranges claimed in the '285 patent. Ex. 1001, 46:39-44. The ranges of naproxen and esomeprazole claimed in the '285 patent are narrow, and the doses used in commercially-available formulations fall within those ranges. Specifically, naproxen was available in the 500 mg dose, dosed twice daily, and esomeprazole was available in doses of 20 mg and 40 mg, dosed once a day. Ex. 1043 at 1 and 22; Ex. 1009 at 2 and 24. Thus, a skilled artisan would be able to envision immediately the a combination dosage form containing 500 mg naproxen and 20 mg esomeprazole, dosed twice a day.

69. Claim 1 of the '208 patent further recites that the esomeprazole is released at a pH of 0 or greater. Claim 1 of the '285 patent recites that the esomeprazole is not surrounded by an enteric coating (Ex 1005, claim 1), which a person of ordinary skill would understand to mean that the esomeprazole is immediate-release, thus releasing at any pH, i.e., at “a pH of 0 or greater.”

70. Claim 1 of the '208 patent also recites that the unit dose targets certain PK / PD values. The PK and PD values recited in claim 1 of the '208 patent are also reported in the specification of the '208 patent as the result of a clinical study using a formulation referred to as PN400. Ex. 1001, Example 1, Table 4, Table 6,

Table 11. The '208 patent specification explains that “[t]he PN400 tablet is a multilayer tablet comprising an inner core of naproxen surrounded by a first layer comprising an enteric coating and a second layer comprising non-enteric coated esomeprazole.” *Id.* at 24:18-21. This tablet structure is claimed and disclosed in the '285 patent. Ex. 1005, Fig. 2, 6:5-10 (“the dosage form has a naproxen core, an enteric film coat and an acid inhibitor film coat”). In addition, claim 1 of the '285 patent recites that the claimed pharmaceutical composition contains naproxen that is surrounded by a coating that inhibits its release until the pH is 3.5 or higher. *Id.* at 22:12-14. The person of ordinary skill would understand this to mean that an enteric coat as described in the '208 patent would meet this limitation.

71. I understand that Dr. Mayersohn opines as an expert in PK / PD measurements and explains the basis for why the person of ordinary skill would understand that the targeted PK and PD values recited in claim 1 of the '208 patent are the natural result of administering the formulation claimed and disclosed in the '285 patent and/or are a function, property, or characteristic of the formulation claimed and disclosed in the '285 patent. *See* Ex. 1003. Thus, the '285 patent anticipates claim 1 of the '208 patent.

72. Alternatively, claim 1 of the '208 patent is obvious in view of the '285 patent. As explained above, the method of administration recited in the '208 patent is obvious because the claimed amounts of naproxen and esomeprazole fall within

the ranges claimed in the '285 patent. I understand that Dr. Mayersohn explains why it would have been with the routine skill of the person of ordinary skill to make and test the formulation claimed in the '285 patent composition containing the specific amounts of 500 mg naproxen and 20 mg esomeprazole. Ex. 1003. To the extent any other element of claim 1 discussed above is not anticipated, it is within the routine skill or understanding of the person of ordinary skill and is thus obvious.

2. Claim 2 is anticipated by or obvious over the '285 patent

73. Claim 2 of the '208 patent depends from claim 1, and recites that the mean % time at which intragastric pH remains at about 4.0 or greater for about a 24 hour period after reaching steady state is at least about 71%. I understand that Dr. Mayersohn explains why this PD element is the natural result of administering the formulation claimed and disclosed in the '285 patent and/or is a function, property, or characteristic of the formulation claimed and disclosed in the '285 patent. Ex. 1003. In addition, from the clinician's perspective, a person of ordinary skill would be motivated to keep gastric pH > 4.0 at least 71% of the time because that is the known therapeutic goal.

74. Thus, for the same reasons that the method of administration recited in claim 1 is anticipated or obvious stated above, the '285 patent anticipates or makes obvious claim 2 of the '208 patent.

3. Claims 3 and 4 are anticipated or obvious over the '285 patent

75. Claims 3 and 4 of the '208 patent depend from claim 1, and recite that the administration is for at least about 6 days, or for at least about 9 days, respectively. The '285 patent discloses that the treatment for arthritis-related conditions is contemplated for the long term, i.e., for “chronic administration of NSAIDs” (*see, e.g.*, Ex. 1005, 1:50, 3:2-3, 3:14) and therefore, the '285 discloses that the administration is for “at least” 6 or 9 days.

76. Thus, for the same reasons that the method of administration recited in claim 1 is anticipated or obvious stated above, the '285 patent anticipates or makes obvious claims 3 and 4 of the '208 patent.

4. Claims 5 and 6 are anticipated or obvious over the '285 patent

77. Claims 5 and 6 of the '208 patent depend from claim 1. Claim 5 recites a structure for the multilayer tablet. I understand that Dr. Mayersohn explains how the structure recited in claim 5 is also recited in the '285 patent. *See* Ex. 1005, Fig 2; *see also* Ex. 1003.

78. Claim 6 recites that the esomeprazole is released at a pH of from 0 to about 2. I understand that Dr. Mayersohn explains how the release of the esomeprazole at a pH of from 0 to about 2 in claim 6 is also recited in the '285 patent. *See* Ex. 1003.

79. Thus, because the method of administration recited in claim 1 is anticipated or obvious as stated above, the '285 patent anticipates or makes obvious claims 5 and 6 of the '208 patent.

5. Claim 7 is anticipated or obvious over the '285 patent

80. Claim 7 of the '208 patent depends from claim 5, and recites that the multilayer tablet is substantially free of sodium bicarbonate. The '285 patent discloses examples that do not contain sodium bicarbonate. *See* Ex. 1005, Example 6. Thus, for the same reasons that the method of administration recited in claim 1 is anticipated or obvious stated above, the '285 patent anticipates or makes obvious claim 7 of the '208 patent.

B. All Claims of the '208 Patent Are Obvious Over the '285 patent in View of Howden 2005 and EC-Naprosyn

1. The method of claim 1 is obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn

81. As explained above, the formulation and method of administering it recited in claim 1 were described and claimed in the '285 patent. I understand that Dr. Mayersohn explains in his declaration supporting Mylan's petition, that a person having ordinary skill in the art would have been motivated to "target" the claimed pharmacodynamic and pharmacokinetic values recited in the claims because these values were known to be in the effective range. *See* Ex. 1003. Dr. Mayersohn also explains that the person having ordinary skill would have had a reasonable expectation of success because it would have been routine to make and

test the prior art formulation at the claimed dosages of 500 mg naproxen and 20 mg esomeprazole because these dosages fall within the ranges claimed the same prior art formulation. *See* Ex. 1003.

82. In addition, having designed clinical trials, it would have been routine to a skilled artisan to design the clinical trial described in Example 1 of the '208 patent and perform the clinical trial on a limited number of dosages contained within the narrow ranges claimed in the '285 patent. This is especially true, as explained above, in light of the fact that the dosages claimed in the '208 patent are the same doses contained in the commercially-available forms of naproxen and esomeprazole.

83. Moreover, both Zegerid and EC-Naprosyn were known to be efficacious treatments prior to the priority date for '208 patent. Indeed, Zegerid is an oral suspension that contains omeprazole as its active ingredient and was known to treat acid-related issues such as gastroesophageal reflux disease. EC-Naprosyn was a known and effective pain reliever, including for the treatment of arthritis.

84. Given that these were already known to be effective treatments, a clinician would have known to target the same pharmacodynamic and pharmacokinetic values targeted in Zegerid and EC-Naprosyn in administering a combination formulation of naproxen with esomeprazole in order to achieve the same results.

85. For these reasons, claim 1 of the '208 patent is obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn.

2. Claim 2 is obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn

86. As explained above, claim 2 of the '208 patent depends from claim 1, and recites that the mean % time at which intragastric pH remains at about 4.0 or greater for about a 24 hour period after reaching steady state is at least about 71%. I understand that Dr. Mayersohn explains why this PD element is known to be the effective “target” as taught by Howden 2005. In addition, from the clinician’s perspective a person of ordinary skill would be motivated to keep gastric pH > 4.0 at least 71% of the time because that’s the known therapeutic goal. *See* Ex. 1005 at 1:48-64, 3:14-17.

87. For these reasons, claim 2 of the '208 patent is obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn.

3. Claims 3 and 4 are obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn

88. As explained above, claims 3 and 4 of the '208 patent depend from claim 1, and recite that the administration is for at least about 6 days, or for at least about 9 days, respectively. For the reasons explained above, these added limitations are taught by the '285 patent, and thus claims 3 and 4 of the '208 patent

are obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn for the same reasons claims 5 and 6 are obvious over the '285 patent alone.

4. Claims 5 and 6 are obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn

89. As explained above, claims 5 and 6 of the '208 patent depend from claim 1, and recite tablet structural limitations. For the reasons explained above, these added limitations are taught by the '285 patent, and thus claims 6 and 7 of the '208 patent are obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn for the same reasons claims 5 and 6 are obvious over the '285 patent alone.

5. Claim 7 is obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn

90. As explained above, claim 7 of the '208 patent depends from claim 5, and recites that the multilayer tablet is substantially free of sodium bicarbonate. For the reasons explained above, this added limitation is taught by the '285 patent, and thus claim 7 of the '208 patent is obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn for the same reasons claim 7 is obvious over the '285 patent alone.

IX. NO SUPPOSED SECONDARY CONSIDERATIONS OVERCOME THE OBVIOUSNESS ANALYSIS

A. The '208 Patent Does Not Demonstrate Any Unexpected Result

91. I have been informed that for an invention to demonstrate unexpected results, the claimed invention must exhibit some superior property or advantage that the person of ordinary skill would have found surprising or unexpected. The results must be shown to be unexpected compared with the closest prior art and be a difference in kind not merely one of degree.

92. I have seen no evidence that the claimed inventions demonstrate any unexpected results. As explained above, the claimed method recites administration of a unit dosage form that contains 500 mg naproxen and 20 mg esomeprazole that “target[s]” certain PK and PD values. As I understand Dr. Mayersohn explains, the recited PK and PD values are merely the result of the administration of PN400, which is an embodiment of the formulation disclosed and claimed in the '285 patent (and the '907 patent). *See* Ex. 1003. The '285 and '907 patents also teach administration of the disclosed formulation. *See supra* ¶¶ 48, 52. A person of ordinary skill would readily be able to administer the disclosed formulation as taught in the '285 and '907 patents. Thus, the result of administration cannot be unexpected when the PN400 composition and method of administration that results in the recited PK / PD values is claimed in the prior art.

93. During prosecution of the application that led to the parent '698 patent, the applicants contended that the claimed invention was superior to the combination of famotidine (an H2-blocker not a PPI) and naproxen disclosed in the '907 patent because the amount of acid suppression over a 24-hour period with the claimed invention was 71.35% as compared to 49% with the prior art combination. Ex. 1013 (Applicant Response from January 30, 2013), 7. This is not surprising. At the time of the invention, H2-blockers (such as famotidine) and PPIs (such as esomeprazole) were known to suppress acid by different mechanisms. Ex. 1014, 5-8. It was also thought that PPIs provide greater acid suppression over a 24-hour period than H2-blockers because they are longer-acting, and H2-blockers are shorter-acting. Ex. 1004, 1:41-58; Ex. 1014, 5, 8; *see generally* Ex. 1015.

94. Regardless, the combination of famotidine and naproxen is not the closest prior art to the claimed method of administration. The closest prior art is the combination dosage form of esomeprazole and naproxen also claimed in the '285 patent because it discloses the dosage form and method of administration that results in the recited PK / PD values in the '208 patent claims, and/or the claims of the '907 patent that cover the same combination dosage form of esomeprazole and naproxen. It is axiomatic that a claim to the method of administering the same formulation claimed in the '285 patent or the method of administering that same formulation claimed in the '907 patent (which also claims methods of

administering that formulation), albeit using different terminology, cannot be unexpected when compared to itself.

B. There Is No Evidence of Industry Skepticism of the '208 Patent

95. I have been informed that the patent owner has the burden of establishing any secondary considerations of nonobviousness, including evidence of industry skepticism. In order for the patent owners of the '208 patent to establish skepticism prior to the invention claimed in the '208 patent, it would require the patent owners to disparage the very same invention, albeit claimed as a composition in the prior art '285 patent and/or as a method of administering the formulation in the '907 patent.

C. The '208 Patent Has Not Met Any Long-Felt, but Unmet Need

96. I have seen no evidence that the claimed inventions have met any long-felt, but unmet need. And even if the patent owners could establish that a long-felt, unmet need has been met, that need would have been met by the prior art patents that cover the very same formulation, dosages, and method of administration of the very same drug.

X. CONCLUSION

97. For the foregoing reasons, it is my opinion that claims 1-7 of the '208 patent are anticipated or obvious over the '285 patent alone, or obvious over the '285 patent in view of Howden 2005 and EC-Naprosyn.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Dated: 12/3/17

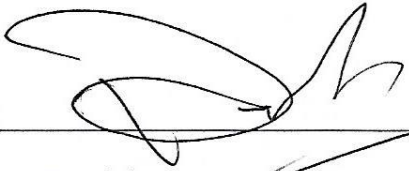
By: 
David C. Metz, M.D.

EXHIBIT A

UNIVERSITY OF PENNSYLVANIA - SCHOOL OF MEDICINE

CURRICULUM VITAE (HUP Format)

Date: June 2017

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SOCIAL SECURITY #: Available on request

CITIZENSHIP: United States of America
(Naturalized March 9, 1993)

EDUCATION:

1970-1975 King David High School, Johannesburg, South Africa.
1976 University of South Africa (UNISA), Pretoria, South Africa.
(2 non-degree correspondence courses, mathematics and statistics)
1977-1982 University of the Witwatersrand Medical School, Johannesburg, South Africa. Bachelor of Medicine and Bachelor of Surgery (MD equivalent)

POST-GRADUATE TRAINING AND FELLOWSHIP APPOINTMENTS:

1983 Johannesburg General Hospital, Witwatersrand University, Parktown, Johannesburg, South Africa – rotating internship in General Medicine and General Surgery

1984 General Practice - Locum Tenens:
State Alluvial Diamond Mine Hospital, Alexander Bay, South Africa.

Private practice in Athlone and Hannover Park, Capetown, South Africa

1985 Internal Medicine - Locum Tenens:
University College Hospital, London, England, general medicine and pulmonology.

Private Practice, Harley Street, London, England; cardiac stress testing, radiology.

Casualty Officer- Emergency Room, Johannesburg Hospital, Johannesburg, South Africa.

Assistantship in General Practice, Johannesburg, South Africa.

1986-1988 Internship and residency in internal medicine: Albert Einstein Medical Center, Philadelphia, PA

Jun. 1989-Jun. 1991 Fellowship in Gastroenterology: Georgetown-VAMC-NIH combined program, Washington, DC

Jun. 1991-Jun. 1993 Senior Staff Fellow, Digestive Diseases Branch, NIDDK, National Institutes of Health, Bethesda, MD

MILITARY SERVICE:

1976-1977 South African Infantry Corps: Three months of basic training; Nine months as assistant to the adjutant, Witwatersrand command Headquarters, Johannesburg, South Africa. Rank of Corporal

FACULTY APPOINTMENTS:

1992-1993	Senior Staff Fellow, Digestive Diseases Branch, NIDDK, NIH, Bethesda, MD, 20892.
1993-1998	Assistant Professor of Medicine, Department of Medicine, University of Pennsylvania, Philadelphia, PA, 19104
1998-2003	Associate Professor of Medicine, Department of Medicine, University of Pennsylvania, Philadelphia, PA, 19104
2003-present	Professor of Medicine, Department of Medicine, University of Pennsylvania, Philadelphia, PA, 19104
2005	Visiting Professor (four month mini-sabbatical), Department of Medicine University of Cape Town, Cape Town, South Africa
2006-present	Professor of Medicine, Department of Otorhinolaryngology: Head and Neck Surgery University of Pennsylvania, Philadelphia, PA, 19104 (Secondary appointment)
2011-2012	Associate Member, Abramson Cancer Center of the University of Pennsylvania
2012-present	Full Clinical Member in the Cancer Therapeutics Program, Abramson Cancer Center

HOSPITAL AND ADMINISTRATIVE APPOINTMENTS;

1992-1993	Member, Institutional Review Board, NIDDK, NIH, Bethesda, MD, 20892.
1993-present	Division of Gastroenterology, HUP, Philadelphia, PA, 19104.
1993-2000	Division of Gastroenterology, VAMC, Philadelphia, PA, 19104.
1993-present	Co-director, GI Physiology laboratory, HUP, Philadelphia, PA, 19104.
1996-present	Director, Acid Peptic Disorders Specialty Program, Digestive and Liver Center, HUP, Philadelphia, PA, 19104
1996-2000	Division of Gastroenterology, Presbyterian Medical Center, Philadelphia, PA, 19104.
2003-present	Division of Gastroenterology, Penn Medicine at Radnor, Radnor, PA, 19087.
2000-present	Co-director, Penn Program for Swallowing Disorders
2006-present	Lead Physician, GI division (HUP), Philadelphia, PA, 19104
2006-present	Associate Chief for Clinical Affairs, Division of Gastroenterology, UPHS, Philadelphia, PA.
2011-present	Co-director, University of Pennsylvania neuroendocrine tumor program

EXAMINATIONS:

1982	ECFMG - revalidated 1985, score 83.
1983	VQE
1986	FLEX Pennsylvania, score: 83 Component I 84 Component II
1989	American Board of Internal Medicine (valid indefinitely)
1991	Gastroenterology Subspecialty Board (recertified 11/2001 and 11/2011)

SPECIALTY CERTIFICATION:

Nov. 1991	Board certified in Gastroenterology, Certificate # 123754 (recertified 2001 and 2011)
Jan. 1990	Board certified in Internal Medicine, Certificate # 123754

LICENSURE:

Aug. 1992	District of Columbia. License # 19628 (inactive)
Jun. 1990	Maryland, USA. Reg. #D40241 (inactive)
Jan. 1987	Pennsylvania, USA. License # MD-040405-L
Jan. 1984	United Kingdom. Reg. #2873936 (overseas list)
Jan. 1984	South Africa. Reg.# MP 26240 (inactive)
Aug. 2014	California Board of Medicine License #132115

HONORS/AWARDS:

1981	South African Anesthetists Medal
1995	Sidney Cohen Faculty teaching award
1996-present	Best Doctors in America (Northeast Region)
1999-present	Top Doctors list (Philadelphia magazine)
2000	Donald Martin Teaching award
2003	McKeen Cattell Memorial Award (American College of Clinical Pharmacology)
2010	Citizenship and service award, Division of Gastroenterology, UPenn
2016	Carnegie WITS Diaspora Fellow - visiting professor program at the University of Witwatersrand, Johannesburg, South Africa to promote collaboration with one's Alma Mater
2016	Solly Marks Visiting Professor (2 weeks), UCT, Groote Schuur Hospital, Cape Town, South Africa
2017	AGA Distinguished Clinician Award

PROFESSIONAL SOCIETY MEMBERSHIPS:

American Gastroenterological Association (AGA)

- Member, Nominating Committee for the AGA Clinical Practice Section (2001)
- Member, Nominating Committee for the AGA EGD section (2005)
- Member, committee on Education (2002-2006)
 - AGA Distinguished Educator Award Selection Committee
 - Representative to the ABIM Continuous Professional Development Program (Recent advances Domain-Definition Meeting)
 - Core curriculum task force on training in acid peptic disease
 - Member, program evaluation subcommittee (2002-2009)
- Representative to the ABIM Liaison committee on recertification (2003-2006)
- Clinical practice section program planning committee
- Associate chair, abstract review (Dyspepsia and Acid-peptic and other gastroduodenal disorders) EGD section (2005-2006), abstract review (GERD 2007).
- Fellow of the AGA (inducted May 2007)
- Member, AGAI Nominating Committee (2010)
- Member of AGA Council; Vice-Chair, EGD section AGA (2011-12)
- Member of AGA Council; Chair, EGD section AGA (2013-15)
- Chair, abstract review (imaging of the stomach) IAT section (2015-)

EGD section councilor (2016-2017)
 Chair, Nominating Committee for the AGA EGD section (2017)
 Abstract Reviewer: GI Oncology section- Neuroendocrine Neoplasms
 American Society for Gastrointestinal Endoscopy (ASGE)
 Member, Research Committee (2007-2010)
 American College of Gastroenterology (ACG)
 North American Neuroendocrine Tumor Society (NANETS) 2009-
 Member, Board of Directors (2011-present)
 Educational representative to Executive committee (2012-14)
 Vice Chair (2014-2016)
 Chair (2016-present)
 American Board of internal medicine, CPD question-writing committee
 National Board of Medical Examiners, USMLE step 1 TMDC for physiology (2005)

EDITORIAL POSITIONS:

Section Editor	Gastroenterology (2006-2011)
Editorial Board	American Journal of Gastroenterology (resigned 2006) Alimentary Pharmacology and Therapeutics (resigned 2015) AGA Institute Press associate editor (2006-2008) AGA Institute Press Advisory Board (2008-2011)
Clinical Evidence.	Co-produced by the British Medical Journal and the American College of Physicians. Initially associate editor for the Gastroenterology Section, subsequently Gastrointestinal section advisor.
ePocrates	Member of the Clinical Board and reviewer for gastrointestinal drugs (lapsed)
Reviewer for;	The New England Journal of Medicine, Gastroenterology, Digestive Diseases and Sciences, The American Journal of Gastroenterology, Alimentary Pharmacology and Therapeutics, Helicobacter, Clinical Drug Investigation Endoscopy Drugs Journal of General Internal Medicine Head and Neck. Scandinavian Journal of Gastroenterology Pharmacoeconomics Journal of applied physiology The Medical Letter Pharmacoepidemiology and Drug Safety Gut Medicine Annals of internal medicine Clinical Cancer research Clinical Gastroenterology and Hepatology
Grant reviewer;	Albert Einstein Research Society 1996 and 1997 American federation for Aging Research 1996 Veteran Health Services Merit Award 1995 Int. Center for Diarrhoeal Disease Research, Bangladesh 1999 Swiss National Science Foundation, 2002 NIDDK Board of Scientific Counselors Review Meeting, Ad Hoc member, May 2006
FDA, CDER	Advisory board member (Gastroenterology section) 2001-2005

Requisites in Gastroenterology; Section editor for volume 1, 2002

ACADEMIC COMMITTEES AT THE UNIVERSITY OF PENNSYLVANIA:

1993-2005	Member, Endoscopy steering committee
1994, April-Oct.	Rotating Membership , Quality Assessment and improvement committee
1994-1998	Member, Medical Student Selection Committee
1994	Member, University of PA Health System Gastrointestinal task force
1994	Chairman, GI task force subcommittee on Acid-peptic disease and motility disorders.
1994-2000	Member, Council of Continuing Medical Education
1995	Member, Internship Selection Panel
1995-1998	Member, CME subcommittee on New Technologies
1995	Member, CME subcommittee on Fees
1996-1997	Member, Reengineering Challenge Team,
1997-1998	Member, Latex taskforce subcommittee of the Standards and Evaluation Committee
1997-1998	Member, CME Council Subcommittee on new technologies and enduring materials
1999	Member, Department of medicine taskforce on Medical Grand Rounds
1999	Member, Philadelphia GI alliance Health and Disease Management committee
2000-2003	Member, Institutional Review Board, University of Pennsylvania, Philadelphia, PA.
2000-2006	Member, Department of Medicine Clinical Effectiveness and Quality improvement team
2000	Member, Department of Medicine Patient-Oriented Research Subcommittee Taskforce on Research
2001-2004	Member, Doris Duke Clinical Research Fellowship Program committee
2002-2004	Member, Department of Medicine, resident selection committee
2005	Member, Infectious Diseases Review Committee
2006-	Member, Clinical Advisory Committee (Department of Medicine)
2006-	Member, Clinical excellence advisory group (CPUP)
2008	Member, Research Day abstract selection committee
2009-	Member, CPUP Clinical Operations Committee

MAJOR TEACHING AND CLINICAL RESPONSIBILITIES FOR THE UNIVERSITY OF PENNSYLVANIA:

1. Director, Gastroenterology CME case conferences.
(approximately once weekly; 1995-1999)

2. Director, Gastroenterology CME grand rounds.
(approximately once weekly ; 1995-1999, 2001-2004)
3. Gastroenterology consult service. (2-3 months per year)
4. Medicine department service:

1994-1997	1 month of medicine ward service per year
1995	Preceptor for ME101C and ME101A
1996-1998	Preceptor for ME101C
1998-2001	Medicine teaching service 2 weeks per year
1998-present	Ambulatory intern clinical rotations in GI
5. Gastroenterology Clinics.
(2 sessions per week 1994-present)
6. Gastroenterology Fellows Clinic.
(1994-1997 approximately 6 sessions/year)
7. Endoscopy and physiology procedures.
(3 sessions per week; 1994-present)
8. Physiology Laboratory weekly teaching conference
(approximately every third week; 1994-1998, monthly since 1999)
9. Intern bedside diagnosis
(two-six sessions per year; 1994-2001)
10. Firm Chief rounds and medical management conferences at HUP and VAMC
(2 to 3 sessions yearly; 1994-present)
11. GI Fellows summer lecture series: 1 per year (1994-1997, 1999-present)
12. GI Pathophysiology course for 2nd year students: 1 per year (1994-present).
13. GI Pathophysiology course for 2nd year students: generation of syllabus for discussion groups (1997 -present).
14. Differential Diagnosis for 2nd year students: 1 discussion group per year (1994-1999).
15. Endocrine Pathophysiology for 2nd year students: 1 lecture per year (1998 only)
16. Clinical Decision Making course for 2nd year students: 1 discussion group per year (2000-present)
17. Instruction and preceptorship of Fellows, Residents and Students during performance of activities listed above.
18. Moderator and Emcee: Annual Raffensperger Symposium, University of PA. April 2012-present

LECTURES BY INVITATION:

1. Zollinger-Ellison syndrome - an update. Gastroenterology Grand Rounds, Long Island Jewish Hospital, New York, NY. Jan. 13, 1992.
2. Use of thapsigargin to define the role of cytoplasmic calcium in mediating pancreatic acinar cell secretion. Gastroenterology Research Conference, Mayo Clinic, Rochester, MN. June 22, 1992.
3. Zollinger-Ellison syndrome - recent advances at the NIH. Monday Research Conference, Mayo Clinic, Rochester, MN. June 22, 1992.

4. Zollinger-Ellison syndrome - an update. Gastroenterology Grand Rounds, Saint Louis University Hospital, St. Louis, MO. Sept. 16, 1992.
5. Zollinger-Ellison syndrome. GI Case Conference, Jefferson Medical College, Philadelphia, PA. Nov. 11, 1992.
6. Recent NIH advances in Zollinger-Ellison syndrome. GI Grand Rounds, University of Pennsylvania Medical Center, Philadelphia, PA. Dec. 16, 1992.
7. Regulation and management of gastric acid secretion. GI fellows fall lecture series, University of Pennsylvania, Philadelphia, PA. September 11, 1993.
8. Zollinger-Ellison syndrome and Multiple Endocrine Neoplasia type 1. Endocrine Grand Rounds, Hospital of the University of Pennsylvania, Philadelphia, PA. October 28, 1993.
9. Peptic ulcer disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 3, 1993.
10. Peptic ulceration is an infectious disease! Visiting professor, Salem Memorial County Hospital, Salem, NJ, November 4, 1993.
11. Diagnosis and Management of H. pylori infections in peptic ulcer disease. Visiting professor, Mercer Medical Center, Trenton, NJ. March 15, 1994.
12. Update on Helicobacter pylori. Department of Medicine, Christiana Hospital, Newark DE. Sponsored by the Medical Society of Delaware, Delaware Academy of Medicine, Wilmington, DE. April 19, 1994.
13. Gastric acid secretion in peptic ulcer disease. GI division Topic Review, Graduate Hospital, Philadelphia, PA, May 3, 1994.
14. Gastroesophageal Reflux Disease; Pathophysiology, Diagnosis and Treatment. Regional meeting in Marlton, NJ., sponsored by Astra/Merck. June 15, 1994.
15. Gastroesophageal Reflux Disease - Current management. Guest lecture to the medical staff of Phoenixville hospital, Phoenixville, PA. June 21, 1994.
16. Ulcer disease and H₂-blockers. Medical housestaff management conference, University of Pennsylvania Medical Center, Philadelphia, PA. Aug 5, 1994.
17. Physiology and pathophysiology of gastric acid secretion and peptic ulcer disease. GI fellows summer lecture series, University of Pennsylvania, Philadelphia, PA. September 24, 1994.
18. New Insights on Zollinger-Ellison syndrome. Pennsylvania Society of Gastroenterology, Annual Scientific Meeting, Philadelphia, PA, September 10, 1994
19. The treatment and management of gastroesophageal reflux disease. Combined meeting of The Camden County Osteopathic Society, The Camden County Medical Society, The Burlington County Osteopathic Society and The Burlington County Medical Society, Cherry Hill, NJ., sponsored by Astra/Merck. September 21, 1994.
20. Therapeutic considerations in the treatment of active duodenal ulcer. Regional meeting in Wilmington, DE., sponsored by Astra/Merck. October 20, 1994.
21. Clinical presentation and diagnosis of NSAID gastropathy. Half day symposium on NSAID therapy: Arthritis and Ulcers. The Graduate Hospital, Philadelphia, PA., October 28, 1994.
22. Peptic ulcer disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 3, 1993.
23. ¹⁴C-Urea Breath Testing for the diagnosis of Helicobacter pylori gastritis. Half day symposium on Interventional Gastroenterology. Penn Tower Hotel, Hospital of the University of Pennsylvania, Philadelphia, PA., November 19, 1994.

24. Course director of half-day CME symposium entitled "State-of-the-art issues in Helicobacter pylori gastritis" sponsored by an educational grant from Abbott Laboratories. The program included a presentation entitled "Current recommendations for therapy of Helicobacter pylori gastritis: Whom to treat and how to treat them". Penn Tower Hotel, Hospital of the University of Pennsylvania, Philadelphia, PA. December 7, 1994.
25. Update on the management of gastroesophageal reflux disease. Regional meeting in Philadelphia, PA., sponsored by Astra/Merck. December 1, 1994.
26. Peptic Ulcer Disease - ZES, NSAIDs and HP. Medical Grand Rounds. Our Lady of Lourdes Medical Center, Camden, NJ. January 10, 1995.
27. Helicobacter pylori gastritis. Medical Grand Rounds. Temple University Hospital, Philadelphia, PA. January 18, 1995.
28. Helicobacter pylori gastritis. Regional meeting in Dover, DE., sponsored by Astra/Merck. February 8, 1995.
29. Update on peptic ulcer disease: H. pylori and Zollinger-Ellison syndrome. Medical Grand Rounds. Albert Einstein Medical Center, Philadelphia, PA. February 15, 1995.
30. Helicobacter pylori gastritis: Pathophysiology and treatment. Medical management conference. Philadelphia VA Medical Center, Philadelphia, PA. February 16, 1995.
31. Helicobacter pylori gastritis: lecture and panel discussion. Second annual clinical topics in gastroenterology CME conference, sponsored by the University of South Florida college of Medicine, Tampa, FL. April 22, 1995.
32. Dyspepsia. Firm Chief Rounds. Philadelphia VA Medical Center, Philadelphia, PA. May 2, 1995
33. Dyspepsia. Firm Chief Rounds. HUP, Philadelphia, PA. May 4, 1995
34. Gastric hypersecretory states. Gastroenterology Rounds, Cooper Hospital University Medical Center, Camden, NJ. June 23, 1995
35. Helicobacter pylori. Medical Grand Rounds VA Medical Center, Philadelphia, PA. July 19, 1996.
36. Helicobacter pylori gastritis. Surgical Grand Rounds. HUP, University of Pennsylvania, Philadelphia, PA. August 12, 1995.
37. Hypersecretory states; H. pylori and Zollinger-Ellison syndrome. Medical Grand Rounds, Crozer Chester Medical Center, Chester, PA. September 8, 1995
38. Non-ulcer dyspepsia: lecture and panel discussion. Half day symposium on Helicobacter pylori: A practical approach to diagnosis and management. Georgetown University Medical Center, Washington, DC., September 16, 1995.
39. Helicobacter pylori: pathophysiology, diagnosis and treatment. Medical Grand Rounds, St. Mary Medical Center, Langhorne, PA. September 19, 1995
40. Gastric acid hypersecretion and peptic ulcer disease. GI fellows summer lecture series, University of Pennsylvania, Philadelphia, PA. September 27, 1995.
41. H. pylori diagnosis: Current comparative data, lecture and discussion. Evening CME symposium on diagnostic testing for H. pylori sponsored by The Graduate Hospital. Marriott Hotel, Philadelphia, PA., September 28, 1995.
42. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 1, 1995.
43. Current trends in managing patients with peptic ulcer disease and gastroesophageal reflux disorder. University of Pennsylvania sponsored CME conference consisting of 2 lectures entitled "Peptic ulcer disease and H. pylori gastritis" and "Gastroesophageal reflux disease: An overview of the problem". Given to Prudential Healthcare System, Dresher, PA, November 2, 1995.

44. Course director of half-day CME symposium entitled "Diagnosis and management of gastroesophageal reflux disease" sponsored by educational grants from Abbott Laboratories, Astra Merck, TAP Pharmaceuticals, Janssen Pharmaceuticals, Synectics Medical, and US Surgical. The program included a presentation entitled "Medical Mangement of GERD. Penn Tower Hotel, Hospital of the University of Pennsylvania, Philadelphia, PA. November 18, 1995.
45. Helicobacter pylori gastritis. Medical grand rounds CME presentation, The Washington Hospital, Washington, PA. November 22, 1995
46. H. pylori and non-ulcer dyspepsia: lecture and panel discussion. Half day CME symposium sponsored by Cooper Hospital/University Medical Center on Helicobacter pylori: Clinical update. Voorhees, NJ, December 8, 1995.
47. Helicobacter pylori. Medical Grand Rounds, Abington Memorial Hospital, Abington, PA. January 17, 1996.
48. Helicobacter pylori. Medical Grand Rounds, Paoli Memorial Hospital, Paoli, PA. January 24, 1996.
49. H. pylori. Three day CME symposium entitled Primary Care 96 sponsored by the Lake Erie College of Osteopathic Medicine (LECOM), Peek 'n Peak, Clymer, New York. March 2, 1996.
50. GERD. Firm Chief Rounds. Philadelphia VA Medical Center, Philadelphia, PA. March 12, 1996
51. GERD. Firm Chief Rounds. HUP, Philadelphia, PA. March 14, 1996.
52. Dyspepsia. Weekly CME conference, Student health service, University of Pennsylvania, Philadelphia, PA. April 9, 1996.
53. H. pylori gastritis and peptic ulcer disease. Keystone Health Plan East (KHPE) "Quality Care College", Adams Mark Hotel, Philadelphia, PA. April 30, 1996.
54. H. pylori gastritis: The academic perspective. Brief talk and panel discussion at the 15th annual symposium on Advances in Pharmacology: Protocol design and methodology: The US Regulatory process, sponsored by the American journal of Therapeutics, Four Seasons Hotel, Washington, DC., May 6-8, 1996.
55. Panelist for an evening symposium entitled "Issues and controversies in acid-related disease: A case-oriented discussion on the management of GERD and Helicobacter pylori" sponsored by an educational grant from Astra Merck, San Francisco Marriott Hotel, San Francisco, CA. May 19, 1996.
56. Peptic Ulcer Disease. Evening symposium on GI disorders, presented to the Clinical Care Associates of the University of Pennsylvania Health System, Adams Mark Hotel, Philadelphia, PA. May 28, 1996.
57. Helicobacter pylori gastritis. Medical grand rounds, Greater Baltimore Medical Center, Baltimore, MD. May 30, 1996.
58. Gastroesophageal Reflux Disease. Cardiothoracic Surgery lecture series. HUP, University of Pennsylvania, Philadelphia, PA. June 14, 1996.
59. Diagnosis and medical management of common acid peptic disorders. Introduction to Gastroenterology lecture series. HUP, University of Pennsylvania, Philadelphia, PA. July 29, 1996.
60. Helicobacter pylori gastritis. A half day preceptorship for Astra/Merck clinical specialists on diagnosis, therapy and controversies relating to H. pylori infection. The program included an extended didactic session, four case studies, a video demonstration of upper endoscopy, and breath testing and antibody testing of 3 volunteers. Penn Tower Hotel, University of Pennsylvania, Philadelphia, PA. August 7, 1996.
61. Gastric Acid Secretion. One of a 16 lecture series for Astra Merck employees developing a core curriculum on Gastroenterology topics. Desmond Hotel, Chesterbrook, PA. September 4, 1996
62. Helicobacter pylori gastritis and non-ulcer dyspepsia. Visiting Professor, Easton Memorial Hospital, Easton, MD. September 12, 1996.

63. Diagnosing *Helicobacter pylori* gastritis. Visiting Professor, Easton Memorial Hospital, Easton, MD. September 12, 1996.
64. Grand Rounds: The spectrum of *Helicobacter pylori* infection - Pathophysiology and treatment. Visiting Professor, Easton Memorial Hospital, Easton, MD. September 13, 1996.
65. Grand Rounds and Visiting Professor: *Helicobacter pylori* gastritis. Episcopal Hospital, Philadelphia, PA. September 19, 1996.
66. *Helicobacter pylori* gastritis. Regional meeting in Norristown, PA. Sponsored by Astra/Merck. September 25, 1996.
67. *H. pylori*: Current controversies in diagnosis and management. Lecture and panel discussion, Philadelphia GI training group, Fall symposium. Eagle Lodge Conference Center, Lafayette Hill, PA. October 5, 1996.
68. Peptic ulcer disease and *H. pylori* gastritis. University of Pennsylvania CME lecture for Mercy Health Plan Physicians. Adams Mark Hotel, Philadelphia, PA. October 9, 1996.
69. Duodenal ulcer disease: The role of *H. pylori*. Regional meeting, James A. Michener Art Museum, Doylestown, PA. Sponsored by Astra/Merck. October 28, 1996.
70. Acid-peptic disease and *H. pylori* infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 4, 1996.
71. New advances in the treatment of *H. pylori*-associated ulcer disease. Regional meeting in Dupont, PA. Sponsored by GlaxoWellcome. November 14, 1996.
72. Regulation of acid secretion. Basic science of gastroenterology lecture series, University of Pennsylvania GI education conference, Philadelphia, PA. November 18, 1996.
73. *H. pylori*. University of Pennsylvania CME lecture for the Chestnut Hill Hospital Summit Medical Group Monthly conference, Philadelphia, PA. December 5, 1996.
74. Diagnostic Modalities: Which one and why. Lecture and panel discussion. Half day CME symposium on *H. pylori*: A practical approach to diagnosis and management. Georgetown University Medical Center, Washington, DC., December 14, 1996.
75. Lecture on "*Helicobacter pylori*; Who and how to treat", Astra Merck Regional Faculty Consultants Conference for Primary care Physicians, Philadelphia, PA. December 15, 1996.
76. *Helicobacter pylori* gastritis. Medical grand rounds, Presbyterian Medical Center, Philadelphia, PA. Jan 10, 1997.
77. Update on *helicobacter pylori* gastritis. Medical grand rounds, Philadelphia VA Medical Center, Philadelphia, PA. February 5, 1997.
78. *Helicobacter pylori* infection: Pathogenesis, Diagnosis and treatment. Regional meeting for the Delaware Society of Hospital Pharmacists, sponsored by Astra Merck, Philadelphia, PA. Feb 18, 1997.
79. *Helicobacter pylori* gastritis: Realities of diagnosis. Two day symposium on *Helicobacter pylori* gastritis. Yale University School of Medicine, New Haven, CT. March 1-2, 1997.
80. 14C-Urea breath testing in the diagnosis of *H. pylori* gastritis: Comparison with existing alternative techniques. Monthly Philadelphia Nuclear Medicine Conference, followed by a case discussion on the impact of In-111 labelled Octreotide imaging in the management of patients with neuroendocrine tumors. HUP, Philadelphia, PA. March 12, 1997.
81. Course director of half-day CME symposium entitled "State-of-the-art issues in *Helicobacter pylori* gastritis" sponsored by an educational grant from Glaxo-Wellcome and Abbott Laboratories. The program included a presentation entitled "Diagnostic Testing". Penn Tower Hotel, Hospital of the University of Pennsylvania, Philadelphia, PA. March 19, 1997.
82. *Helicobacter pylori* infection. Medical Grand Rounds, University of Pennsylvania Medical Center, Philadelphia, PA. March 25, 1997.

83. H. pylori gastritis: Who and How to Treat. Lecture and panel discussion. Fourth annual Topics in Gastroenterology CME conference, sponsored by the University of South Florida college of Medicine, Tampa, Fl. April 5, 1997.
84. Panelist and lecturer for an evening symposium entitled "Dyspepsia: Current controversies and new approaches to management" sponsored by the the office Continuing Medical Education of the University of South Dakota, Grand Hyatt, Washington, DC. May 11, 1997.
85. Peptic ulcer disease, new advanced treatment strategies. Regional meeting in East Rutherford, NJ. Sponsored by TAP Pharmaceuticals. June 12, 1997.
86. Panelist and lecturer at the 61st annual University of Minnesota CME course in surgery entitled "Gastrointestinal and GI Laparoscopic surgery. The program included two lectures entitled "Helicobacter pylori: methods for diagnosis and pathological significance" and Helicobacter pylori: various treatment regimens and their long-term outcome" as well as participation on two question and answer panels. Wiley Hall, University of Minnesota, Minneapolis MN, June 18-19, 1997.
87. Diagnosis and medical management of common acid peptic disorders. Introduction to Clinical Gastroenterology lecture series. HUP, University of Pennsylvania, Philadelphia, PA. July 28, 1997.
88. Helicobacter pylori gastritis; Pathophysiology, Diagnosis and Treatment, Puerto Rico Gastroenterology Conference sponsored by Astra Merck, El Conquistador, Puerto Rico. August 22-24, 1997.
89. Diagnosis of non-Zollinger-Ellison syndrome, non-carcinoid syndrome, enteropancreatic neuroendocrine tumors. Advances in digestive endocrine tumors: Rome Fall Meeting on Gastrointestinal Diseases. Rome, Italy. September 29-30, 1997.
90. Peptic ulcer disease. Update in internal medicine. One day CME symposium sponsored by the University of Pennsylvania, State College, PA. October 10, 1997.
91. New approaches in the diagnosis and management of H. pylori gastritis. Series of 4 CME lectures sponsored by the University of Pennsylvania for Prudential Healthcare employees, Joseph Ambler Inn, North Whales, PA, October 16, 1997; Ristorante La Buca, Philadelphia, PA, October 30, 1997; Toscana, Wilmington, DE, November 20, 1997; Braddock's Tavern, Medford, NJ, December 4, 1997.
92. H. pylori: Here today and gone tomorrow. GI Updates and clinical issues for the 90's and beyond. Half day CME symposium sponsored by The Uniontown Hospital, Nemacolin Woodlands Resort, Farmington, PA. October 18, 1997.
93. New approaches to Peptic Ulcer Disease. Lecture to residents of Sacred Heart Family Residency Program, Sacred Heart Hospital, Allentown, PA. October 23, 1997.
94. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 3, 1997.
95. Helicobacter pylori gastritis, duodenal ulcers and gastric cancer. Department of Medicine Grand Rounds, Albert Einstein Medical Center, Philadelphia, PA. November 19, 1997.
96. Helicobacter pylori and gastric cancer. University of Pennsylvania grand rounds, HUP, Philadelphia, PA. December 17, 1997.
97. Helicobacter pylori: Pathophysiology, diagnosis and treatment. Medical Grand Rounds: Lyons VAMC, Lyons, NJ. December 18, 1997.
98. Helicobacter pylori: Pathophysiology, diagnosis and treatment. Surgical Grand Rounds: St Lukes Hospital, Bethlehem, PA. January 21, 1998.
99. Helicobacter pylori: A rational approach to testing methods. University of Pennsylvania outpatient GI lecture series. University of Pennsylvania, February 20, 1998.

100. Prescribing decisions in reflux gastroesophageal reflux disease. Dinner lecture, Lambertville, NJ, February 27, 1998.
101. H. pylori: testing and therapy. Philadelphia GI Training Group Spring Conference entitled "Common GI problems emphasizing management", City Line Holiday Inn, Philadelphia, PA., March 28, 1998.
102. Helicobacter pylori gastritis: Pathophysiology diagnosis and treatment. 11th annual Gastroenterology symposium, St Francis Hospital and Medical Center, Topeka, Kansas. April 2, 1998.
103. Gastroesophageal reflux disease. Outpatient Management Conference. HUP, Philadelphia, PA, April 16, 1998.
104. Intravenous Pantoprazole for Zollinger-Ellison syndrome. Wyeth-Ayerst investigators meeting, New Orleans, LA, May 17, 1998.
105. Zollinger-Ellison syndrome. Fellows reporter series lecture. New Orleans, LA, May 19, 1998.
106. H. pylori infection and peptic ulcer disease. Outpatient management conference. Presbyterian Hospital, Philadelphia, PA, June 3, 1998.
107. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. June 5, 1998.
108. H. pylori from peptic ulcer disease to gastric cancer. Lecture and panel discussion. Fifth annual Topics in Gastroenterology CME conference, sponsored by the University of South Florida college of Medicine, Tampa, FL. June 6, 1998.
109. Neuroendocrine tumors. Noon medicine conference, Episcopal Hospital, Philadelphia, PA. June 11, 1998.
110. ZollingerEllison syndrome. South Carolina Gut Club meeting, Charlotte, SC. July 15, 1998.
111. Current trends in Gastrosophageal Reflux Disease. Regional Dinner lecture sponsored by Astra Pharmaceuticals, Philadelphia, PA. August 20, 1998.
112. Moderator and discussant for "Trends in acid peptic disease and how to use the medicare E and M guidelines effectively". An evening Clinical symposium for primary care and family physicians sponsored by Astra Pharmaceuticals, presented by The Resource Group and CME accredited by The Cleveland Clinic. Four Seasons Hotel, Philadelphia, PA. September 22, 1998.
113. Enteropancreatic neuroendocrine tumors. Philadelphia GI training group, Fall symposium. Eagle Lodge Conference Center, Lafayette Hill, PA. September 26, 1998.
114. GERD: H2 antagonists versus proton pump inhibitors. HIP lecture, Camden, NJ. October 2, 1998.
115. Peptic Ulcer Disease. Lecture with CME accreditation by the University of Pennsylvania for the 76th 4 day annual education meeting of the Texas club of internists. Philadelphia, PA. October 4, 1998.
116. Experience with the use of intravenous proton pump inhibitors. Lecture and panel discussion with CME accreditation by Baylor Medical College for an evening satellite symposium at the American College of Gastroenterology annual meeting entitled "New approaches to suppression of gastric acid in the acute care setting". Boston, MA. October 10, 1998. Also published as a monograph for CME credits.
117. Pathogenesis and management of H. pylori gastritis. Atlantic City Medical Center grand rounds. Atlantic City Medical Center, NJ. November 9, 1998.
118. Gastrointestinal peptide hormones and enteropancreatic neuroendocrine tumors. Endocrinology Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 17, 1998.
119. Heartburn and Dyspepsia: Disease management for the primary care physician. Noon conference, Department of Family Practice. University of Pennsylvania, Philadelphia, PA. December 17, 1998.

120. Update on Proton Pump Inhibitors. Medical grand Rounds, Hospital of the University of Pennsylvania, Philadelphia, PA. January 5, 1999.
121. Zollinger-Ellison Syndrome. Gastroenterology grand rounds and visiting professor. Vanderbilt University, Nashville TN, January 21, 1999.
122. Prevention of NSAID gastropathy. Atlantic City Medical Center grand rounds. Atlantic City Medical Center, NJ. March 8, 1999.
123. Gastroesophageal reflux disease. Regional lunchtime lecture meeting for TAP pharmaceuticals. Philadelphia, PA, March 14, 1999.
124. Zollinger-Ellison Syndrome and enteropancreatic neuroendocrine tumors. Gastroenterology Grand Rounds, Hahnemann University Hospital, Philadelphia, PA, April 22, 1999.
125. Zollinger-Ellison syndrome. Fellows reporter series lecture. Orlando, FL, May 16, 1999.
126. Oral and Intravenous Antisecretory therapy for acid-peptic disease. Lecture and panel discussion with CME accreditation by Duke University for an evening satellite symposium at Digestive Diseases Week entitled "Continuing the Proton Pump Inhibitor Revolution: What's the future?" Orlando, FL. May 16, 1999. Also published as a monograph for CME credits.
127. Diagnosis and medical management of Supraesophageal GERD. Lecture and panel discussion at a Digestive Diseases Week Combined symposium entitled "Laryngeal and pulmonary complications of gastroesophageal reflux disease". Orlando, FL. May 18, 1999.
128. H. pylori, gastritis and peptic ulcer disease. Seventh Annual University of Santo Tomas Medical Alumni Association meeting. Philadelphia, PA. May 27, 1999
129. Session moderator (Gastric diseases) and lecture entitled "H. pylori gastritis and peptic ulcer disease" at University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Park Hyatt, Philadelphia, June 17, 1999.
130. Session moderator (Pancreatic diseases) and lecture entitled "Neuroendocrine tumors" at University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Park Hyatt, Philadelphia, June 17, 1999.
131. Session moderator (Intestinal diseases) and lecture entitled "Malabsorption syndromes" at University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Park Hyatt, Philadelphia, June 18, 1999.
132. Neuroendocrine tumors. Atlantic City Medical Center grand rounds. Atlantic City Medical Center, NJ. September 13, 1999.
133. Helicobacter pylori gastritis. The medical center at Princeton grand rounds. Princeton Medical Center, NJ. September 14, 1999.
134. NSAID gastropathy. Mid-Atlantic Podiatry Association Annual Conference, Morgantown, WV. September 19, 1999.
135. Zollinger-Ellison syndrome. Surgical Department Grand Rounds, Hospital of the University of Pennsylvania, Philadelphia, PA. October 9, 1999.
136. New Paradigms in antisecretory therapy: IV H₂RAs versus IV PPIs. Lecture and panel discussion with CME accreditation by University of Michigan for an evening satellite symposium at the annual American College of Gastroenterology meeting entitled "Reengineering oral and IV therapy for acid peptic diseases" Phoenix, AZ, October 16, 1999. Also published as a monograph for CME credits.
137. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 5, 1999.
138. Zollinger-Ellison syndrome and intravenous proton pump therapy. Georgetown University Gastroenterology division grand rounds, Washington, DC. November 10, 1999.

139. Clinical use of proton pump inhibitors in the hospital setting. Lecture and panel discussion with CE accreditation at one of six breakfast satellite symposia at the midyear American Society of Health-System Pharmacists clinical meeting. Orlando, FL. December 7, 1999.
140. GERD. Otorhinolaryngology resident and lecture series 2000. Hospital of the University of Pennsylvania, Philadelphia, PA. January 6, 2000.
141. Topics in gastroenterology. Gastroenterology fellow's outpatient curriculum lecture. Hospital of the University of Pennsylvania, Philadelphia, PA. January 7, 2000.
142. GI research seminar: Issues with oral and intravenous proton pump inhibitors. Visiting Professor, UMDNJ, New Brunswick, NJ. January 14, 2000.
143. GI Grand rounds: Neuroendocrine tumors of the gastrointestinal tract. Visiting Professor, UMDNJ, New Brunswick, NJ. January 14, 2000.
144. Oral and intravenous proton pump inhibitors. Medical grand rounds. Rutland Regional Medical Center, Rutland VT. January 20, 2000.
145. Use of proton pump inhibitors. Medical grand rounds. CVPH medical Center, Plattsburgh, NY. January 21, 2000.
146. Update on oral and intravenous proton pump inhibitors. GI Grand Rounds. Long Island Jewish Medical Center, New Hyde Park, NY. February 7, 2000.
147. IV Management of acid output in ICU's, perioperative and postoperative settings. Lecture and panel discussion at a morning satellite symposium of the annual Society for Critical Care Medicine meeting entitled "Acid suppression in the critically ill: the role of PPI's". Orlando, FL. February 12, 2000.
148. Esophageal and supraesophageal manifestations of GERD. Lecture and workshop at TAP University. Annual training meeting for representatives of TAP Pharmaceuticals. Orlando, FL. February 14, 2000.
149. Supraesophageal reflux disease: Diagnosis and management. Medical residency outpatient management Conference. HUP, Philadelphia, PA, March 9, 2000.
150. H. pylori infection. Student Health CME lecture series. HUP, Philadelphia, PA, March 14, 2000.
151. H. pylori gastritis: issues for the new millenium. American College of Gastroenterology Postgraduate course for primary care physicians. Lecture and panel discussion. Bellevue Hotel, Philadelphia, PA, March 18, 2000.
152. Update on antisecretory therapy. Combined surgical intensive care and gastroenterology lecture. University of Maryland Medical Center. Baltimore, MD. April 19, 2000.
153. Oral and intravenous antisecretory therapy. Interdisciplinary conference lecture. Georgetown University Medical Center. Washington, DC. April 19, 2000.
154. Choice of antisecretory therapy: H2 blockers versus PPIs. Bryn Mawr Hospital Lunchtime conference. Bryn Mawr, PA. April 25, 2000.
155. An update on oral and IV proton pump inhibitors. Surgical grand Rounds. St Francis Hospital and Medical Center. Hartford, CT. May 10, 2000
156. Suppression of gastric acid secretion: New approaches with intravenous agents. University of Connecticut Health Center. Farmington, CT. May 10, 2000.
157. Using the human model to understand proton pump and parietal cell function in patients receiving intravenous proton pump inhibitors. Lecture and panel discussion at an evening symposium at Digestive Disease Week with CME accreditation by Duke University entitled "From Oral to IV PPI's". San Diego, CA May 21, 2000. Also published as a monograph for CME credits.

158. Oral and intravenous antisecretory therapy. Digestive Disease Week Fellows Reporter series. May 23, 2000.
159. Session moderator (Gastric diseases and disorders) and lecture entitled "H. pylori, gastritis and peptic ulcer disease" at University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Westin Hotel, Philadelphia, June 8, 2000.
160. Session moderator (Pancreatic diseases and disorders) and lecture entitled "Neuroendocrine tumors" at University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Westin Hotel, Philadelphia, June 8, 2000.
161. Session moderator (Small and large intestinal diseases and disorders) and lecture entitled "Malabsorption syndromes" at University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Westin Hotel, Philadelphia, June 9, 2000.
162. Moderator for the "Clinical interface" session including a lecture entitled "H. pylori and upper GI tract cancer" for a one day symposium entitled "Upper Gastrointestinal Tract: Biology and Genetics" sponsored by the UPHS division of gastroenterology and the center for molecular studies in digestive and liver diseases. Penn Tower hotel, Philadelphia, June 16, 2000.
163. Using intravenous PPI therapy to understand parietal cell function in humans. Gastroenterology research talk. New England medical Center, Boston, MA, June 21, 2000.
164. Oral and intravenous antisecretory therapy: An update. Medical Grand Rounds, St Elizabeths Hospital, Brighton, MA, June 22, 2000.
165. New antisecretory therapies for GERD. Evening lecture to the Long Island Gastroenterology Association. Jericho, New York. June 26, 2000.
166. Oral and intravenous antisecretory therapy: An update. Division of Gastroenterology and Hepatology weekly Conference, Cornell University, New York Presbyterian Hospital, New York, NY. June 27, 2000.
167. New Strategies in the management of gastroesophageal reflux disease. Two CME lecture sponsored by the St Barnabas Health Care System of New Jersey. Nonna's, Cherry Hill, NJ, June 27, 2000 and The Manor, West Orange, NJ, June 28, 2000.
168. Oral and intravenous proton pump inhibitor and histamine H2 receptor antagonist therapy: New concepts. Medical grand Rounds, Montgomery General Hospital, Olney, MD. July 20, 2000.
169. Diagnosis and medical management of common Acid-Peptic disorders. GI Division summer lecture series. HUP, University of Pennsylvania, Philadelphia, PA. July 31, 2000.
170. Dysphagia, GERD and failure to thrive in the mentally challenged. Special education lecture at the Elwyn Institute. Philadelphia, PA. August 3, 2000.
171. An overview of antisecretory therapy. Medical Grand Rounds, Holy Redeemer Hospital, Philadelphia, PA. September 7, 2000.
172. New approaches to antisecretory therapy in hospitalized patients. Concord Hospital CME conference, Concord, NH. September 13, 2000.
173. New approaches to antisecretory therapy in hospitalized patients. Androscoggin valley Hospital CME conference, Berlin, NH. September 13, 2000.
174. The great H. pylori debate: Good bug or bad bug? Philadelphia GI training group, Fall symposium. Eagle Lodge Conference Center, Lafayette Hill, PA. September 16, 2000.
175. Peptic ulcer disease. University of Pennsylvania Medical management conference, Presbyterian Hospital, Philadelphia, PA. September 15, 2000.

176. Peptic Ulcer disease. University of Pennsylvania Medical management conference, HUP, Philadelphia, PA. September 21, 2000.
177. New Acid Suppressing therapies. Medical grand Rounds, Queens Hospital Center, Jamaica, NY. September 27, 2000
178. New modalities in the treatment of GERD. Continuing Education lecture to the Long Island Society of Health-System pharmacists, Carle Place, NY. September 27, 2000.
179. Oral and Intravenous antiseecretory therapy. American College of Gastroenterology annual meeting. Fellows Reporter series. New York, NY, October 17, 2000.
180. Potential roles for intravenous proton pump inhibitors. Hahneman University, Division of Gastroenterology, grand Rounds. Philadelphia, PA, October 19, 2000.
181. Tachyphylaxis and rebound hypersecretion with antiseecretory agents: Potential roles for IV PPI therapy. Northwestern University, Division of Gastroenterology Grand Rounds, Chicago, IL, October 26, 2000.
182. Nonsteroidal Gastropathy and its prevention. Lecture at an evening CME symposium entitled "Update on new rheumatologic medications" sponsored by Searle Pharamaceuticals and accredited by Pharmcon, Inc. CME coordinators, Philadelphia, PA, October 26, 2000.
183. New approaches to antiseecretory therapy in the hospital setting. Nassau County medical Center medical grand Rounds, Nassau, NY, November 2, 2000.
184. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 3, 2000.
185. Nonsteroidal gastropathy and its prevention. Medical Grand Rounds, St Agnes Hospital, Philadelphia, PA. November 8, 2000.
186. Oral and intravenous antiseecretory therapy. Medical Grand Rounds, Shady Grove Adventist Hospital, Rockville, MD. November 16, 2000.
187. Oral and intravenous antiseecretory therapy. Evening CME lecture accredited by Anne Arundel Medical Center, Annapolis, MD. November 16, 2000.
188. New treatment options for the management of GERD. Physician medical education dinner, Mercy Hospital of Philadelphia, Philadelphia, PA. November 27, 2000.
189. An update on Helicobacter pylori infection. Medical Grand Rounds, Taylor hospital, Philadelphia, PA, 2000.
190. Suppression of gastric acid secretion: New approaches with intravenous agents. Saturday morning CME conference, Delaware County Memorial Hospital, Drexel Hill, PA. December 2, 2000.
191. Oral and intravenous antiseecretory therapy. Medical grand rounds, University of Virginia, Charlottesville, VA. December 4, 2000.
192. Physiology of proton pumps. Gastroenterology research Conference, University of Virginia, Charlottesville, VA. December 5, 2000.
193. Gastroesophageal reflux disease. Department of medicine Grand Rounds, St Joseph medical center, Towson, MD. December 20, 2000.
194. Proton pump inhibitors. Medical Grand Rounds, Holyoke Hospital, Holyoke MA. January 9, 2001.
195. Antiseecretory therapy in the critically ill patient. Surgical grand Rounds, Newton Wellesley Hospital, Newton, MA. January 10, 2001
196. NSAID Gastropathy. Medical Grand Rounds. Mercy Fitzgerald Hospital, Upper Darby, PA. January 17, 2000.

197. Supraesophageal reflux disease. The Atlanta GUT club, Atlanta, GA. January 18, 2000.
198. Helicobacter pylori gastritis: Issues for the new millenium. Delaware County memorial Hospital medical grand rounds, Philadelphia, PA. January 20, 2000.
199. Acid suppression in the hospital setting. St Francis Hospital CME lecture, Trenton, NJ. January 26, 2001.
200. Oral and intravenous antiseecretory proton pump inhibitor therapy. Riddle Memorial Hospital Medical Grand Rounds, Media, PA. February 2, 2001.
201. Acid suppression in the hospital setting. Medical grand Rounds, Holy Spirit Hospital, Camp Hill, PA. February 15, 2000.
202. Physiology of gastric acid secretion and oral and intravenous antiseecretory therapy. Gastroenterology Grand Rounds, Hershey Medical Center, Hershey, PA. February 21, 2001.
203. Faculty member of an academic skills workshop entitled "Training and academic opportunities for junior faculty in gastroenterology" jointly sponsored by the AGA and GRG including panel discussions and a lecture entitled "Developing budgets", Singer Island, FL. February 23-25, 2001.
204. Supraesophageal GERD. Lecture and workshop at TAP University. Annual training meeting for representatives of TAP Pharmaceuticals. Nashville, TN. February 26, 2001.
205. Intravenous proton pump inhibitors: potential indications. South Carolina GUT club, Columbia, South Carolina. February 28, 2001.
206. Oral and intravenous antiseecretory therapy. Have H2 antagonists been replaced by PPI's for all indications. Department of medicine Grand rounds, University of South Carolina, Columbia, South Carolina. March 1, 2001.
207. Intravenous proton pump inhibitors: Use in reflux disease, stress ulcer prophylaxis and prevention of peptic ulcer rebleeding. Combined Medical and Surgical grand rounds, Saint Francis Hospital and Medical Center, Hartford, Connecticut. March 8, 2001.
208. Oral and intravenous PPI therapy. Medical Grand Rounds, Lawrence Hospital, Bronxville, NY. March 13, 2001.
209. Practical management of gastroesophageal reflux disease. Lecture and panel discussion at a lunch-time symposium in conjunction with PriMed South, supported by TAP Pharmaceuticals and CME accredited by Harvard University. Ft Lauderdale, FL. March 23, 2001
210. Fire in the belly and beyond: Update on the management of GERD and dyspepsia. 1 hour CME lecture to the District of Columbia Academy of Family Physicians sponsored by the Thomas R. Beam, Jr., Memorial Institute for CME. Washington, DC. April 3, 2001.
211. Oral and intravenous antiseecretory therapy. Medical grand Rounds. St Peter's Hospital, New Brunswick, NJ. April 10, 2001.
212. Oral and intravenous antiseecretory therapy. Gastroenterology research conference and visiting professor. Oregon Health Sciences university, Portland, OR. April 13, 2001
213. Otolaryngologic manifestations of GERD. Penn ENT alliance annual meeting. Radnor, PA. April 25, 2001.
214. Oral and intravenous acid suppression in the hospital setting. GI lecture series, Allegheny General Hospital, Pittsburgh, PA. April 26, 2001.
215. Oral and intravenous antiseecretory therapy. Medical grand rounds, Advocate Lutheran General Hospital, Chicago, IL. May 30, 2001.
216. Physiology of proton pumps. Gastroenterology research Conference, Advocate Lutheran General Hospital, Chicago, IL. May 30, 2001.

217. Acid suppression in the critically ill patient. Surgical Grand Rounds, Mount Auburn Hospital, Cambridge, MA. June 5, 2001.
218. Intravenous antisecretory therapy in the hospitalized patient. Bryn Mawr Hospital Grand Rounds. Bryn Mawr, PA. June 12, 2001.
219. Medical Management of duodenal ulcer disease. Lecture and Panel discussion at a CME course for surgeons entitled "Advances in Gastrointestinal and GI laparoscopic surgery" sponsored by the University of Minnesota. Minneapolis, MN. June 14, 2001.
220. Diagnosis and management of Helicobacter pylori. Lecture and Panel discussion at a CME course for surgeons entitled "Advances in Gastrointestinal and GI laparoscopic surgery" sponsored by the University of Minnesota. Minneapolis, MN. June 14, 2001.
221. Supraesophageal reflux disease. CME Lecture for the American Association of Physicians of Indian Origin Annual Meeting. Washington, DC. June 30, 2001.
222. Intravenous antisecretory therapy in the hospitalized patient. Medical grand rounds. Easton Memorial Hospital, Easton, MD. July 20, 2001.
223. Intravenous antisecretory therapy in the hospitalized patient. CME dinner meeting. St Mary's Hospital, Leonardtown, MD. August 9, 2001.
224. Oral and intravenous antisecretory therapy. Medical Grand Rounds. LaGrange memorial Hospital, Adventist Health System – Midwest region, Chicago, IL. September 11, 2001.
225. Oral and intravenous antisecretory therapy. Medical Grand Rounds. Rush North Shore Hospital, Adventist Health System – Midwest region, Chicago, IL. September 12, 2001.
226. Oral and intravenous antisecretory therapy. Medical Grand Rounds. Hinsdale Hospital, Adventist Health System – Midwest region, Chicago, IL. September 13, 2001.
227. Intravenous antisecretory therapy in the hospital setting. Monthly CME conference for the Delaware Valley Chapter of the ASHP. Conshohocken, PA. September 18, 2001.
228. Session moderator (Gastric and small intestinal diseases and disorders) and lecture entitled "H. pylori and NSAIDs: Current practice recommendations" at University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Rittenhouse Hotel, Philadelphia, September 20, 2001.
229. Neuroendocrine tumors: Diagnosis. University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update", Rittenhouse Hotel, Philadelphia, September 20, 2001.
230. Intravenous antisecretory therapy in the hospital setting. One of 4 CME lectures for a one-day symposium on GI topics. North Shore University Hospital, Manhasset, NY. September 29, 2001.
231. A new option in the management of acid suppression: Intravenous proton pump inhibitors. Lecture and panel discussion at an evening symposium at the American College of Gastroenterology Annual Meeting with CME accreditation by Michigan University entitled "Reaching beyond traditional outcomes in acid related disorders". Las Vegas, NV October 20, 2001. Also published as a monograph for CME credits.
232. Intravenous PPI therapy in hospitalized patients. Medical Grand Rounds, St Joseph's hospital Center, Baltimore, MD. October 24, 2001.
233. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 5, 2001.
234. Intravenous PPI therapy in hospitalized patients. Medical Grand Rounds, Christiana Hospital, Newark, DE. November 15, 2001.

235. Acute acid suppression therapy in the hospital setting. Lecture and panel discussion at a morning satellite symposium at the American Society of Hospital Pharmacists Annual midyear clinical meeting. New Orleans, LA. December 5, 2001.
236. Intravenous antisecretory therapy in the hospitalized setting. Louisville GUT club, Louisville, KY. December 5, 2001.
237. Peptic Ulcer Disease: Update on Pathogenesis and Therapy. Medical Grand Rounds. Montefiore Medical Center, Bronx, NY. December 20, 2001.
238. Oral and IV antisecretory therapy. Gastroenterology Grand Rounds. Montefiore Medical Center, Bronx, NY. December 20, 2001.
239. Supraesophageal reflux disease. ORL resident lecture series, UPHS, Philadelphia, PA. January 3, 2002.
240. Extra-esophageal reflux disease. Medical Grand Rounds, Pennsylvania Hospital, Philadelphia, PA. January 8, 2001.
241. Gastrointestinal complications of NSAIDs. Medical Grand Rounds, Nazareth Hospital, Philadelphia, PA. January 30, 2002.
242. Management of peptic ulcer disease in the modern era. Outpatient management lecture series to medical residents, UPHS, Philadelphia, PA. February 1, 2002.
243. Intravenous antisecretory therapy in the hospital setting. Medical Grand Rounds. Bronx Lebanon Hospital, New York, NY. February 7, 2002.
244. Update on the use of IV acid suppression in the hospital. Two CME lecture sponsored by the St Barnabas Health Care System of New Jersey. The Manor, West Orange, NJ, February 27, 2002 and Nonna's, Cherry Hill, NJ, February 28, 2002.
245. GI, Renal and Cardiovascular Safety Profiles of COX-2 Inhibitors. Lecture and Panel discussion at an International and American associations of Dental Research (IADR) symposium entitled "COX-2 Inhibitors: Where Are We Now and Where Are We Going" at the annual IADR meeting. San Diego, CA. March 8, 2002.
246. H. pylori gastritis and gastric cancer. Invited lecture at Byk Gulden, Pharmaceuticals, Konstanz, Germany. March 12, 2002.
247. Management of peptic ulcer disease in the modern era. Outpatient management lecture series to medical residents, Presbyterian Hospital, Philadelphia, PA. March 15, 2002.
248. Intravenous antisecretory therapy in the hospital setting. Medical Grand Rounds. Long Island Jewish Hospital, New Hyde Park, NY. April 5, 2002.
249. H. pylori gastritis and gastric cancer. Gastroenterology Grand Rounds. Hospital of the University of Pennsylvania, Philadelphia, PA. April 10, 2002.
250. Intravenous antisecretory therapy in hospitalized patients. Nassau County medical Center medical grand Rounds, Nassau, NY, May 2, 2002.
251. Fire in the belly and beyond: Update on the management of GERD and dyspepsia. 1 hour CME lecture to the New York Society of Osteopathic Medicine (Eastern Regional Conference) sponsored by the Thomas R. Beam, Jr., Memorial Institute for CME under an unrestricted grant from TAP Pharmaceuticals. New York, NY. May 3, 2002.
252. Achieving effective acid suppression in the ICU: Are we providing the best care to our critically ill patients? Lecture and panel discussion at a sunrise satellite symposium to the American Association of Critical Care Nurses National Teaching Institute and Exposition entitled "GI Bleeding in the Critical Care Setting: Proper Patient Management and the Role of Pharmacotherapy". Atlanta, GA. May 8, 2002.
253. Extra-esophageal GERD: Really important or really hyped? AGA 2002 Spring postgraduate course lunchtime breakout lecture. San Francisco, CA. May 18 and 19, 2002.

- 254. H. pylori gastritis and gastric cancer. AGA annual meeting. Fellows Reporter series. San Francisco, CA, May 19, 2002.
- 255. Preventing gastrointestinal complications of hypoperfusion: An evidence-based approach. Symposium moderator, lecturer and panel discussion participant at a breakfast satellite symposium to the American Gastroenterology Association meeting entitled "The ICU consult: Managing gastrointestinal challenges in the critically ill patient". San Francisco, CA. May 20, 2002.
- 256. Zollinger-Ellison syndrome: Diagnosis and management. GI weekly conference, University of Nebraska, Omaha, NE. May 30, 2002.
- 257. Intravenous proton pump inhibitors in the hospital setting. Department of Surgery Rounds, Creighton University, Omaha, NE. May 31, 2002
- 258. Oral and intravenous proton pump inhibitor therapy. Evening CME lecture sponsored by Sherman hospital, Chicago, IL. June 26, 2002.
- 259. New advances in GI therapies: From oral to IV PPIs. Medical Grand rounds. Saint Therese Medical Center, Waukegan, IL. June 27, 2002.
- 260. Diagnosis and medical management of common Acid-Peptic disorders. GI Division summer lecture series. HUP, University of Pennsylvania, Philadelphia, PA. July 8, 2002.
- 261. Intravenous antisecretory therapy in the hospital setting. Medical Grand Rounds. Hamot Medical Center, Erie, PA. July 18, 2002.
- 262. Intravenous antisecretory therapy in the hospital setting. Medical Grand Rounds. Saint Vincent Medical Center, Erie, PA. July 19, 2002.
- 263. Intravenous proton pump inhibitors in the hospital setting. Division of Trauma Grand Rounds, Crozer-Chester Medical Center, Chester, PA. July 30, 2002.
- 264. Zollinger-Ellison syndrome. Lankenau hospital medical grand rounds and visiting professor, Wynnewood, PA. August 9, 2002.
- 265. Intravenous proton pump inhibitors in the hospital setting. Department of Medicine Grand Rounds, Cooper Medical Center, Camden, NJ. August 29, 2002.
- 266. H. pylori: Where we are and where we are going? Tidewater GUT club, Norfolk, VA. September 10, 2002.
- 267. H. pylori: Where are we and where are we going? Eastern Virginia Medical School, Norfolk, VA. September 11, 2002.
- 268. Managing acid-related disorders from pediatrics to geriatrics. Lecture on the adult GERD patient with persistent symptoms and panel discussion at a morning CME symposium in conjunction with the PriMed Women's Health Update meeting. Philadelphia, PA. September 12, 2002.
- 269. Intravenous proton pump inhibitors in the hospital setting. Department of Surgery Grand Rounds, St Lukes Hospital, Bethlehem, PA. September 18, 2002.
- 270. Two lectures entitled "NSAID gastropathy" and "IV PPI therapy" and moderator of case presentations during the Upper GI session of the fourth annual University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update" (I also was a co-director of the course), Rittenhouse Hotel, Philadelphia, September 19, 2002.
- 271. Fire in the belly and beyond: Management update on GI disorders caused by NSAIDs. 1 hour CME lecture to the Pennsylvania Society of Physician Assistants sponsored by the Thomas R. Beam, Jr., Memorial Institute for CME under an unrestricted grant from TAP Pharmaceuticals. Pittsburgh, PA. September 25, 2002.
- 272. Extra-esophageal GERD. Lecture and panel discussion at a morning symposium on transnasal upper endoscopy. Graduate hospital, Philadelphia, PA. October 5, 2002.

273. Zollinger-Ellison syndrome. Department of Medicine Grand Rounds, Long Island Jewish Hospital, New Hyde Park, NY. October 7, 2002.
274. *H. pylori*: Where are we and where are we going? Medical Grand Rounds. New York Hospital of Queens, New York, NY. October 8, 2002.
275. *H. pylori* gastritis and gastric cancer. Gastroenterology Grand Rounds. New York Hospital of Queens, New York, NY. October 8, 2002.
276. Acid-peptic disease and *H. pylori* infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 4, 2002.
277. Zollinger-Ellison syndrome. Gastroenterology Grand Rounds and Visiting Professor. Duke University, Durham, NC. November 7, 2002.
278. Current status of IV PPI therapy for GERD. Lecture and panel discussion at a two-day symposium entitled GERD: Then and Now. Yale University School of Medicine, New Haven, CT. November 15-17, 2002.
279. Gastrointestinal Physiology Laboratory Studies. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. November 21, 2002.
280. Intravenous proton pump inhibitors in the hospital setting. Gastroenterology Grand Rounds, New York University Hospital, New York, NY. November 26, 2002.
281. Intravenous proton pump inhibitors in the hospital setting. Gastroenterology Grand Rounds, Beth Israel Hospital, New York, NY. November 27, 2002.
282. Intravenous proton pump inhibitors in the hospital setting. Combined Medical and Surgical Grand Rounds, Good Samaritan Hospital, Baltimore, MD. December 18, 2002.
283. Intravenous proton pump inhibitors in the hospital setting. Medical Grand Rounds, Nazareth Hospital, Philadelphia, PA. January 15, 2003.
284. *H. pylori* gastritis and gastric cancer. Gastroenterology Grand Rounds, Hahnemann University Hospital, Philadelphia, PA. February 21, 2003.
285. Chemoprevention of Esophageal adenocarcinoma. Gastroenterology Grand Rounds, University of Pennsylvania Medical Center, Philadelphia, PA. March 19, 2003.
286. Update on *H. pylori*. 16th Annual Advances in Gastroenterology Symposium. St Francis Health Center, Topeka, KS. April 10, 2003.
287. Dyspepsia, Reflux and *Helicobacter pylori*: Where do we go from here? Lecture and Panel discussion at a CME symposium entitled "Meeting new challenges in Gastroenterology and Hepatology". University of Wisconsin Medical School, Madison, WI. May 3, 2003.
288. Course co-director of half-day CME symposium entitled "Swallowing and esophageal disorders" sponsored by an educational grant from Wyeth and Novartis. The program included a presentation entitled "Extraesophageal manifestations of GERD". Biomedical Research Building, University of Pennsylvania School of Medicine, Philadelphia, PA. May 9, 2003.
289. Zollinger-Ellison syndrome: Diagnosis and Management. Lecture and panel discussion at the 19th annual University of Witwatersrand medical School Surgical course entitled Gastroenterology Update. Johannesburg, South Africa, June 2, 2003.
290. *H. pylori* gastritis and gastric cancer. Lecture and panel discussion at the 19th annual University of Witwatersrand medical School Surgical course entitled Gastroenterology Update. Johannesburg, South Africa, June 3, 2003.

291. Oral and intravenous antiseecretory therapy in the hospital setting. Lecture and panel discussion at the 19th annual University of Witwatersrand medical School Surgical course entitled Gastroenterology Update. Johannesburg, South Africa, June 4, 2003.
292. Helicobacter pylori: Issues for the new Millenium. Special Lecture to the department of Surgery. University of the Witwatersrand Medical School, Johannesburg, South Africa. June 17, 2003.
293. Oral and intravenous antiseecretory therapy in the hospital setting. Evening CME Lecture to GI staff. University of Nevada. Reno, NV, June 26, 2003.
294. Approach to common acid peptic disorders. Breakfast CME Lecture to Medical staff. University of Nevada. Reno, NV, June 27, 2003.
295. Intravenous antiseecretory therapy in the hospital setting. Medical Grand Rounds. Highland Park Hospital. Highland Park, IL. July 15, 2003.
296. Oral and intravenous antiseecretory therapy in the hospital setting. Special CME lecture. Provena Saint Therese Medical Center. Highland, IL. July 15, 2003.
297. Management of non-variceal upper GI bleeding. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. August 20, 2003.
298. A new look at Barrett's esophagus: Can we change the course of progression to cancer? CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical Grand rounds, Mercy Health Systems (Miseracordia hospital), Philadelphia, PA. August 25, 2003.
299. Many Faces of GERD: Management of extraesophageal manifestations through differential diagnosis. CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical grand Rounds, Deborah Heart and Lung Center, Browns Mills, NJ. September 18, 2003.
300. Acid as a causative factor in GERD and other acid-secretory diseases. CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical Grand rounds, Delaware County Memorial Hospital, Philadelphia, PA. September 20, 2003.
301. IV PPI's in the hospitalized patient. GI Grand Rounds. Drexel University College of Medicine, Hahnemann Campus, Philadelphia, PA. September 25, 2003.
302. IV PPI's in the hospitalized patient. Medical Grand Rounds. Georgetown University Hospital, Washington, DC. October 2, 2003.
303. Diagnosis and Management of H. pylori infection. Medical Grand Rounds. George Washington University, Washington, DC. October 2, 2003.
304. Intravenous antiseecretory therapy in the hospitalized patient. Medical Grand Rounds, Newark Beth Israel Medical Center, Newark, NJ. October 9, 2003.
305. A new look at Barrett's esophagus: Can we change the course of progression to cancer? CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical Grand rounds, St Barnabas Health System, Toms River, NJ. October 9, 2003.
306. Pharmacology of Peptic ulcer disease. Lecture and generation of three cases for discussion. Pharmacology Course, University of Pennsylvania Medical School (third year), Philadelphia, PA. October 10, 2003.
307. Zollinger-Ellison Syndrome. Gastroenterology Grand Rounds, Thomas Jefferson University Hospital, Philadelphia, PA. November 5, 2003.
308. Symptom Presentation and Approach to GERD Management. CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical Grand rounds, University of Alabama Birmingham-Huntsville, Huntsville, AL. November 6, 2003.

309. H. pylori gastritis and its relationship to gastric adenocarcinoma. Medical Grand Rounds, Jeanes Hospital, Philadelphia, PA. November 12, 2003.
310. Supraesophageal GERD. Resident educational series lecture, Department of Otorhinolaryngology, Hospital of the University of Pennsylvania. November 13, 2003.
311. A new look at Barrett's esophagus: Can we change the course of progression to cancer? CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical Grand rounds, New Hanover Regional Medical Center, Wilmington, NC. December 3, 2003.
312. Helicobacter pylori gastritis and gastric cancer: The real truth. New Jersey Gastroenterology and endoscopy society President's dinner lecture. West Orange, NJ. December 3, 2003.
313. Management of non-variceal upper gastrointestinal bleeding. Lecture and panel discussion at the ASHP midyear clinical meeting symposium entitled "IV or PO: Appropriate acid suppression therapy for the individual patient". New Orleans, LA. December 8, 2003.
314. Diagnosis and management of common acid peptic disorders. Resident management conference. University of Pennsylvania, Philadelphia, PA. December 11, 2003.
315. Zollinger-Ellison Syndrome. Phoenix Society of Gastroenterology Meeting. Phoenix, AR. December 18, 2003
316. Intravenous antisecretory therapy in hospitalized patients. Lecture and case presentations. Mayo Clinic Scottsdale, Scottsdale, AR. December 19, 2003.
317. Extraesophageal manifestations of reflux disease. South Jersey Hospital CME lecture series, Elmer, NJ. January 6, 2004.
318. Extraesophageal manifestations of reflux disease. Bridgeton Hospital CME lecture series, Bridgeton, NJ. January 23, 2004.
319. NSAIDs and the GI tract. Gastroenterology Grand Rounds, Atlantic City Medical Center, Atlantic City, NJ. February 9, 2004.
320. Intravenous antisecretory therapy in the hospital setting; evaluating the evidence. City-wide GI grand rounds, University Hospitals Health System, Case Western Reserve, Cleveland, OH. February 19, 2004.
321. Zollinger-Ellison syndrome. GI luncheon conference. University Hospitals of Cleveland, Cleveland, OH. February 19, 2004.
322. Acid reduction for the critical care patient. Riverview Medical Center Medical Grand Rounds, Red Bank, NJ. February 25, 2004.
323. Sizing up PPIs and the use of acid suppression for acute UGI bleeding. Two lectures and panel discussion for round three (Outside the ring of heartburn) of Gastroenterology/Hepatology Impact Conference 2004. CME symposium sponsored by Rush Presbyterian Hospital, Chicago, IL held in New York, NY. April 17, 2004
324. Helicobacter pylori and gastric cancer. Medical Grand Rounds. St Joseph's Regional Medical Center, Patterson, NJ. April 21, 2004
325. The many faces of GERD: Management of extraesophageal manifestations through differential diagnosis. CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical Grand rounds, Taylor Hospital, Ridley Park, PA. April 22, 2004.
326. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 28, 2004.
327. Management of non-variceal upper GI bleeding. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. August 4, 2004.

328. Anatomy, histology and physiology of the stomach and duodenum. William Steinberg's Board Review in Gastroenterology. Wyndham Baltimore Inner Harbor Hotel, Baltimore, MD. September 28, 2004.
329. Approach to gastroduodenal symptoms and management. William Steinberg's Board Review in Gastroenterology. Wyndham Baltimore Inner Harbor Hotel, Baltimore, MD. September 28, 2004.
330. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Wyndham Baltimore Inner Harbor Hotel, Baltimore, MD. September 28, 2004.
331. H. pylori and NSAIDs: Should we or shouldn't we test and treat? Louisville Gut Club. Louisville, KY. September 29, 2004.
332. Upper GI Bleeding in the Hospitalized Patient: Stress related mucosal disease and prevention of re-bleeding after endoscopic hemostasis. Medical Grand Rounds, University of Louisville, Louisville, KY, September 30, 2004.
333. Zollinger Ellison Syndrome. Lecture for gastroenterology core physiology lecture series. VA Medical Center, Georgetown University, Washington DC, October 6, 2004.
334. Two lectures entitled "GERD: New Approaches" and "Management of non-ulcer Dyspepsia and H. pylori infection" each with panel discussion and Challenging Case Discussions for the sixth annual University of Pennsylvania CME course entitled "Gastroenterology and Hepatology Update" (I also was a co-director of the course), Park Hyatt at the Bellvue Hotel, Philadelphia, October 7, 2004.
335. The many faces of GERD: Management of extraesophageal manifestations through differential diagnosis. CME symposium series sponsored by an unrestricted grant from AstraZeneca entitled "Symptoms and Outcomes: Managing acid related disorders". Medical Grand rounds, Memorial Hospital, York, PA. October 21, 2004.
336. Zollinger-Ellison syndrome. GI fellows seminar series. University of Virginia, Division of Gastroenterology and Hepatology, Charlottesville, Virginia, October 28, 2004.
337. NSAIDs: Weapons of Mass Destruction. Point Counterpoint nighttime satellite symposium on NSAIDs as part of the Annual University of Virginia CME update course, Charlottesville, Virginia, October 28, 2004.
338. Reality of IV PPI use. Lecture to AstraZeneca Medical Information Scientists at their Annual Science day, Orlando, Florida, October 31, 2004.
339. *Helicobacter pylori* gastritis and gastric cancer. GI Grand Rounds, Medical University of South Carolina, Charleston, SC, November 29, 2004.
340. Principles of IV PPI therapy in hospitalized patients. Medical Grand Rounds, Medical University of South Carolina, Charleston, SC, November 30, 2004.
341. Principles of IV PPI therapy in hospitalized patients. Medical Grand Rounds, George Washington University, Washington, DC, December 9, 2004.
342. Pharmacology of antisecretory therapy. Lecture and panel discussion at a Daybreak Session on antisecretory therapy in the ICU at the 34th Critical Care Congress sponsored by the Society of Critical Care Medicine under an unrestricted grant from Santarus, Inc. Phoenix, AZ, January 16, 2005
343. Zollinger-Ellison syndrome and hypersecretory conditions. GI Fellows lecture series, Tufts New England Medical Center, Boston, MA. February 3, 2005
344. Principles of antisecretory therapy. Medical Grand Rounds, Caritas St. Elizabeth's hospital, Brighton, MA. February 3, 2005.
345. Case presentations and lecture on Zollinger-Ellison Syndrome. Visiting professorship at St James Hospital, Olympia Fields, IL. February 25, 2005.
346. Acid suppression of the future. Gastroenterology Grand Rounds, UPHS, Philadelphia, PA. March 9, 2005.

- 347. Zollinger-Ellison syndrome. Gastroenterology Grand Rounds, Brown University and Rhode Island Hospital, Providence, RI. March 17, 2005.
- 348. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 27, 2005.
- 349. Management of acute GI disease: Prevention and Treatment. Lecture and panel discussion at a CME conference entitled "Cardiothoracic Surgical Critical Care 2005" sponsored by the Washington Institute of Thoracic and Cardiovascular Surgery. Washington, DC. June 15, 2005
- 350. Update on H. pylori, peptic ulcer disease and Gastrointestinal reflux and Intravenous proton pump inhibitors for hospitalized patients. Two lectures and panel discussion at the 69th Annual Surgery CME Course entitled Advances in gastrointestinal and GI laparoscopic surgery sponsored by the University of Minnesota Medical School. Minneapolis, MN. June 16, 2005.
- 351. The role of acid reduction in treating acute UGI bleeding. Lecture and panel discussion at a CME meeting entitled "update on GI bleeding" sponsored by the Delaware Society of Gastrointestinal Endoscopy and accredited by Fox Chase Cancer center. Philadelphia, PA. July 9, 2005.
- 352. Management of non-variceal upper GI bleeding. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. August 3, 2005.
- 353. Pharmacology of Peptic ulcer disease. Lecture and generation of three cases for discussion. Pharmacology Course, University of Pennsylvania Medical School (third year), Philadelphia, PA. August 5, 2005.
- 354. Zollinger-Ellison syndrome: Diagnostic and therapeutic pitfalls. Invited lecture at the 43rd annual congress of the South African Gastroenterology Society (SAGES), Durban, South Africa. August 23, 2005.
- 355. Intravenous antisecretory therapy in hospitalized patients. Lecture and panel discussion for a lunch time symposium entitled "Intravenous Acid Suppression: Rationale and Application" at the 43rd annual congress of the South African Gastroenterology Society (SAGES), Durban, South Africa. August 24, 2005.
- 356. Gastroesophageal reflux Disease: New Approaches. Surgical Grand Rounds, Groote Schuur Hospital, Cape Town, South Africa. September 7, 2005.
- 357. Peptic Ulcer Bleeding. Surgical Grand Rounds, Groote Schuur Hospital, Cape Town, South Africa. September 14, 2005.
- 358. H. pylori and gastric cancer. Medical Grand Rounds, Groote Schuur Hospital, Cape Town, South Africa. September 22, 2005.
- 359. Obesity surgery and the endoscopic management of its complications. Surgical Grand Rounds, Groote Schuur Hospital, Cape Town, South Africa. October 19, 2005.
- 360. Intravenous antisecretory therapy in the hospital setting. Medical Grand Rounds, Groote Schuur Hospital, Cape Town, South Africa. October 20, 2005.
- 361. Gastrointestinal carcinoids. Surgical Grand Rounds, Groote Schuur Hospital, Cape Town, South Africa. November 2, 2005.
- 362. Gastrointestinal carcinoids. Special CPD lecture, Donny Gordon Wits Medical Center, Johannesburg, South Africa. November 3, 2005.
- 363. H. pylori and gastric cancer. Special lecture to the Department of Medical Genetics, University of Cape Town, Cape Town, South Africa. November 22, 2005.
- 364. Obesity for the gastroenterologist and gastrointestinal surgeon. GI Grand Rounds, Hahnemann University Hospital (Drexel), Philadelphia, PA. April 6, 2006.

365. Zollinger-Ellison syndrome: Pitfalls in diagnosis and management. GI Grand Rounds, College of Physicians and Surgeons of Columbia University, New York, NY. May 1, 2006.
366. Neuroendocrine tumors: Risks of Disease progression. AGA Spring Postgraduate Course. DDW. Los Angeles, CA. May 21, 2006.
367. ABIM Maintenance of Certification Made easy. DDW. Los Angeles, CA. May 23, 2006.
368. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 26, 2006.
369. Reflections on gastric acid secretion and why I do what I do. Visiting Professor and lecturer at GI fellow graduation, University of Illinois at Chicago, Chicago, IL. June 13, 2006.
370. Pharmacology of Peptic ulcer disease. Lecture and generation of three cases for discussion. Pharmacology Course, University of Pennsylvania Medical School (third year), Philadelphia, PA. July 14, 2006.
371. Peptic Ulcer Disease. Core topics in subspecialty medicine discussion series for UPHS Internal Medicine Residents, Philadelphia, PA. August 3, 2006.
372. Acid peptic diseases. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. August 28, 2006.
373. A 55 yr old man with liver metastases. CPC discussion at Medical Grand Rounds, HUP, University of Pennsylvania, Philadelphia, PA. September 5, 2006.
374. Anatomy, histology and physiology of the stomach and duodenum. William Steinberg's Board Review in Gastroenterology. Renaissance Hotel, Baltimore, MD. September 16, 2006.
375. Approach to gastroduodenal symptoms and management. William Steinberg's Board Review in Gastroenterology. Renaissance Hotel, Baltimore, MD. September 16, 2006.
376. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Wyndham Baltimore Inner Renaissance Hotel, Baltimore, MD. September 16, 2006.
377. Gastrointestinal carcinoid tumors. Riddle Memorial Hospital Medical Grand Rounds. Meridia, PA. January 5, 2007.
378. Gastrintestinal carcinoid Tumors. Gastroenterology and Hepatology Linked to Endoscopy: Mayo Clinic's 5th Annual Winter Course in Scottsdale, AZ. February 26, 2007.
379. Management of patients with multiple endocrine neoplasia type 1 (MEN-1). Lecture in concurrent session IV (Parathyroid) at the Penn general Surgery Update 2007. Hyatt Regency Philadelphia at Penn's Landing, Philadelphia, PA. May 11, 2007.
380. Summary lecture: Epidemiological issues in upper gastrointestinal bleeding. AGA-I Topic Forum on non-variceal upper GI bleeding, DDW. Washington, DC. May 20, 2007.
381. Is it OK to take a PPI and call me at 8 am? ASGE clinical symposium entitled the 2 am call: Management of GI emergencies, DDW. Washington, DC. May 22, 2007.
382. Physiology of gastric acid secretion and acid-peptic disorders. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 25, 2007.
383. Pharmacology of Peptic ulcer disease. Lecture and generation of three cases for discussion. Pharmacology Course, University of Pennsylvania Medical School (third year), Philadelphia, PA. July 13, 2007.
384. Acid peptic diseases. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. July 25, 2007.

- 385. Putting the risk-benefit ratio of PPIs into perspective. Visiting Scholar, TAP Pharmaceuticals, Deerfield, IL. September 27, 2007.
- 386. Hypergastrinemia, gastric carcinoids and PPI safety. Visiting Scholar series, AstraZeneca LLC, Wilmington DE, November 1, 2007
- 387. Approach to the diagnosis and management of GI carcinoids. Oncology fellows lunchtime conference, University of Pennsylvania, Philadelphia, PA. November 8, 2007.
- 388. Obesity for the gastroenterologist. Mt. Sinai School of Medicine GI Grand Rounds. Mt. Sinai, New York, NY. November 30, 2007.
- 389. Celiac Disease for the immunologist. Allergy and Immunology Lecture series, University of Pennsylvania, Philadelphia, PA. February 1, 2008.
- 390. Putting the risk-benefit ratio of PPIs into perspective. New York gastroenterology association meeting, New York, NY. February 21, 2008.
- 391. Visiting Professor for Grand Rounds (Putting the risk-benefit ratio of PPIs into perspective) and Clinical Case Presentations. Drexel University College of Medicine, Philadelphia, PA. February 27, 2008.
- 392. Putting the risk-benefit ratio of PPIs into perspective. 21st Annual GI Symposium in Topeka, St. Francis Health Center, Topeka, KS, April 10, 2008.
- 393. Putting the risk-benefit ratio of PPIs into perspective. GI Grand Rounds. New York-Presbyterian Hospital/Weill Cornell Medical College, New York, NY. April 15, 2008.
- 394. Endoscopy in the Bariatric patient. Invited lecture for CME course "Penn Live: GI Endoscopy 2008". HUP, University of Pennsylvania, Philadelphia, PA. April 26, 2008.
- 395. Visiting professor for the Neuroenteric Clinical Research Group and Lecture entitled "Intravenous proton pump inhibitor therapy: Principles of management". University of Arizona, Tucson, AZ. April 29, 2008.
- 396. Invited lecture: Optimal pH targets for peptic ulcer bleeding. AGAI research forum entitled non-variceal UGI bleeding: Pharmacological treatment and prognosis, DDW. San Diego, CA. May 18, 2008.
- 397. Invited lecture: How much PPI is enough PPI? AGAI clinical symposium entitled the patient with refractory GERD: Is it always NERD? DDW. San Diego, CA. May 18, 2008.
- 398. Pathophysiology of acid-peptic disorders and *H. pylori* gastritis. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 30, 2008.
- 399. Putting the risk-benefit ratio of PPIs into perspective. GI Grand Rounds. Beth Israel Hospital, New York, NY. June 18, 2008.
- 400. Pharmacology of Peptic ulcer disease. Lecture and three cases for discussion. Pharmacology Course, University of Pennsylvania Medical School (third year), Philadelphia, PA. July 18, 2008.
- 401. Obesity for the gastroenterologist. GI grand rounds, Pennsylvania Hospital, Philadelphia, PA. September, 18, 2008
- 402. Anatomy, histology and physiology of the stomach and duodenum. William Steinberg's Board Review in Gastroenterology. Renaissance Hotel, Baltimore, MD. September 20, 2008.
- 403. Approach to gastroduodenal symptoms and management. William Steinberg's Board Review in Gastroenterology. Renaissance Hotel, Baltimore, MD. September 20, 2008.
- 404. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Wyndham Baltimore Inner Renaissance Hotel, Baltimore, MD. September 20, 2008.

405. Acid Therapy – Today and Beyond. Lecture and visiting professorship, GI teaching day at UMA Gastroenterology, Binghamton NY. CME accredited by United health Services Hospitals. October 16, 2008.
406. Acid Therapy today and beyond: Putting the risk-benefit ratio of PPIs into perspective. Medical Grand Rounds, Albert Einstein Medical Center, Philadelphia, PA. November 12, 2008.
407. Putting the risk-benefit ratio of PPIs into perspective. Medical Grand Rounds, Mercy Fitzgerald Medical Center, Darby, PA. November 19, 2008
408. GERD 2009: Acid, non-acid and functional heartburn. Lecture and panel discussion. Gastroenterology and Hepatology Linked to Endoscopy: Mayo Clinic's 7th Annual Winter Course in Scottsdale, AZ. February 26, 2009.
409. Neuroendocrine tumors for the gastroenterologist. Central Pennsylvania Society of Gastroenterology Semiannual meeting , Harrisburg, PA. April 29, 2009.
410. Physiology of gastric acid secretion and acid-peptic disorders. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 27, 2009.
411. 'Intravenous Proton Pump Inhibitors: An update' and 'GERD 2009: Acid, Nonacid and Functional Heartburn'. Two lectures and a panel discussion at the 73rd University of Minnesota CME surgery course entitled "Advances in Gastrointestinal and Laparoscopic Surgery". Hyatt Regency, Minneapolis, MN. June 11, 2009.
412. Clinical Therapeutics: Peptic Ulcer Disease. Pharmacology Course, University of Pennsylvania Medical School (third year), Philadelphia, PA. June 18, 2009. Podcast of lecture and three case presentations.
413. Carcinoid Tumors: UPHS Oncology Fellows Lecture Series, Philadelphia, PA, June 18, 2009.
414. Putting the risk-benefit ratio of PPIs into perspective. Lecture and Panel Discussion. 29th Annual Advances in Gastroenterology, CME Course sponsored by Thomas Jefferson Medical College, Sheraton Atlantic City Convention center Hotel, Atlantic City NJ. June 20, 2009.
415. Acid peptic diseases. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. July 22, 2009.
416. The Risk-Benefit Ratio of Proton Pump Inhibitors (PPIs). Grand Rounds and Visiting Professor, Lankenau Hospital, Wynnewood, PA. August 12, 2009.
417. Approach to the diagnosis and treatment of GI carcinoid tumors. Invited lecture for the Neuroendocrine Tumor alliance at the Novartis annual meeting. Atlanta, GA January 12, 2010.
418. New Modalities in GI Physiology testing. Lecture at the Annual Penn Live CME Course, Philadelphia, PA March 5, 2010 (included a live demonstration of a bravo probe placement).
419. Writing good grants and how to succeed in academic GI. Grant writing workshop at DDW 2010, sponsored by ASGE. New Orleans, LA Sunday May 2, 2010.
420. Managing the post-bariatric patient. Clinical Challenge Session (John Martin, MD co-presenter) at AGA Postgraduate course entitled "Managing digestive diseases in the next decade". New Orleans, LA, Saturday May 1 and Sunday May 2, 2010 (repeated).
421. Physiology of gastric acid secretion and acid-peptic disorders. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 26, 2010.
422. Invited lecture entitled "Triage for Neuroendocrine Tumor Liver Metastases: When To Intervene?" for a Plenary session entitled "Neuroendocrine Tumors and Cholangiocarcinoma". World Conference on Interventional Oncology. Philadelphia, PA. June 12, 2010.
423. Normal and abnormal acid secretion. Lecture at the Penn Gastroenterology and Hepatology Board review Course 2010, Marriott Courtyard Hotel, Philadelphia, PA June 24, 2010. Co-director of course which ran June 24-27, 2010.

424. Gastroduodenal acid-peptic disorders. Lecture at the Penn Gastroenterology and Hepatology Board review Course 2010, Marriott Courtyard Hotel, Philadelphia, PA June 24, 2010. Co-director of course which ran June 24-27, 2010.
425. Anatomy, histology and physiology of the stomach and duodenum. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA. September 14, 2010.
426. Approach to gastroduodenal symptoms and management. William Steinberg's Board Review in Gastroenterology. Crystal gateway Marriott, Arlington, VA. September 14, 2010.
427. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Crystal gateway Marriott, Arlington, VA. September 14, 2010.
428. Invited lecture: Long Term treatment With a PPI – Safe or Sorry? Breakfast symposium entitled Controversies in GERD Treatment for the ACG annual meeting. San Antonio, Tx. October 19, 2010.
429. Eosinophilic Esophagitis. GI Grand Rounds, multi-disciplinary conference. University of Pennsylvania, October 20, 2010.
430. Gastric carcinoids. Lecture and panel discussion for an educational session entitled "Management of small primary tumors: Biomarkers, treatment and follow up studies" at the NANETs annual meeting. Santa Fe, NM. October 29, 2010.
431. Neuroendocrine Tumors. Lecture and panel discussion at a CME conference entitled "Recent Advances in Upper Gastrointestinal Cancers – Focus on Pancreatic and Esophagogastric Tumors" presented by the Abramson Cancer Center and Penn Medicine. Hyatt Regency at Penn's Landing, Philadelphia, PA. December 10, 2010.
432. Update in the management of upper GI bleeding. Plenary lecture Philippine Society of Gastroenterology 2011 Philippine Digestive health Week. Edsa Shangri-La Hotel, Manila, Philippines. March 8, 2011.
433. Potential Consequences of Achlorhydria or Hypochlorhydria. Invited lecture for an AGA Clinical Symposium entitled Risks of PPI therapy in clinical practice, DDW, Chicago, IL. May 9, 2011.
434. Presentation, syndromes and Pathology: Implications for treatment. Invited lecture for a SSAT/AHPBA Joint Symposium entitled Pancreatic Neuroendocrine Tumors, DDW, Chicago, IL. May 9, 2011.
435. Normal esophageal motility and GERD. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 26, 2011.
436. Physiology of gastric acid secretion and acid-peptic disorders. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 25, 2011.
437. Diagnosis of neuroendocrine tumors. Invited lecture at the "Neuroendocrine Tumor Regional CME Conference" sponsored by MD Anderson Cancer Center and NANETS (North American Neuroendocrine Tumor Society). Marriott Hotel, Nashville, TN. July 22, 2011.
438. Management of hormonal syndromes from NETs. Invited lecture at the "Neuroendocrine Tumor Regional CME Conference" sponsored by MD Anderson Cancer Center and NANETS (North American Neuroendocrine Tumor Society). Marriott Hotel, Nashville, TN. July 22, 2011.
439. Pathophysiology and treatment of acid peptic diseases. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. July 25, 2011.
440. Gastroenteropancreatic NETs (clinical presentation and diagnosis). Penn Neuroendocrine Tumor CME Course, BRB Auditorium, University of Pennsylvania, Philadelphia, PA, September 9, 2011.
441. Somatostatin Analogs and the PROMID Trial. Penn Neuroendocrine Tumor CME Course, BRB Auditorium, University of Pennsylvania, Philadelphia, PA, September 9, 2011.
442. Neuroendocrine Tumors 101 (Overview of NETs). Focus on Neuroendocrine Tumors, Patient and Caregiver Conference, Hilton Hotel, Philadelphia, PA. September 16, 2011.

- 443. Anatomy, histology and physiology of the stomach and duodenum. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. September 19, 2011.
- 444. Approach to gastroduodenal symptoms and management. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. September 19, 2011.
- 445. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. September 19, 2011.
- 446. Balancing the risks and benefits of proton pump inhibitors. Invited lecture at the 23rd symposium of the Association of Roberto Farini entitled "Evidence Based Medicine in Gastroenterology and Hepatology", University of Padua, Italy. January 28, 2012.
- 447. Managing Patients Pre- and Post- Bariatric Surgery. Invited lecture (with Ed Livingston, MD) for a breakout session of the AGAI Spring Post-Graduate Course, San Diego, Ca. May 19, 2012.
- 448. Gastric Carcinoid Tumors. Invited lecture for a DDW clinical symposium on "Gastric Mass lesions" sponsored by the EGD section of the AGA. San Diego, Ca. May 20, 2012.
- 449. Neuroendocrine tumors: The GI perspective. Invited lecture to GI division. University of California (Irvine), Santa Ana, Ca. May 24, 2012.
- 450. Physiology of gastric acid secretion and acid-peptic disorders. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 25, 2012.
- 451. Neuroendocrine tumors. Abramson Cancer Center Grand Rounds, University of PA. Philadelphia, PA. May 30, 2012.
- 452. State of the Art: Nonvariceal upper GI bleeding. Lecture at the 43rd Annual Nordic Society of Gastroenterology meeting, Reykjavik, Iceland, June 12-15, 2012
- 453. Non-variceal UGI bleeding. GI Division summer Lecture series, HUP, University of Pennsylvania, Philadelphia, PA. July 16, 2011.
- 454. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. September 10, 2012.
- 455. GI Hormones and Tumor Syndromes. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. September 10, 2012.
- 456. Diagnosing NETs – Where can we improve? An Endoscopic perspective. Lecture and Panel discussion, NANETs annual meeting entitled "Management Strategies, What's new and relevant", San Diego, Ca. October 12, 2012
- 457. Controversies in Diagnosis. Lecture and Panel discussion, NANETs annual meeting entitled "Management Strategies, What's new and relevant", San Diego, Ca. October 12, 2012
- 458. Overview of gastroenteropancreatic neuroendocrine tumors (GEP-NETs). Focus on Neuroendocrine Tumors, Patient and Caregiver Conference, Hilton Hotel, Philadelphia, PA. November 2, 2012.
- 459. Neuroendocrine tumors: The GI perspective. Endocrinology Grand Rounds. University of PA. Philadelphia, PA. November 28, 2012.
- 460. Gastric Intestinal Metaplasia and Carcinoids – What to do? Lecture at the ACG Western regional course, Los Angeles, CA. January 25, 2013
- 461. Neuroendocrine tumors: The GI perspective. Department of Medicine Grand Rounds. Crozer-Chester Medical Center, Chester, PA. February 22, 2013.
- 462. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 30, 2013.

463. Visiting Professor and GI Grand Rounds: Neuroendocrine tumors: The GI perspective. Mt Sinai Medical Center, New York, NY. June 7, 2013.
464. Visiting Professor and presentation entitled “Rebound gastric acid hypersecretion: fact or fiction”. UCLA Wadsworth VA, Los Angeles, CA. July 29, 2013.
465. Session Moderator for session V: Treatment of Barrett’s Esophagus and lecture entitled “Role of non-acid suppressing therapies and lifestyle changes” for the 2013 James W. Freston Conference entitled “Consensus Approach to Barrett’s Esophagus: Biology, Biomarkers and management”. Chicago, IL. August 17&18, 2013.
466. Neuroendocrine tumors of the GI tract. Lecture and panel discussion at the ACG/VGS/ODSGNA regional postgraduate course. Williamsburg, VA. September 7, 2013
467. GI aspects of Neuroendocrine Tumors. Lecture and panel discussion at the Pennsylvania Society of Gastroenterology 2013 Annual Scientific meeting. Hershey, PA. September 28, 2013
468. Zollinger-Ellison Syndrome: Pitfalls of Secretin testing. Lecture and panel discussion at the 2013 Annual NANET’s meeting, Charleston, SC, October 4, 2013.
469. Complicated case presentations with ARS – Panel discussion for two patient cases (metastatic Glucagonoma and non-functional small PNETs) at the 2013 Annual NANET’s meeting, Charleston, SC, October 5, 2013.
470. Non-variceal upper GI bleeding. William Steinberg’s Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. October 10, 2013.
471. GI Hormones and Tumor Syndromes. William Steinberg’s Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. October 10, 2013.
472. Gastroenteropancreatic Neuroendocrine Tumors. Oncologic Imaging – From Head to Toe. Penn Radiology CME course. Philadelphia, PA, October 11, 2013.
473. Neuroendocrine tumors: The GI Perspective. Gastroenterology Grand Rounds. University of Pennsylvania, Philadelphia, PA. October 23, 2013.
474. Rebound gastric Acid Hypersecretion: Fact or Fiction? Lecture and panel discussion at A Day in the Gut XXI. Montefiore Medical Center, Bronx, NY. November 1, 2013.
475. Gastric Intestinal Metaplasia and Neuroendocrine Proliferation: Insights and Management Strategies. Lecture and panel discussion at A Day in the Gut XXI. Montefiore Medical Center, Bronx, NY. November 1, 2013.
476. Gastroenteropancreatic Neuroendocrine Tumors (GEPNETs). Lecture and panel discussion for Recent Advances in the Management of Gastrointestinal Cancer: Focus on Precision Medicine. CME course. Philadelphia, PA. December 13, 2013.
477. Neuroendocrine Tumors: An Update. GI grand rounds and visiting professor. University of Colorado, Denver, CO. January 3, 2014
478. Gastrointestinal Carcinoid Tumors: Diagnosis and management: Lecture and panel discussion. ACG Board of Governors/ASGE Best Practice Course. Las Vegas, NV. January 25, 2014.
479. Management of hormonal syndromes from NETs: Functional and non-functional PNETs. Invited lecture and panel discussion at “Multidisciplinary Management of Neuroendocrine Cancers” sponsored by Wayne State University School of Medicine and NANETS (North American Neuroendocrine Tumor Society). Troy Marriott Hotel, Troy, MI. May 17, 2014.
480. Peptide Receptor Radionuclide Therapy – Current status in the US, and other clinical trials. Invited lecture and panel discussion at “Multidisciplinary Management of Neuroendocrine Cancers” sponsored by Wayne State University School of Medicine and NANETS (North American Neuroendocrine Tumor Society). Troy Marriott Hotel, Troy, MI. May 17, 2014.

481. Esophageal Pathophysiology. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 29, 2014.
482. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 29, 2014.
483. Diagnostic Testing: What I need to know and when to order. Lecture and panel discussion at the AGA Principles of Gastroenterology for the Nurse Practitioner and Physician assistant 2014. Intercontinental Hotel, Chicago, IL. Aug 15, 2014.
484. Neuroendocrine Tumors. Lecture and panel discussion at the AGA Principles of Gastroenterology for the Nurse Practitioner and Physician assistant 2014. Intercontinental Hotel, Chicago, IL. Aug 17, 2014.
485. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA.. September 10, 2014.
486. GI Hormones and Tumor Syndromes. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA. September 10, 2014.
487. Panel Discussion and lecture entitled "The role of the gastroenterologist in the diagnosis and treatment of NETs". Carcinoid Cancer Awareness Network Annual Meeting, Charlotte Marriott Center City, Charlotte, NC. September 20, 2014.
488. Management of hormonal syndromes from NETs: Functional and non-functional PNETs and Hereditary syndromes associated with NETs. Invited lecture and panel discussion at "Multidisciplinary Management of Neuroendocrine Cancers" sponsored by Keck School of medicine of USC and NANETS (North American Neuroendocrine Tumor Society). Mdr Hotel, Marina Del Rey, CA. Nov 1, 2014.
489. Peptide Receptor Radionuclide Therapy – Current status in the US, and other clinical trials. Invited lecture and panel discussion at "Multidisciplinary Management of Neuroendocrine Cancers" sponsored by Keck School of medicine of USC and NANETS (North American Neuroendocrine Tumor Society). Mdr Hotel, Marina Del Rey, CA. Nov 1, 2014.
490. H. pylori testing and treatment. GI fellows core curriculum lecture. University of PA, Philadelphia, PA. Jan 26, 2015.
491. Peptic ulcers, mass lesions and gastritides (other than H. pylori). GI fellows core curriculum lecture. University of PA, Philadelphia, PA. Feb 2, 2015.
492. Difficulties in diagnosing and managing Zollinger-Ellison Syndrome. Endocrine Grand Rounds. University of PA, Philadelphia, PA. Feb 4, 2015.
493. Meet the Professor: Difficulties in diagnosing and managing Zollinger-Ellison Syndrome. 12th Annual ENETS Conference for the Diagnosis and Treatment of Neuroendocrine Tumor Disease. Barcelona, Spain. March 12 and 13, 2015 (delivered twice)..
494. Dedication of Robert T. Jensen, MD., Lifetime Achievement Awardee, 12th Annual ENETS Conference for the Diagnosis and Treatment of Neuroendocrine Tumor Disease. Barcelona, Spain. March 12, 2015.
495. GI procedures Related to NETs. Lecture and panel discussion at the regional NET Cancer patient Conference organized by The Neuroendocrine Cancer Awareness Network (NCAN), Long Island Marriott, Uniondale NY. March 28, 2015
496. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 27, 2015.
497. Peptic Ulcer Disease: How to Treat. Lecture and panel discussion at the 2nd Annual Digestive Diseases: New Advances Conference, CME sponsored by Global Academy CME and Rutgers University. Philadelphia Sheraton Downtown, Philadelphia, PA. June 12, 2015
498. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA. September 28, 2015.

499. GI Hormones and Tumor Syndromes. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA. September 28, 2015.
500. Gastroduodenal mucosal diseases. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA. September 28, 2015.
501. Neuroendocrine Tumors: Work-up, Symptoms and palliative Options. Oncologic Imaging: Optimizing Patient Care. CME sponsored by the Perelman School of Medicine at the University of Pennsylvania. Sofitel, Philadelphia, PA. October 7, 2015.
502. Biomarkers, endoscopic imaging and obstacles in diagnosis of NETs. Invited lecture and panel discussion at "Multidisciplinary Management of Neuroendocrine Cancers" sponsored by UT Southwestern Medical Center and NANETS (North American Neuroendocrine Tumor Society). Dallas Marriott Suites Medical Market Center, Dallas, TX. Nov 14, 2015.
503. Neuroendocrinology for the gastroenterologist. HUP Allergy and Immunology Conference. University of Pennsylvania, Philadelphia, PA. December 4, 2015.
504. Gastric Intestinal Metaplasia: What to do. Keynote Lecture at the 39th Annual NYSGE course entitled "Endoscopy: Everyday, Extreme and Everything in Between" New York Marriott Marquis Hotel, New York, NY. December 18, 1 2015.
505. Peptic Ulcer Disease: How to Treat. Lecture and panel discussion at the 3rd Annual Digestive Diseases: New Advances Conference, CME sponsored by Global Academy CME and Rutgers University. Philadelphia Double Tree by Hilton Downtown, Philadelphia, PA. April 1, 2016.
506. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 26, 2016.
507. The best of DDW in acid-peptic disease and Neuroendocrine tumors. Evening Symposium at University of Pennsylvania entitled Best of EASL and DDW 2016. University of Pennsylvania, Philadelphia, PA. May 26, 2016.
508. Neuroendocrine Tumors. Endocrinology Grand Rounds. University of PA, Philadelphia, PA. June 22, 2016.
509. How I stay current. Lecture at the 25th Wits Biennial Surgical Symposium entitled "Standards of care meets evidence-based medicine". University of the Witwatersrand School of Public Health, Parktown, Johannesburg. June 27, 2016.
510. Gastric polyps: Ignore, biopsy or resect? Lecture at the 25th Wits Biennial Surgical Symposium entitled "Standards of care meets evidence-based medicine". University of the Witwatersrand School of Public Health, Parktown, Johannesburg. June 27, 2016.
511. Neuroendocrine Tumors update. Keynote lecture at the 25th Wits Biennial Surgical Symposium entitled "Standards of care meets evidence-based medicine". University of the Witwatersrand School of Public Health, Parktown, Johannesburg. June 27, 2016.
512. Consequences of Gastric atrophy: intestinal metaplasia and gastric carcinoids. Lecture to the GI department at the Donald Gordon Academic Hospital, Parktown, JHB June 28, 2016.
513. Gastroduodenal mucosal diseases. GI Fellowship Summer Lecture Series. University of Pennsylvania, Philadelphia, PA. August 24, 2016
514. Non-variceal upper GI bleeding. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA. September 11, 2016.
515. Gastro-duodenal mucosal disorders. William Steinberg's Board Review in Gastroenterology. Crystal Gateway Marriott, Arlington, VA. September 11, 2016.
516. Gastric intestinal metaplasia and carcinoids: What to do. Vassar Brothers Medical Center, 21st Annual GI Teaching Day. The Grandview, Poughkeepsie, NY. September 21, 2016.

517. Panel Discussion and lecture entitled "The role of the gastroenterologist in diagnosing and treating NETs". 2016 National NET Cancer Patient Conference, Neuroendocrine Cancer Awareness Network Annual Meeting, Grand Hyatt, New Orleans, LA. September 23, 2016.
518. Calculating the Adenoma Detection Rate (ADR) Using a Novel Electronic Medical Record (EMR) Workflow. Gastroenterology and Colorectal Surgery Divisions Lecture. Groote Schuur Hospital, UCT, Cape Town, South Africa. October 19, 2016.
519. Neuroendocrine tumors. Department of Surgery Grand Rounds. Groote Schuur Hospital, UCT, Cape Town, South Africa. October 20, 2016.
520. Intestinal metaplasia and gastric carcinoids. Gastroenterology Division Lecture. Groote Schuur Hospital, UCT, Cape Town, South Africa. October 21, 2016.
521. Solly Marks Memorial Lecture: Current perspectives on the risk benefit ratio of PPI therapy. Medial Grand Rounds. Groote Schuur Hospital, UCT, Cape Town, South Africa. October 21, 2016.
522. PUD update. Gastroenterology Division Lecture. Groote Schuur Hospital, UCT, Cape Town, South Africa. October 22, 2016.
523. Secretin testing for Zollinger-Ellison Syndrome: Lecture and Panel Discussion. HPBASA 2016 Conference. Wallenberg Research Centre @ STIAS, Stellenbosch, South Africa. October 23, 2016.
524. Medical Management of Zollinger-Ellison Syndrome: Lecture and Panel Discussion. HPBASA 2016 Conference. Wallenberg Research Centre @ STIAS, Stellenbosch, South Africa. October 23, 2016.
525. Personalized medicine for NETs. Gastroenterology Division Lecture. Groote Schuur Hospital, UCT, Cape Town, South Africa. October 25, 2016.
526. Non-variceal UGI bleeding. Gastroenterology and Endoscopy Nurses Lecture. Groote Schuur Hospital, UCT, Cape Town, South Africa. October 26, 2016.
527. Pancreatic Neuroendocrine Tumors. Lecture and Panel Discussion. Hoag-USC Hepatobiliary symposium. Hoag Hospital, Irvine, CA. January 26, 2017.
528. Translating Disease Type, Progression Profiles, Biomarkers and the Safety-Efficacy Equation for Available Therapies into Optimal Clinical Management. Lecture and Panel Discussion. CME program entitled "Real World Decision-making for Gastrointestinal Neuroendocrine Tumors (NETs)" sponsored by the University of Massachusetts. Grand Hyatt, NYC, NY. March 4, 2017.
529. Gastroduodenal Ulcers: Still a Clinically Relevant Problem. Lecture and panel discussion at the 4th Annual Digestive Diseases: New Advances Conference, CME sponsored by Global Academy CME and Rutgers University. Westin Philadelphia, Philadelphia, PA. March 24, 2017.
530. Perspectives of the Risk-Benefit Ratio of PPI Therapy. Lecture and panel discussion at the 4th Annual Digestive Diseases: New Advances Conference, CME sponsored by Global Academy CME and Rutgers University. Westin Philadelphia, Philadelphia, PA. March 24, 2017.
531. Acid-peptic disease and H. pylori infection. GI Pathophysiology Course, University of Pennsylvania Medical School (second year), Philadelphia, PA. May 23, 2017.

ORGANIZING ROLES IN SCIENTIFIC MEETINGS (see also professional society memberships):

AGA abstract review committee member (1992-present)
 AGA Clinical practice symposium committee (2001-2006)
 AGA Postgraduate course co-director (2006)
 AGA Maintenance of Certification Made Easy course director (2006)
 DDW 2012-13 AGA EGD section Vice Chair

BIBLIOGRAPHY:

Research Publications, peer reviewed:

1. DC Metz and SB Benjamin. Islet cell carcinoma of the pancreas presenting as bleeding from isolated gastric varices - report of a case and review of the literature. *Dig Dis Sci* 36(2):241-44, 1991.
2. JR Pisegna, JA Norton, GG Slimak, DC Metz, PN Maton, JD Gardner, RT Jensen. Effects of curative gastrinoma resection on gastric secretory function and antiseecretory drug requirements in patients with Zollinger-Ellison syndrome. *Gastroenterology* 102(3):767-78, 1992.
3. DL Miller, JL Doppman, DC Metz, PN Maton, JA Norton, RT Jensen. Zollinger-Ellison syndrome: Technique, results and complications of portal venous sampling. *Radiology* 182:235-41, 1992.
4. DC Metz, JR Pisegna, VA Fishbeyn, RV Benya, RT Jensen. Currently used doses of omeprazole in Zollinger-Ellison syndrome are too high. *Gastroenterology* 103(5):1498-1508, 1992.
5. E Straus, J-P Raufman, S Samuel, JD Waye, DC Metz, JR Pisegna, RT Jensen. Endoscopic cure of the Zollinger-Ellison syndrome: Removal of duodenal gastrinoma from the proximal limb of gastrojejunostomy. *Gastrointestinal Endoscopy* 38(6):709-711, 1992.
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Abstracts:

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92. KR DeVault, RB Lynn, WJ Bochenek, ME Mack, R Karlstadt, DC Metz. Successful treatment of elderly patients with erosive esophagitis (EE) using pantoprazole 40 mg. American Gastroenterological Association Meeting, Orlando, FL. May 2003.
93. GL Shih, DA Katzka, C Brensinger, DC Metz. Postprandial esophageal integrated acidity (ePIA), an indirect measure of esophageal clearance, correlates closely with gastroesophageal reflux disease (GERD). American Gastroenterological Association Meeting, Orlando, FL. May 2003. Poster presentation.
94. EP Chan, M Goebig, R Demers, DA Katzka, DC Metz. Intravenous (IV) pantoprazole to prevent rebleeding after endoscopic hemostasis of bleeding ulcers: Initial US experience. American Gastroenterological Association Meeting, Orlando, FL. May 2003. Poster presentation.

95. KR DeVault, RB Lynn, WJ Bochenek, ME Mack, R Karlstadt, DC Metz. Successful treatment of elderly patients with erosive esophagitis (EE) using pantoprazole 40 mg. American College of Gastroenterology Meeting, Baltimore, MD. Oct 2003. Poster presentation.
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129. JE Mandel, J Tanner, G Lichtenstein, DC Metz, M Kochman. Patient-controlled sedation for colonoscopy with propofol/remifentanyl vs. midazolam/fentanyl. ASA 2006 Annual Meeting, Chicago, IL. October 2006. Oral presentation.
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132. G Spencer, S Schutte-Rodin, DA Katzka, S Stache, DC Metz. Continuous positive airway pressure ventilation in sleep apneics reduces esophageal acid exposure. ACG Annual Meeting, Las Vegas, NV. October 2006. Poster presentation
133. AI Bunim, DA Katzka, Y-X Yang, DC Metz. Double dose or higher PPI therapy does not always result in normalization of distal esophageal acid exposure. ACG Annual Meeting, Las Vegas, NV. October 2006. Poster presentation
134. V Pratha, DL Hogan, RB Lynn, G Comer, DC Metz. Gastric acid analysis is a reliable and reproducible measure of acid secretion in patients treated with placebo or pantoprazole. American Gastroenterological Association Meeting, Washington, DC. May 2007.
135. G Spencer, S Schutte-Rodin, DA Katzka, S Stache, DC Metz. Gastroesophageal reflux occurs after arousals and awakenings in patients with obstructive sleep apnea. American Gastroenterological Association Meeting, Washington, DC. May 2007. Poster presentation
136. V Pratha, DL Hogan, RB Lynn, G Comer, DC Metz. Gastric acid analysis is a reliable and reproducible measure of acid secretion in GERD patients treated with placebo or pantoprazole. American College of Gastroenterology Annual Meeting, Philadelphia, PA. October 2007. Poster presentation
137. G Fulda, MB Sostek, KM Olsen, JT Monyak, SB Simonson, DC Metz. Intravenous esomeprazole in critically ill patients. American Thoracic Association Meeting, Toronto, Ontario, Canada. May 2008. Poster presentation
138. JY Lau, DC Metz, JJ Sung, CW Howden. Systematic review of the epidemiology of complicated peptic ulcer, incidence, recurrence, risk factors and mortality. American Gastroenterological Association Meeting, San Diego, CA. May 2008. Oral presentation
139. DC Metz, CW Howden, M Perez, LM Larsen, JM O'Neill. TAK-390 MR, a proton pump inhibitor with a novel dual delayed release formulation maintains healing and controls heartburn in GERD patients with healed erosive esophagitis. American Gastroenterological Association Meeting, San Diego, CA. May 2008. Poster presentation
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141. DC Metz, G Fulda, KM Olsen, JT Monyak, SB Simonson, MB Sostek. Rapid onset of intragastric acid control with intravenous esomeprazole in critically ill patients. American Gastroenterological Association Meeting, San Diego, CA. May 2008. Poster presentation

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143. R Choksi, MF Pascua, F Aberra, DC Metz, AI Levinson, A Burkart. Is there an association between common variable immunodeficiency and microscopic colitis? American Gastroenterological Association Meeting, San Diego, CA. May 2008. [Poster presentation](#)
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147. P Shah, Y-X Yang, DC Metz. Hypo/achlorhydria is Associated with False-Positive Secretin Stimulation Testing (SST) for Zollinger-Ellison Syndrome (ZES). American College of Gastroenterology Annual Meeting, San Antonio, Tx. October 2010. [Poster presentation](#) (also presented at NANETs annual meeting Santa Fe, NM – winner of travel award).
148. J Hasskarl, M Kaufmann, H Schmid, DC Metz. The potential role of somatostatin analogues in the treatment of gastrointestinal (GI) cancers. American Society of Clinical Oncology – 2011 Gastrointestinal Cancers symposium, San Francisco, Ca. January 20, 2011. [Poster presentation](#).
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150. P Menard-Katcher, MA Brisco, JE Rame, DC Metz. Continuous Flow and Pulsatile Left Ventricular Assist Devices Associated With Similar Rates of Gastrointestinal Bleeding. American Gastroenterological Association Meeting, Chicago, IL. May 2011. [Poster presentation](#)
151. LY Korman, N Haddad, DC metz, SK Lazerow, HL Miller, SB Benjamin, V Egorov, M Patel, A Sarvazyan. Propofol Anesthesia for Colonoscopy - Quicker Examination Time but With a Potential Risk. American Gastroenterological Association Meeting, Chicago, IL. May 2011. [Poster presentation](#)
152. CV Almario, B Riff, DC metz, N Merriman, Y-X Yang. Risk of Community-Acquired Pneumonia in Patients With a Diagnosis of Pernicious Anemia. American Gastroenterological Association Meeting, Chicago, IL. May 2011. [Poster presentation](#)
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156. Korman LY, Brandt LJ, Metz DC, Haddad Nadim, Lazerow SK, Benjamin SB, Miller HL, Greenwald D, Patel M, Sarvazyan A. Effect of Body Mass Index (BMI) and Procedure Difficulty on Force Applied During Colonoscopy, American Gastroenterological Association Meeting, San Diego, CA. May 2012. [Poster presentation](#)

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162. Menezes AK, Tierney A, Yang Y-X, Forde KA, Bewtra M, Metz DC, Ginsberg GG, Falk GW. Adherence to the 2011 AGA Medical Position Statement for the Treatment of Barrett's Esophagus. American Gastroenterological Association Meeting, Orlando, FL.. May 2013. [Poster presentation](#)
163. Singh MH, Soulen MC, Pryma DA, Bennett, BJ, Wild D, Guillaume N, Teitelbaum UR, Metz DC. Organ Dysfunction after Delayed Peptide Receptor Radionuclide Therapy in Patients With Metastatic Neuroendocrine Tumors. American Gastroenterological Association Meeting, Orlando, FL.. May 2013. [Poster presentation](#)
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166. Riff BP, Leiman DA, Fraker DL, Bennett, BJ, Metz DC. Weight gain after control in Zollinger-Ellison syndrome. American Gastroenterological Association Meeting, Chicago, IL. May 2014. [Oral presentation](#)
167. Riff BP, Yang, Y-X, Soulen MC, Pryma DA, Bennett BJ, Wild D, Guillaume N, Teitelbaum, UR, Metz DC. PRRT-induced hepatotoxicity in metastatic GEP-NET patients with liver metastases. American Gastroenterological Association Meeting, Chicago, IL. May 2014. [Oral presentation](#)
168. Leiman DA, Riff BP, Morgan S, Metz DC, Falk GW, French B, Umscheid CA, Lewis JD. Alginate Therapy Is Effective in the Treatment of Non-erosive Reflux Disease: A Systematic Review and Meta-analysis. American College of Gastroenterology Annual Scientific Meeting, Honolulu, HI October 2015. [Poster presentation](#).
169. L Anthony, D Hörsch, C Ervin, MH Kulke, M Pavel, E Bergsland, M Caplin, K Öberg, R Warner, P Kunz, DC Metz, J Pasiaka, N Pavlakakis, D DiBenedetti, E Haydysch, Qi M Yang, S Jackson, K Arnold, L Law, P Lapuerta. Assessing Treatment Benefit of Telotristat Etiprate in Patients with Carcinoid Syndrome: Patient Exit Interviews North American Neuroendocrine Tumor Society (NANETS) Annual Meeting, Austin, TX, October 2015. [Poster presentation](#).
170. JX Chen, S Rose, SB White, G El-Haddad, N Fidelman, H Yarmohammadi, D Sze, R Salem, D Metz, MC Soulen. Embolotherapy for Neuroendocrine Tumor Liver Metastases: Prognostic Factors for Hepatic Progression-free Survival

and Overall Survival. North American Neuroendocrine Tumor Society (NANETS) Annual Meeting, Austin, TX, October 2015. Poster presentation

171. MC Soulen, U Teitelbaum, D Metz, JI Mondschein, B Giantonio, SW Stavropoulos, T Evans, N Damjanov. Feasibility of Combining Capecitabine and Temozolomide with yttrium 90 Radioembolization (CapTemY90) for Intermediate-Grade Metastatic Neuroendocrine Tumors. North American Neuroendocrine Tumor Society (NANETS) Annual Meeting, Austin, TX, October 2015. Poster presentation

172. KM Stashek, RE Roses, EE Furth, DC Metz. Clinical and Pathologic Characteristics of Gastric Neuroendocrine Tumors in a Tertiary Care Center. North American Neuroendocrine Tumor Society (NANETS) Annual Meeting, Austin, TX, October 2015. Poster presentation

173. M Pavel, D Hörsch, L Anthony, C Ervin, MH Kulke, E Bergsland, M Caplin, KI Öberg, R Warner, P Kunz, DC Metz, J Pasieka, N Pavlakakis, D DiBenedetti, P Lapuerta. Patient Interviews in TELESTAR, a Phase 3 Study of Telotristat Etiprate, Report Meaningful Improvement in Carcinoid Syndrome. European Neuroendocrine Tumor Society Annual Meeting, Barcelona, Spain. March 2016.

174. BW Katona, BP Riff, MC Soulen, DA Pryma, BJ Bennett, D Wild, G Nicolas, UR Teitelbaum, DC Metz. Peptide Receptor Radionuclide Therapy (PRRT) for Metastatic Neuroendocrine Tumors (NETs) in a United States (US) Population. American Gastroenterological Association Meeting, San Diego, CA. May 2016. Oral presentation.

175. S Elhanafi, DC Metz, GG Ginsberg, SJ Mehta, NA Ahmad. Adenoma Detection rate in Screening Compared to Non-Screening Colonoscopies: A cross-Sectional Study. American Gastroenterological Association Meeting, San Diego, CA. May 2016. Poster presentation.

176. MJ Whitson, K Lynch, Y-X Yang, DC Metz, GW Falk. Lack of PPI Trial Prior to Commencing Therapy for Eosinophilic Esophagitis Is Common. American Gastroenterological Association Meeting, San Diego, CA. May 2016. Poster presentation.

177. LY Korman, DC Metz, ML Weinstein, N Sarvazyan, R Hardi, D O'Kieffe, L Winderlite, M Schwartz, T Wojtera, H Mercer, V Egorov. Propofol Anesthesia Does Not Change the Force Used by the Endoscopist During Colonoscopy: Results of a Randomized Controlled Trial. American Gastroenterological Association Meeting, San Diego, CA. May 2016. Poster presentation.

178. KM Stashek, R Tondon, SG Shroff, R Roses, EE Furth, DC Metz. Neoplasia in Patients With Atrophic Metaplastic Autoimmune Gastritis (Amag): Screening and Surveillance Endoscopy Should Become Standard of Care. American Gastroenterological Association Meeting, San Diego, CA. May 2016. Poster presentation.

179. KL Lynch, Y-X Yang, DC Metz, GW Falk. Esophagogastric Junction Outflow Obstruction: A Heterogeneous Entity of Unclear Clinical Significance. American College of Gastroenterology Annual meeting, Las Vegas, NV. October 2016.

180. KM Stashek, R Tondon, SG Shroff, R Roses, EE Furth, DC Metz. Neoplasia in Patients with Atrophic Metaplastic Autoimmune Gastritis (AMAG): Screening and Surveillance Endoscopy Should Become Standard of Care. 2016 AGA James W. Freston Single Topic Conference: Intestinal Metaplasia in the Esophagus and Stomach – Origins, Differences, Similarities and Significance. InterContinental Hotel Chicago, IL. August 2016. Poster presentation.
181. BW Katona, BP Riff, MC Soulen, DA Pryma, BJ Bennett, D Wild, G Nicolas, UR Teitelbaum, DC Metz. Peptide Receptor Radionuclide Therapy (PRRT) for Metastatic Neuroendocrine Tumors (NETs): A United States Experience. 2016 NANETS Symposium, Jackson Hole, WY. September 2016. Poster presentation.
182. E Segelov, D Lok H Chan, L Moody, S Carsley, DC Metz, JR Strosberg, S Singh. Development of follow up recommendations for completely resected Gastroenteropancreatic Neuroendocrine Tumours (GEP-NETS): Practice Survey of Commonwealth Neuroendocrine Tumour Collaboration (CommNETS) in conjunction with North American Neuroendocrine Tumour Society (NANETS). ASCO GI 2017. Moscone Center West Bldg, San Francisco, CA. January 2017. Oral Presentation.
183. B Cai, MS Broder, E Chang, T Yan, DC Metz. Predictive Factors of Carcinoid Syndrome Among Patients with Gastrointestinal Neuroendocrine Tumors (GI NETs). ASCO 2017 Chicago, IL. June 2017 (submitted)
184. KE Hansen, JW Nieves, S Nudurupati, DC Metz, M Claudia Perez. A randomized double-blind, placebo-controlled multicenter 26-week study on the effects of dexlansoprazole and esomeprazole on bone homeostasis in healthy postmenopausal women. American Gastroenterological Association Meeting, Chicago, IL. May 2017. Oral presentation.
185. CA Newberry, SM Siddique, NA Ahmad, DC Metz, S Mehta. Gastrointestinal Bleeding in Inpatients admitted for another indication: Results of a Multi-Center Retrospective Analysis. American Gastroenterological Association Meeting, Chicago, IL. May 2017. Poster presentation.
186. H Helgadottir, E Bjornsson, SS Gizurarson, DC Metz. Gastrin Elevation Following Proton Pump Inhibitor Therapy is related to Dose per Body weight. American Gastroenterological Association Meeting, Chicago, IL. May 2017. Poster presentation.
187. W Bassett, SM Siddique, BL Ranard, Y Gitelman, C Newberry, N Mull, S Arian-Javia, M Coniglio, DC Metz, NA Ahmad, S Mehta. Real-time Communication of a Clinical Pathway for Upper Gastrointestinal Bleeding Through Secure Text Messaging. American Gastroenterological Association Meeting, Chicago, IL. May 2017. Poster presentation.
188. KE Hansen, JW Nieves, S Nudurupati, DC Metz, M Claudia Perez. A randomized double-blind, placebo-controlled multicenter 26-week study on the effects of dexlansoprazole and esomeprazole on bone homeostasis in healthy postmenopausal women. American Society of Bone Mineralization Research Meeting, Denver, CO. September 2017 (submitted)
189. KE Hansen, JW Nieves, S Nudurupati, DC Metz, M Claudia Perez. A randomized double-blind, placebo-controlled multicenter 26-week study on the effects of dexlansoprazole and esomeprazole on bone homeostasis in healthy postmenopausal women. 2017 Asian Pacific Digestive Week, Hong Kong. (submitted)

190. KE Hansen, JW Nieves, S Nudurupati, DC Metz, M Claudia Perez. A randomized double-blind, placebo-controlled multicenter 26-week study on the effects of dexlansoprazole and esomeprazole on bone homeostasis in healthy postmenopausal women. 25TH UEG Week 2017, Barcelona, Spain. (submitted)
191. B Cai, MS Broder, E Chang, T Yan, DC Metz. Predictive factors of carcinoid syndrome (CS) among patients with gastrointestinal neuroendocrine tumors (GI NETs). 2017 NANETS Symposium, Philadelphia, PA. October 2017. (submitted)

Contributions to abstracts, participation cited but not authorship:

1. WM Duck, BD Gold, JM Pruckler, Q Song, A Sulka, B Swaminathan, J Sobel and the HARP Working Group. Risk Factors for emerging antimicrobial resistance in *Helicobacter pylori* infection in the United States. International Conference on Emerging Infectious Diseases (ICEID) Meeting, Atlanta, GA. March 2002. Poster presentation.

Editorials, Reviews, Chapters:

1. DC Metz, JR Pisegna, VA Fishbeyn, RV Benya, RT Jensen. The control of gastric acid hypersecretion in the management of patients with Zollinger-Ellison syndrome. In: Progress symposium on the treatment of islet cell tumors. JA Norton, ed. World J Surgery 17:468-480, 1993.
2. DC Metz, RT Jensen. Endocrine tumors of the pancreas. In: Bockus Gastroenterology. WB Haubrich, F Schaffner, JE Berk, eds. Volume 4, Section 13, Chapter 159, W.B. Saunders Publishing Co., Philadelphia, PA. 5th edition, 1994, pp 3002-3034.
3. DC Metz, RT Jensen. The Zollinger-Ellison syndrome. In: Consultations in Gastroenterology. WJ Snape, Jr., ed. W.B. Saunders Publishing Co., Philadelphia, PA. 1995, pp 322-334.
4. DC Metz, RT Jensen, AE Bale, MC Skarulis, RC Eastman, L Nieman, JA Norton, E Friedman, C Larsson, A Amorosi, M-L Brandi, SJ Marx. Multiple endocrine neoplasia type I: Clinical features and management. In: The Parathyroids. Bilezikian JP, Marcus R, Levine MA, eds. Chapter 37, Raven Press Publishing Co., New York, New York, 1994, pp 591-646.
5. E Friedman, C Larsson, A Amorosi, M-L Brandi, AE Bale, DC Metz, RT Jensen, MC Skarulis, RC Eastman, L Nieman, JA Norton, SJ Marx. Multiple endocrine neoplasia type I: Pathology, pathophysiology, molecular genetics, and differential diagnosis. In: The Parathyroids. Bilezikian JP, Marcus R, Levine MA, eds. Chapter 38, Raven Press Publishing Co., New York, New York, 1994, pp 647-680.
6. DC Metz, RT Jensen. Advances in gastric antisecretory therapy in Zollinger-Ellison syndrome. In: Endocrine Tumors of the Pancreas: recent advances in research and management. M Mignon, RT Jensen, editors. Frontiers in Gastrointestinal Research, S Karger AG, Basel, Switzerland, 1995, Vol 23, pp 240-257.
7. DB Strader, JL Doppman, M Orbuch, RT Jensen, DC Metz. Functional localization of pancreatic endocrine tumors. In: Endocrine Tumors of the Pancreas: recent advances in research and management. M Mignon, RT Jensen, editors. Frontiers in Gastrointestinal Research, S Karger AG, Basel, Switzerland, 1995, Vol 23, pp 282-297.
8. M Orbuch, JL Doppman, DB Strader, VA Fishbeyn, RV Benya, DC Metz, RT Jensen. Imaging (CT, ultrasound, MR and angiography) for pancreatic endocrine tumor localization: recent advances. In: Endocrine Tumors of the Pancreas: recent advances in research and management. M Mignon, RT Jensen, editors. Frontiers in Gastrointestinal Research, S Karger AG, Basel, Switzerland, 1995, Vol 23, pp 268-281.
9. DC Metz. Multiple Endocrine Neoplasia type I. In: Seminars in gastrointestinal disease (RT Jensen, editor) Volume 6(2), April 1995, pp 56-66.
10. DC Metz. Diagnosis and treatment of pancreatic neuroendocrine tumors. In: Seminars in gastrointestinal disease (RT Jensen, editor) Volume 6(2), April 1995, pp 67-78.

11. DC Metz. Peptic ulcer disease; Diagnosis and Treatment. In: Gastrointestinal disease: An Endoscopic approach, AJ DiMarino and SB Benjamin (editors). Chapter 22, Blackwell Science Inc., Cambridge, MA., 1997, Vol 1, pp285-304.
12. DC Metz. Endocrine tumors of the pancreas: Types and diagnostic aspects. Practical Gastroenterology. Volume 20(12), December 1996, pp 25-36.
13. JA Kroser, DC Metz. Evaluation of the adult patient with diarrhea. In: Primary care: Clinics in Office Practice. J Katz and G Steele, editors. Volume 23 (3), September 1996, pp 629-647.
14. DO Faigel, DC Metz. Acute pancreatitis. In: The Intensive Care Unit Manual. Lanken PN, Manaker S, Hanson CW, eds. Chapter 58, W.B. Saunders Publishing Co., Philadelphia, PA, 2000, pp667-674.
15. DC Metz. Dyspepsia. In: Clinical Practice of Gastroenterology. Brandt LJ, editor. Chapter 25, Current Medicine (subsidiary of Churchill Livingstone), Philadelphia, PA., 1998, Vol 1, pp225-235.
16. DC Metz. Helicobacter pylori infection and gastroduodenal disease. In: Kelley's Textbook of Medicine (Updates). Traber PG, editor. Lippincott-Raven Healthcare, Philadelphia, PA. Vol 1, 1997, 1-16.
17. JA Kroser, DR Bachwich, DC Metz. Physiology and Pathophysiology. In: Clinical Imaging of the Small Intestine. Second edition. Herlinger H, Maglinte DDT and Birnbaum B, editors. Springer-Verlag, New York, NY. 1998, pp13-28.
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19. I Scotiniotis and DC Metz. Invited commentary on a case report entitled " Acute diverticulitis in a 22 year-old man". Resident and staff physician 45;47-51:1999
20. DC Metz. Is the only good H. pylori a dead H. pylori? Invited commentary on "Curing H. pylori infection in patients with duodenal ulcer may provoke reflux esophagitis" for the World Literature Review section of the American Journal of Gastroenterology 92;2131:1997.
21. DC Metz. Diagnosis of non-Zollinger-Ellison syndrome, non-carcinoid syndrome, enteropancreatic neuroendocrine tumors. Italian J. Gastroenterol and Hepatol. 31(Suppl 2);S153-S159, 1999.
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23. DC Metz. Helicobacter colonization of the biliary tree: Commensal, Pathogen, or spurious finding? Invited commentary on "Hepatic Helicobacter species identified in bile and gallbladder tissue from Chileans with chronic cholecystitis" for the World Literature Review section of the American Journal of Gastroenterology 93;1996:1998.
24. NA Ahmad, DC Metz. Dyspepsia and heartburn. In: Rheumatic disease clinics of North America. Baime M and Mandell B, editors. WB Saunders Company, Philadelphia, PA. Volume 25(3), August 1999, pp 703-718.
25. DC Metz. Helicobacter pylori and gastric cancer: proving the link. Invited commentary on "Helicobacter pylori infection induces gastric cancer in Mongolian gerbils" for the World Literature Review section of the American Journal of Gastroenterology 94;852-853:1999.
26. DC Metz. Hyperplastic gastric polyps: Medical management is feasible. Invited commentary on "Disappearance of hyperplastic polyps in the stomach after eradication of Helicobacter pylori" for the World Literature Review section of the American Journal of Gstroenterology 94;1977-1978:1999.
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Letters to the editor:

1. DC Metz, VA Fishbeyn, RT Jensen. Assessing the cure of the Zollinger-Ellison syndrome after gastrinoma resection - invited reply to a letter to the editor by M Hammami. *Ann Int Med* 120:165, 1994.
2. JA Katz, DC Metz, DO Faigel. Gastrointestinal bleeding from a gastric plasmacytoma. *Am J Gastroenterol.* 89:643-644, 1994.
3. DO Faigel, DC Metz. Therapy for *Helicobacter pylori* gastritis. *N. Engl. J Med.* 333:190-191, 1995.
4. DC Metz, HD Getz. Therapy with omeprazole clarithromycin increases serum carbamazepine levels in patients with *H. pylori* gastritis - invited reply to a letter to the editor by HG Dammann. *Dig Dis Sci* 41:519-520, 1996.
5. JD Lewis, J Kroser, J Bevan, EE Furth, DC Metz. Quantitative Urea breath testing does not predict peptic ulcer disease. *Gastrointestinal Endoscopy.* 46:94, 1997.
6. DA Katzka and DC Metz. Response to Drs. Achkar and Richter and to Drs. Singh and Chigh. *Am J Gastroenterol.* 98:697, 2003.
7. WC Blonski, DA Katzka, GR Lichtenstein, DC Metz. Response to Dr Waldum's letter regarding 'Idiopathic gastric acid hypersecretion presenting as a diarrheal disorder and mimicking both Zollinger-Ellison syndrome and Crohn's disease. *Eur J Gastroenterol Hepatol.* 17:1001, 2005.
8. Yang Y-X, Lewis JD, Epstein S, Metz DC. Response to Drs. Geller and Adams pertaining to JAMA 296;2947-2953, 2006.
9. Yang Y-X, Lewis JD, Epstein S, Metz DC. Reply to Drs. Inadomi and Somsouk pertaining to their Selected Summary review in *Gastroenterology* entitled Proton Pump Inhibitors and hip fracture: Cause for alarm? *Gastroenterol* 132:2065, 2007.
10. Metz DC, Pilmer BL, Han C, Perez MC. Withdrawing PPI Therapy: Author response to Waldun, et al. *Am J. Gastroenterol.* 107;326, 2012.
11. Metz DC. Invited commentary. Netazepide for gastric acid suppression: Another kid on the block?. *Aliment. Pharmacol. Therap.* 36;294-5, 2012.

12. Singh MH, Fraker DL, Metz DC. Response to a letter to the editor by JD Gardner entitled "Missed opportunity in ZE Research". Clin Gastroenterol Hepatol. 2013;11:448-49.
13. Muir AB, Wang M-L, Metz DC, Falk G, Markowitz J, Spergel JM and Liacouras CA. Proton pump inhibitor-responsive oesophageal eosinophilia: Too early to change clinical practice. GUT (in press).

Books:

1. Clinical Evidence. Gastroenterology section editor. BMJ Publishing group, London, England, 1999-.
2. Requisites in Gastroenterology. Rustgi AK, series editor: Katzka DC and Metz DC, Gastroesophageal section editors (Volume 1 of 4). Elsevier Science, Philadelphia, PA, 2003. (translated into Spanish 2005)
3. AGA Guidebook to ABIM Recertification (supplemental edition covering the Recent Advances Module). Metz DC, editor, American Gastroenterological Association, Washington, DC, 2005.

Alternative Media:

1. Session Moderator, Afternoon topic forum (AGA). Diagnostic imaging. American Gastroenterological Association Meeting, Boston, May 17, 1993.
2. Moderator of a live panel discussion for an international teleconference entitled "Gastroenterology today: Treatment of gastric and duodenal ulcers" produced by the MedEdNet Satellite Network, Houston, TX. The program included a videotape presentation entitled "When to consider Zollinger-Ellison syndrome" Broadcast from Washington DC on June 10, 1993.
3. Moderator of a live panel discussion for an international teleconference entitled "Gastroenterology today: Management and treatment of gastroesophageal reflux disease" produced by the MedEdNet Satellite Network, Houston, TX. The program included a videotaped introduction and a presentation entitled "Antisecretory therapy for gastroesophageal reflux disease" Broadcast from Philadelphia PA on January 25, 1994.
4. Moderator of a live panel discussion for an international teleconference entitled "Dyspepsia: A critical appraisal" produced by the MedEdNet Satellite Network, Houston, TX. The program included a videotaped introduction on the definition, epidemiology and diagnosis of dyspepsia as well as a presentation entitled "Helicobacter pylori gastritis as a cause of dyspepsia" Broadcast from Austin TX on July 12, 1994.
5. Session Moderator, AGA Topic forum entitled GI Endocrine tumors. American Gastroenterological Association Meeting, San Diego, May 17, 1995.
6. Moderator for a national audio teleconference series entitled "Helicobacter pylori and Ulcer Management". 1 hour CME accredited conference telephone calls sponsored by Discovery International under an unrestricted educational grant from Abbott Laboratories Inc., January 15, 1996, January 18, 1996, April 15, 1996, May 9, 1996 and May 14, 1996.
7. Session Moderator, AGA Research forum entitled new therapies for H. pylori. American Gastroenterological Association Meeting, San Francisco, May 22, 1996.
8. Helicobacter pylori infection. A 1 hour CME-accredited internet program with post-test (for credit) on the University of Pennsylvania Health System's home page. Address: <http://www.med.upenn.edu/demo/HP/intro.html> On line September 1996.
9. Workshop Leader, H pylori: Diagnosis and treatment, Astra Merck Regional Faculty Consultants Conference, Kansas City, MO, September 20-22, 1996
10. Invited contribution of 10 questions and answers with detailed discussion to the international Self-assessment color review of Gastroenterology. N Gilinsky and A Forbes, editors. Manson Publishing limited, London, United Kingdom. 1998

11. Workshop leader on "The therapeutic Challenge of Treating *Helicobacter pylori* in the primary care setting", Astra Merck Regional Faculty Consultants Conference for Primary care Physicians, Philadelphia, PA. December 14 and 15, 1996.
12. Moderator and discussant for a nationally broadcast live satellite consumer outreach program entitled "Ulcer Alert!" broadcast to over 2500 hospitals nationwide. Produced by VHA incorporated and sponsored by Abbott Laboratories Inc., August 12, 1997.
13. Course director, chairman and organizer of a two day consultants conference for Astra Merck (Southwestern Florida region) consisting of three didactic lectures and four breakout discussion workshops. The Hilton Hotel, Marco Island, Florida. November 21-23, 1997.
14. Faculty member of the 1998 American College of Gastroenterology National fellows' Forum sponsored by Astra Pharmaceuticals. Hyatt Regency La Jolla, San Diego, California. August 27-30, 1998.
15. Dyspepsia. Patient education material for Empower Health. An educational resource for the general public edited by C. Everett Koop, MD. Available on the internet and by hard copy. September 23, 1998
16. GERD. Patient education material for Empower Health. An educational resource for the general public edited by C. Everett Koop, MD. Available on the internet and by hard copy. September 23, 1998
17. Moderator for a national audio teleconference series entitled "An update on proton Pump Inhibitors". Two 1.2 hour CME accredited conference telephone calls sponsored by the University of South Dakota School of medicine under an unrestricted educational grant from Astra Pharmaceuticals, Inc., November 16, 1998.
18. Course director and lecturer for a national audio teleconference series entitled "Suppression of gastric acid secretion: New approaches with intravenous agents". Seventy-five 1 hour CME accredited conference telephone calls sponsored by the University of Pennsylvania School of medicine under an unrestricted educational grant from Wyeth Ayerst Pharmaceuticals, Inc., June through September, 1999.
19. Session Moderator, Morning topic forum (AGA). GERD Therapeutics. American Gastroenterological Association Meeting, San Diego, May 21, 2000.
20. Course co-director for the second annual Gastroenterology and Hepatology update. Four day comprehensive update at the Westin Hotel, Philadelphia, PA. June 8-11, 2000
21. Invited contribution of 10 questions and answers with interpretation of answers for the IRB module of the Patient Oriented Research Certification Program at the University of Pennsylvania. June 2000.
22. Challenges in the use of antisecretory therapy in the hospital setting. Nationally broadcast live satellite CME program broadcast to over 1000 hospitals nationwide. Produced by VHA incorporated and sponsored by Wyeth Ayerst laboratories, October 3, 2000.
23. Questions on reflux. Four contributions for the medical moment, a Web-based streaming consumer outreach program sponsored by VHA incorporated. Produced by VHA incorporated, Dallas, TX, October 3, 2000.
24. The Role of *Helicobacter pylori* Infection in Nonsteroidal Anti-inflammatory Drug Ulceration, Non-ulcer Dyspepsia and Gastroesophageal Reflux Disease. Lecture for a Webcast entitled "Peptic Ulcer Disease – Update with the experts" with CME accreditation by Medical Education Collaborative and sponsored by Prometheus-Labs. Taped October 5, 2000, Philadelphia, PA. Also published as a monograph for CME credits and distributed nationally.
25. GERD. One hour live TV program broadcast on Comcast cable channel CN8 (On Call with Donna Willis), November 20, 2000.
26. Session Moderator, AGA Research Forum entitled GERD Treatment. American Gastroenterological Association Meeting, Atlanta, May 21, 2001.
27. Session Moderator, AGA Research Forum entitled Failed eradication of *H. pylori*: try, try, and try again. American Gastroenterological Association Meeting, Atlanta, May 23, 2001.

28. Lecturer for a national audio teleconference series entitled "PPI's: Clinical and hospital formulary issues". CME teleconferences for pharmacists and physicians sponsored by the University of Buffalo, NY under an unrestricted educational grant from Wyeth Ayerst Pharmaceuticals, Inc. September 19, 2001; September 25, 2001, November 15, 2001, December 13, 2001, December 18, 2001, February 11, 2002, February 19, 2002, March 6, 2002, June 11, 2002, October 3, 2002, October 22, 2002, October 31, 2002, November 21, 2002, April 3, 2003, April 24, 2003, May 14, 2003, September 25, 2003, October 30, 2003 (twice), November 13, 2003.
29. New insights into the evolving treatment of acid-related disorders. Nationally broadcast live satellite CME program broadcast to over 1500 hospitals nationwide. Produced by GE Tip-TV and sponsored by Wyeth Ayerst laboratories, October 17, 2001.
30. Stress Ulcer Prophylaxis in the ICU: Clinical controversies and advances. Teleconference debate for a special print edition of Medical Crossfire for CME accreditation by UMDNJ sponsored by an unrestricted grant from Wyeth Ayerst Laboratories. February 4, 2002. Published as a monograph for CME credits through UMDNJ April, 2002.
31. Session Moderator, AGA Topic Forum entitled GERD Therapy. American Gastroenterological Association Meeting, San Francisco, May 21, 2002.
32. Lecturer for a national audio teleconference series entitled "Controversy on coxicity: Optimizing treatment for patients at risk for NSAID-related adverse events". CME teleconferences sponsored by the Dannemiller Memorial Educational Foundation and The Customer link, Inc. under an unrestricted educational grant from TAP Pharmaceuticals, Inc. June 3, 2002 (two conferences), July 31, 2002, September 18, 2002, October 2, 2002, October 3, 2002, December 4, 2002, December 5, 2002.
33. Lecturer for a national audio teleconference series entitled "NSAIDs and GI injury". CME teleconference series "Dialing into Gastroenterology" sponsored by CME consultants, Inc. under an unrestricted educational grant from TAP Pharmaceuticals, Inc. June 18, 2002.
34. Lecturer for a national audio teleconference series entitled "Dialing into Gastroenterology". Two CME accredited lectures entitled "Heartburn" and "Colorectal cancer" sponsored by CME consultants, Inc. under an unrestricted educational grant from TAP Pharmaceuticals, Inc. August 8, 2002.
35. Lecturer for a national audio teleconference series entitled "Dialing into Gastroenterology". Two CME accredited lectures entitled "Dyspepsia" and "Irritable Bowel Syndrome" sponsored by CME consultants, Inc. under an unrestricted educational grant from TAP Pharmaceuticals, Inc. October 29, 2002.
36. Invited lecturer and panel member at the Cancer Prevention Working Group Meeting. Washington, DC. November 1-2, 2002.
37. Lecturer for a national audio teleconference series entitled "Risk management of NSAID-associated gastric ulcers". CME teleconferences sponsored by The Customer link, Inc. under an unrestricted educational grant from TAP Pharmaceuticals, Inc. April 2, 2003 (two conferences), April 29, 2003 (two conferences), May 6, 2003 (two conferences), May 28, 2003, July 24, 2003 (two conferences).
38. Lecturer for a national audio teleconference series entitled "Dialing into Gastroenterology". Two CME accredited lectures entitled "The nursing home patient with acute upper GI bleeding" and "The adult GERD patient with persistent symptoms" sponsored by CME consultants, Inc. under an unrestricted educational grant from TAP Pharmaceuticals, Inc. May 14, 2003.
39. Session Moderator, AGA Topic Forum entitled "evaluating strategies to minimize risks of upper GI tract injury from NSAIDs". American Gastroenterological Association Meeting, Orlando, May 19, 2003.
40. Lecturer entitled "management of non-variceal bleeding" for a Webcast continuing education program for pharmacists on Acid Suppression in the ICU (<http://symposia.ashp.org/acidsuppression>) sponsored by ASHP Advantage under an unrestricted grant from Wyeth recorded in Chicago, IL on 8/18/2003.
41. Lecture and case discussion entitled "New diagnostic tools" for "Reflux disease: What's new" for "Clinical Advances in Gastroenterology" an audiocassette series of the American College of Gastroenterology. Taped 2/12/2004.

42. Focused clinical update entitled "peptic ulcer disease". Abstract discussion, American Gastroenterological Association Meeting, New Orleans, May 17, 2004. Published for the AGA by Cirque Med Ed. Chapter 1 pg 3-18.
43. Diagnostic tools and medical therapies. Lecture for a DDW combined clinical symposium sponsored by ASGE and SSAT entitled "Carcinoid tumors: Management and therapeutics". American Gastroenterological Association Meeting, New Orleans, May 19, 2004.
44. Lecture for an AGA clinical symposium entitled "H. pylori: Not dead yet!". American Gastroenterological Association Meeting, New Orleans, May 19, 2004.
45. Session Moderator, AGA Research Forum entitled "gastroduodenal disorders". American Gastroenterological Association Meeting, Orlando, May 19, 2004.
46. Moderator and discussant for a nationally broadcast live satellite CME program entitled "Improving Outcomes in Critical Care: Optimal Strategies for Antisecretory Therapy" broadcast to over 500 hospitals nationwide (repeat broadcast 7/20/04 to over 6000 hospitals, also available on the VHA website as streaming video). Produced by VHA incorporated and sponsored by Wyeth Pharmaceuticals, June 30, 2004.
47. Clinical update in Gastroenterology: Acid suppression in the prevention and treatment of ulcer-related gastrointestinal hemorrhage: Peptic ulcer and stress ulcer. CME program sponsored by Boston University School of Medicine under an unrestricted grant from Wyeth Pharmaceuticals including enduring materials in print and on CD ROM.
48. Invited contribution of 10 monographs corresponding to 10 questions (on the esophagus and stomach) for the Recent Advances self-study module for Gastroenterology recertification published by the American Gastroenterology Association as a guidebook accompanying recertification courses run by the AGA (in press).
49. Maximizing acid suppression: New considerations in the management of acid-related disorders. A clinical discussion on the optimal management of acid-peptic conditions: Applications of proton pump inhibitors with CME available on line hosted by Dr Steven G Peters for CME today (volume 2, issue 3) also available on CD Rom and on the web at www.sr.cme-today.com.
50. Treatment of Upper GI Problems in the Critically Ill Patient: A Case-based Approach. A one-hour live Webworkshop sponsored by CME-today and CME consultants Inc. under an unrestricted grant from AstraZeneca. Live presentation February 1, 2005.
51. David C Metz and Michael M Wolfe. AGA Core curriculum Task Force on training in acid peptic disease.
52. Lecturer, moderator and course director for an AGA Education and Training Committee sponsored symposium entitled "ABIM recertification made easy". American Gastroenterological Association Meeting, Chicago, May 17, 2005.
53. Lecturer for a DDW meet the professor luncheon entitled "Endoscopic and medical management of gastric bypass complications". American Gastroenterological Association Meeting, Chicago, May 17, 2005.
54. Session Moderator, AGA Clinical Symposium entitled "New advances in GI Pharmacotherapy: What new agents will be available in the near future". American Gastroenterological Association Meeting, Chicago, May 16, 2005.
55. Session Moderator, AGA Clinical Symposium entitled "Dyspepsia and its many causes". American Gastroenterological Association Meeting, Chicago, May 17, 2005.
56. Interviewee, AGA CME Café, GI conversation on neuroendocrine tumors. American Gastroenterological Association Meeting, Chicago, 2005.
57. Optimizing Acute Acid Suppression in the ICU. Teleconference series and on-demand Web-based CME activity at www.gicme.com (<http://www.gicme.com/>) edited by DC Metz and J Devlin under an unrestricted grant from TAP Pharmaceuticals produced by the Dannemiller Foundation and the Customer Link.
58. Acid Peptic Disease in the Critical Care Setting: Effective Management Options. A clinical discussion on the optimal management of acid-peptic conditions with CME available on line hosted by Dr Steven G Peters for CME today (in press) also available on CD Rom and on the web at www.sr.cme-today.com.

59. Chairman and faculty presenter, Acid suppression pharmacotherapy in the ICU: Re-evaluating the evidence (ASPIRE). A free Internet-based CME activity jointly sponsored by the University of Michigan Medical School and the University of Michigan College of Pharmacy under an unrestricted grant from Wyeth Pharmaceuticals. Presentations and panel discussions including supplementary interviews as presented in St Louis, MO on February 26, 2005. Available at <http://www.aspire-education.com/>.
60. Co-Director, Section Moderator (Risks of Diagnostic error) and Speaker (Risks of disease progression), AGA SPGC Recognizing and Reducing Risks in GI practice Los Angeles, Ca. May 20-21, 2006.
61. Moderator, EGD section research Forum entitled Dyspepsia: Does the evidence support the new AGA guidelines? DDW, Los Angeles May 21, 2006.
62. Moderator, AGA Clinical symposium entitled On-demand therapy for GERD: A look into the future. DDW, Los Angeles May 23, 2006.
63. Update on H pylori, peptic ulcer disease and gastroesophageal reflux. Audio CME program. Audio-Digest General Surgery: Gastrointestinal Update. Volume 53, issue 12, June 21, 2006. Reproduced from a lecture at the 69th Annual Surgery CME course at the University of Minnesota (see lecture #350).
64. HOT TOPIC: PPI safety: What's new after nearly 30 years? FastTRACK issue 1 of 4: CME-accredited CD series.
65. CASE: GERD management in the obese. FastTRACK issue 1 of 4: CME-accredited CD series.
66. Moderator, DDW combined Clinical Symposium entitled Parabariatric syndromes: You've lost weight but is the coast clear? DDW, Washington, DC. May 23, 2007.
67. The Science of Speed Eating. National Geographic Channel program aired 7/8/07 at 9PM and available on DVD
68. Expert on call. An interview by Nancy O'Hagan, President and Founder of the Caring for Carcinoid Foundation on diagnosing and treating carcinoid tumors posted on OncoLink Pod casts June 4, 2007
<http://www.oncolink.com/Podcasts/podcasts.xml>
69. HOT TOPIC: The future of Acid Suppression: More potent longer acting PPIs. FastTRACK issue 4 of 4: CME-accredited CD series.
70. CASE: Managing Acid-related disorders in Seniors: What to think about. FastTRACK issue 4 of 4: CME-accredited CD series.
71. Moderator, Mini-symposium 1: Focus on the esophagus. CME course "Penn Live: GI Endoscopy 2008". HUP, University of Pennsylvania, Philadelphia, PA. April 26, 2008.
72. Abstract reviewer, Penn Research day, 2008.
73. Lecturer for a DDW meet the professor luncheon entitled "Managing Upper GI Bleeding". American Gastroenterological Association Meeting, San Diego, CA, May 20, 2008.
74. Content Reviewer for a CME article by Jason Jenkins, Pete Sloan, Karin Yao and Jennifer Haberman of the Customer Link entitled "the Burn Ultimatum: Taking a stand against GERD and acid-related disorders". Primary Issues, Primary Care Education network, 2008 Summer Issue, pg 10-18.
75. Twenty minute Interview with Brian Crump of Radio New Zealand on "Nights" on competitive eating. August 21, 2008. Available at: <http://www.radionz.co.nz/national/programmes/nights/20080821>
76. Moderator for lectures and live cases for 2 mini-symposia: CME course "Second Annual Penn Live: GI Endoscopy and liver disease 2009". HUP, University of Pennsylvania, Philadelphia, PA. April 17, 2009.
77. Moderator, Section on Esophageal Diseases, 2009 AGAI Spring Postgraduate Course, DDW, Chicago IL, May 30, 2009.

78. Moderator, Clinical practice section Research Forum use of Proton Pump Inhibitors – Benefits and Consequences, DDW, Chicago IL, June 1, 2009.
79. Moderator, EGD section Research Forum entitled GERD- Pharmacological treatment, DDW, Chicago IL, June 1, 2009.
80. Expert Advisor for “Could it be Carcinoid? Detecting the Differences - connecting the clues”. Informational Brochure for Physicians developed by Novartis Oncology.
81. Diagnosing Gastrointestinal Neuroendocrine Tumors, An interview for the ReachMD XM Radio series, Medical Breakthroughs from Penn Medicine <http://reachmd.com/xmradioseries.aspx?sid=11> aired October 5-12, 2009 and also available by podcast.
82. Acid, Nonacid Reflux and Heartburn. Lecture from 73rd University of Minnesota CME surgery in Minneapolis, MN. June 11, 2009 published by Audio-Digest Foundation for CME credit Volume 56, Issue 21, November 7, 2009.
83. Humanly Impossible. National Geographic Channel program aired 12/6/09 at 9PM with a segment on Speedeating
84. Exploring the role of the pharmacist in OTC PPI use for frequent heartburn. Online CPE program (1.5 hrs) at www.powepak.com sponsored by the Postgraduate Institute for Medicine and Strategic Consultants International and supported by an educational grant from Novartis consumer healthcare (expires 4/30/2012).
85. AGA Podcast for gastroenterology on the risks and benefits of PPI use to accompany YX Yang and DC Metz. Safety of proton pump inhibitor exposure. Gastroenterology (see Editorials, Reviews, Chapters #80).
86. Clinical Presentation and diagnosis of neuroendocrine tumors. Video presentation for a CME program on neuroendocrine tumors jointly sponsored by NANETs and MD Anderson Cancer Center. Santa Fe, NM. October 28, 2010.
87. Session moderator at the Annual Penn Live CME Course, UPenn, Philadelphia, PA. March 11, 2011
88. Session Moderator at the First Eosinophilic Esophagitis retreat, CHOP, Philadelphia, PA. March 29, 2011.
89. Moderator, EGD section Research Forum entitled Improving Diagnostic criteria for GERD, DDW, Chicago IL, May 8, 2011.
90. Course Co-Director, Moderator and Lecturer, Penn Neuroendocrine Tumor CME Course, BRB Auditorium, University of Pennsylvania, Philadelphia, PA, September 9, 2011.
91. Conference Chair and Lecturer, Focus on Neuroendocrine Tumors, Patient and Caregiver Conference, Hilton Hotel, Philadelphia, PA. September 16, 2011.
92. Diagnosis heartburn, the gastroenterologist says check for GERD. Interview and article for Woman’s Day magazine June 2012, pg 130
93. Advancing the Diagnosis and Management of Neuroendocrine tumors. Lecture and slide presentation for the NET alliance website available at <http://mp.pvupdate.com/player/7255/1445#1>.
94. *Managing Patients Pre- and Post- Bariatric Surgery*. Postgraduate Course Clinical Challenge Session. 2012 AGAI Spring Postgraduate Course, DDW, San Diego, CA, May 19, 2012.
95. Moderator AGA Clinical Symposium entitled “Current State of the Art in GERD”, EGD section, DDW, San Diego, CA May 21, 2012.
96. Moderator EGD section plenary session, DDW, San Diego, CA. May 21, 2012.
97. Moderator AGA Clinical Symposium entitled “Upper GI Endoscopy Case based session”, DDW, San Diego, CA May 21, 2012.
98. Conference Chair and Lecturer, Focus on Neuroendocrine Tumors, Patient and Caregiver Conference, Hilton Hotel, Philadelphia, PA. November 2, 2012.

99. Expert Opinion Interview (in 2 parts) for Practice Update :Primary Care on the risks and benefits of proton pump inhibitors published by Elsevier, Philadelphia, PA available at <http://www.practiceupdate.com>
100. Moderator AGA Clinical Symposium entitled “Foregut Neuroendocrine Tumors”, DDW, Orlando, FL. May 19, 2013.
101. Moderator EGD section plenary session, DDW Orlando, FL. May 20, 2013.
102. Moderator AGA/ASGE Combined Clinical Symposium entitled “My Weekend on Call: Case-based presentations”, DDW, Orlando, FL. May 21, 2013.
103. Moderator for lectures and live cases for the “Seventh Annual Penn Live: GI Endoscopy and liver disease 2014”. HUP, University of Pennsylvania, Philadelphia, PA. March 7, 2014.
104. Moderator AGA Clinical symposium entitled “Gastric Cancer a Scourge Worldwide”. DDW, Chicago IL. May 3, 2014.
105. Moderator AGA, EGD Disorders section Distinguished Abstracts Plenary, DDW, Chicago IL. May 3, 2014.
106. Moderator AGA Clinical symposium entitled “Obesity and the Upper GI tract”. DDW, Chicago IL. May 5, 2014.
107. Moderator and facilitator of panel discussion for “Complicated case presentations with ARS”, NANETS annual meeting, Nashville TN, October 10, 2014.
108. Moderator for lectures and live cases for the “Eighth Annual Penn Live: GI Endoscopy and liver disease 2014”. HUP, University of Pennsylvania, Philadelphia, PA. March 6, 2015.
109. Moderator AGA Translational Symposium entitled “Molecular Markers in the Diagnosis and Management of Gastrointestinal Neoplasia: Personalized Medicine at its Best”. DDW, Washington, DC. May 16, 2015.
110. Moderator AGA Clinical Symposium entitled “Autoimmunity and the Upper GI Tract”. DDW, Washington, DC. May 18, 2015.
111. Moderator AGA Translational Symposium (Funderburg Symposium) entitled “ H. pylori Gastritis and Gastric Cancer: Bacterial, Host and Environmental Factors Interact to Cause Malignancy”. DDW, Washington, DC. May 18, 2015.
112. Moderator AGA, EGD Disorders section: Distinguished Abstracts Plenary, DDW, Washington, DC. May 19, 2015.
113. Moderator: Increasing Incidence of Incidental NETs – What is the optimal management? 2015 NANETS Neuroendocrine Tumor Symposium : NET diagnosis and management strategies: A team perspective. Austin, TX October 15-17, 2015.
114. Moderator: AGA Clinical Symposium entitled “Complications of Chronic PPI Use”. DDW, San Diego, CA. May 21, 2016.
115. Moderator, 2016 AGA James W. Freston Single Topic Conference, Intestinal Metaplasia in the Esophagus and Stomach – Origins, Differences, Similarities and Significance. InterContinental Hotel, Chicago, IL. August 21, 2016
116. Moderator and Summary lecture for a research Symposium Entitled “Carcinoid and Other GI Neuroendocrine Tumors (Genetics, Epigenetics, Cell Biology and Development)”. American Gastroenterological Association Meeting, Chicago, IL. Tues May 9, 2017.
117. Moderator, 2017 ENETS/NANETS Young Investigator Symposium at the 14th Annual Conference of the European Neuroendocrine Tumor Society. Barcelona, Spain, March 9, 2017.
118. Answers to Common Questions in the Management of Neuroendocrine Tumors. Meet the Professor Luncheon (with Michelle K. Kim). DDW, Chicago IL, May 7, 2017.

PATENTS: None

PRINCIPAL INVESTIGATOR OF GRANTS (Company-sponsored):

1. The evaluation of a capsule-based low-dose carbon 14 urea breath test for the diagnosis of *Helicobacter pylori* gastritis (1995)
2. A study to evaluate the effects of dual therapy with lansoprazole and clarithromycin on the eradication of *Helicobacter pylori* (1995)
3. Evaluation of the clinical and cost effectiveness of therapy with clarithromycin plus omeprazole compared to omeprazole or ranitidine for the treatment of patients with duodenal ulcer and *Helicobacter pylori* infection (1995)
4. A study to evaluate the effects of dual therapy with lansoprazole and clarithromycin on the recurrence of duodenal ulcer after treatment for eradication of *Helicobacter pylori* (1995)
5. Gastric physiology and symptomatology in *Helicobacter pylori* gastritis (1996)
6. Evaluation of the Flexsure rapid serum *Helicobacter pylori* antibody test (1996)
7. A study to evaluate the effects of triple therapy with lansoprazole, clarithromycin and amoxicillin versus dual therapy with clarithromycin and amoxicillin on the eradication of *Helicobacter pylori* (1996)
8. Evaluation of barium radiography and serial *Helicobacter pylori* antibodies for the diagnosis and management of patients with *Helicobacter pylori*-induced peptic ulcers (1996)
9. Developing Normal Adult Values for the 13C-Urea Breath Test (1996)
10. Accustat rapid *H. pylori* assay (1996)
11. Comparison of the Clinical Safety and Efficacy of Pantoprazole 10 mg, 20mg, or 40 mg Once Daily and Placebo in Patients with Symptomatic Erosive Esophagitis (1996)
12. Comparison of the Clinical Efficacy and Safety of Pantoprazole 10 mg, 20mg, or 40mg Once Daily and Ranitidine 150 mg Twice Daily as a Relapse Prophylaxis Over Three Years for Patients with Healed Erosive Esophagitis (1996)
13. A Study to Evaluate the Effects of Lansoprazole 30 mg QD or 15 mg OD Versus Placebo in Patients with Non-Ulcer Dyspepsia (1997)
14. Pivotal Efficacy Study of Gastric Acid Secretion By Intravenous Pantoprazole In Patients With Zollinger-Ellison Syndrome With or Without Multiple Endocrine Neoplasia Type-1 Syndrome (1997)
15. A Safety and Efficacy Study of Inhibition of Gastric Acid Secretion by Intravenous Pantoprazole as an Alternative to Oral Proton Pump Inhibitors in Patients with Zollinger-Ellison Syndrome (1997)
16. *H. pylori* gastritis in HIV positive patients (1997)
17. A Safety and Efficacy Study of Long Term Oral Administration of Pantoprazole in Patients with Zollinger-Ellison Syndrome or Other Hypersecretory Conditions (1997)
18. A Comparison Of Gastric Acid Secretion Responses In Patients With Gastroesophageal Reflux Disease Who Are Switched From Oral To Intravenous Pantoprazole (1998)
19. Multicenter, Double-Blind, Placebo Controlled, Randomized Comparison Study of the Efficacy and Upper Gastrointestinal Safety of 100 mg, 200 mg and 400mg of SC-58635 BID and 500 mg Naproxen BID in Treating the Signs and Symptoms of Rheumatoid Arthritis (1998)
20. Study to Identify Otolaryngologic Criteria for Gastroesophageal Reflux Disease (1998)
21. Clinical Protocol for a Multicenter, Double-Blind, Parallel Group Study Comparing the Effects on Renal Function and the Incidence of Gastroduodenal Ulcer Associated with Valdecoxib in Patients with Osteoarthritis or Rheumatoid Arthritis (1998)

22. A Multi-Center, Randomized, Double-Blind, Parallel Group Comparison of the Safety and efficacy of a 7 Day Treatment of Pantoprazole plus Selected Antibiotics In the Eradication of H. Pylori Infection (1999)
23. Study To Evaluate the Effect of EM-574 5 mg TID, 20 mg TID versus Placebo in Patients with Non-Erosive GERD (1999)
24. Clinical Protocol for A Multicenter, Double Blind, Parallel Group Study Comparing the Incidence of Clinically Significant Upper Gastrointestinal Adverse Events Associated With SC-58635 400 mg BID to That of NSAID Treatment With Either Diclofenac 75 mg BID, Ibuprofen 800 mg TID or Naproxen 500 mg BID in Patients with Osteoarthritis or Rheumatoid Arthritis (1999)
25. A Multicenter, Randomized, Double-Blind, Safety and Efficacy Study of H 199/18 with Clarithromycin Compared to H199/18 for the Eradication of *Helicobacter pylori* in Subjects with Active Duodenal Ulcer or History of Duodenal ulcer Disease (1999)
26. A Blinded Multicenter Study of the PYtest (C-14 Urea Breath Test) in Patients Previously Treated for *Helicobacter Pylori* (1999)
27. Appropriate Timing of the 14 C-Urea Breath Test to Establish Eradication of *Helicobacter Pylori* Infection (1999)
28. Multi-Site Project for Antimicrobial Resistance among *Helicobacter pylori* Isolates in the United States (1999)
29. Open Label Use of Rabeprazole in Patients with Zollinger-Ellison Syndrome or Idiopathic Gastric Hypersecretion (1999)
30. A Randomized, Controlled Crossover Study Evaluating Synthetic Porcine Secretin, Synthetic Human Secretin, and Biologically Derived Porcine Secretin for the Diagnosis of Gastrinoma (1999)
31. A Study to Evaluate the Effect of Lansoprazole 30 mg QD versus Omeprazole 20 mg QD on Relief of Symptoms in Patients with Erosive Reflux Esophagitis (2000)
32. A Study of the Effects of Pantoprazole and Omeprazole on Intragastric pH Profiles in Patients with Gastroesophageal Reflux Disease (2000)
33. A Multicenter, Randomized, Parallel-Group, Active-and Placebo-Controlled, Double-Blind Study Conducted Under In-House Blinding Conditions to Determine the Incidence of Gastroduodenal Ulcers in Patients With Rheumatoid Arthritis After 12 Weeks of Treatment With MK-0663, Naproxen, or Placebo (2000)
34. Limited Access Protocol for the Use of Oral Cisapride in the Treatment of Refractory Gastroesophageal RefluxDisease and Other Gastrointestinal Motility Disorders (2000)
35. A Randomized, Open-Label, Pilot Assessment of the Effect of Protonix® (Pantoprazole Sodium) IV on Gastric pH in ICU Patients (2000)
36. A Comparative Efficacy and Safety Study of NEXIUM™ (esomeprazole magnesium) Delayed-Release Capsules (40 mg qd(daily) and 20 mg qd(daily) Versus Ranitidine (150 mg bid) for the Healing of NSAID-associated Gastric Ulcers When Daily NSAID Use is Continued (2001)
37. A Comparative Efficacy and Safety Study of NEXIUM™ (esomeprazole magnesium) Delayed-Release Capsules (40 mg(daily) and 20 mg qd(daily) Versus Placebo for the Prevention of Gastric Ulcers Associated with Daily NSAID Use in Patients at Risk (2001)
38. An Efficacy and Safety Study of Intravenous Pantoprazole in the Prevention of Recurrent Peptic Ulcer Disease After Successful Hemostasis (2001)
39. A Comparison of the Acid Inhibitory Affects of Simplified Omeprazole Solution and Intravenous Pantoprazole (2001)
40. A Randomized, Placebo-Controlled, Multi-Center Study to Evaluate the Pharmacodynamics of Intravenous Lansoprazole to that of Oral Lansoprazole in Subjects with Erosive Esophagitis (2001)
41. The Effect Of Indomethacin On *Helicobacter Pylori* Infection, As Assessed By The C-14 Urea Breath Test (2001)
42. A Population-based Case-Control Study of Major Gastrointestinal Toxicity with Over-the-Counter Non-steroidal Anti-inflammatory Drugs (2001)

43. Impact of Rabeprazole Sodium (Aciphex) and Paroxetine Hydrochloride (Paxil) on Symptoms and Quality of Life in Ulcer-like Dyspepsia (2002)
44. A Randomized, Double-Blind Trial Comparing the Early Profile of Heartburn Relief Associated with Rabeprazole, 20 mg once daily Vs., Omeprazole, 20 mg once daily in Gastroesophageal Reflux Disease Patients with an Acute or Documented History of Erosive Esophagitis (2002)
45. Evaluation of Gastroesophageal Reflux in Patients on Continuous Positive Airway Pressure Ventilation for Obstructive Sleep Apnea (2002)
46. A Multi-Center, Open-label, Four-way Crossover Study of the Effects of Esomeprazole, Aspirin and Rofecoxib on Prostaglandin (PGE₂) Production, Cyclooxygenase-2 Enzyme Activity and PCNA Expression in Patients with Barrett's Esophagus (2002)
47. A Multicenter, Randomized, Parallel Group, Placebo-Controlled, Double-Blind Study with In-House Blinding to Determine the Effect of 156 Weeks of Treatment with MK-0966 on the Recurrence of Neoplastic Polyps of the Large Bowel in Patients with a History of Colorectal Adenomas (2001)
48. An Open-Label Multi-Center Study to Evaluate the Pharmacodynamics of Intravenous Lansoprazole to that of Oral Lansoprazole in Subjects with Erosive Esophagitis (2003)
49. Multicenter, Randomized, Double-Blind, Double-Dummy, Parallel-Group Comparison of the Remission Rates for Once Daily Treatment with Esomeprazole 20 mg and Lansoprazole 15 mg for 6 Months in Patients Whose EE Has Been Healed (2003)
50. A Multicenter, Randomized, Double-Blind, Double-Dummy, Parallel-Group Efficacy Study Comparing 8 Weeks of Treatment with Esomeprazole Magnesium (40 mg qd) to Lansoprazole (30 mg qd) for the Healing of Erosive Esophagitis in Patients with Moderate or Severe Erosive Esophagitis (2003)
51. Symptom Relief in Patients Suffering from GERD Grade A to D According to LA Classification Treated with Pantoprazole 40 mg or Esomeprazole 40 mg QD
52. A Phase III, Multi-center, Open-label Study to Evaluate the Control of Gastric Acid Secretion with Esomeprazole in Patients with Gastric Acid Hypersecretory States Including Idiopathic Hypersecretion and ZES for 12 Months.
53. A Double-blind, Placebo-Controlled, Randomized Two-week Study Comparing Small Bowel Lesions Associated with Celecoxib (20 mg BID) vs. Ibuprofen (800 mg TID) plus Omeprazole (20 mg QD)
54. A Randomized, Double-Blind, Placebo-Controlled, Multi-center Study to Assess the Efficacy, safety, and Tolerability of Tegaserod Alone and in Combination with Omeprazole given orally in patients Suffering from Symptomatic (non-erosive) Gastroesophageal Reflux Disease (sGERD)
55. A 6 Week, Randomized, Double –Blind, Placebo-Controlled, Multicenter Study, to Assess the Efficacy and Safety of Oral Tegaserod (6mg bid) and Placebo in Female Patients with Dyspepsia
56. A Phase 3 Study to Evaluate the Efficacy and Safety of TAK-390MR (60mg QD and 90mg QD) Compared to Placebo on Symptom Relief in Subjects with Symptomatic Non-Erosive Gastroesophageal Reflux Disease (GERD) T-GD04-083
57. A Phase 3 Study to Evaluate the Efficacy and Safety of TAK-390MR (60mg QD and 90mg QD) and an Active Comparator, Lansoprazole (30mg QD) on Healing of Erosive Esophagitis T-EE04-085
58. A Phase 3 Study to Evaluate the Safety and Efficacy of TAK-390MR (60mg QD and 90mg QD) Compared to Placebo in Maintenance of Healing in Subjects with Healed Erosive Esophagitis T-EE04-087
59. A Phase 3 Open-Label Study to Assess the Long-Term Safety of TAK-390MR (60mg QD and 90mg QD) T-G104-088
60. "A Study of the Efficacy and Safety of Teduglutide in Subjects with Parenteral Nutrition-Dependent Short Bowel Syndrome, Protocols CL006-004 and CL006-005" , NPS Allelix Pharmaceuticals.
61. A Phase IIb, Randomized, Double-Blind, Placebo Controlled Study for the Treatment of Active Celiac Disease with AT1001. Alba Therapeutics.

62. A Double-Blind, Randomized Placebo-Controlled Clinical Trial Investigating The Efficacy And Safety Of Somatuline Depot (Lanreotide) Injection In The Treatment Of Carcinoid Syndrome. Tercica Inc.
63. A Phase IIb, Randomized, Double-Blind, Placebo Controlled, Dose Ranging, Multicenter Study to Determine the Safety, Tolerance, and Efficacy of AT-1001 in Celiac Disease Subjects during a Gluten Challenge. Alba Therapeutics.
64. Evaluation of Handheld Colonoscopy Force Monitor by Expert and Trainee Endoscopists in the Performance of Colonoscopy
65. A Dose-Response Efficacy and Safety Study of Arbaclofen Placarbil (XP19986) as Adjunctive Therapy in Subjects with Gastroesophageal Reflux Disease (GERD) who are Incomplete Responders to a Proton Pump Inhibitor (PPI)
66. Effect of Long-Term Proton Pump Inhibitors on Gastrin
67. Genetics and Biochemical Studies of Gastrointestinal Neuroendocrine Tumors
68. A Registry of Patients with Neuroendocrine Tumors
69. Treatment outcomes in patients with metastatic gastroenteropancreatic neuroendocrine tumors scanned and/or treated with metaiodobenzylguanidine (MIBG) therapy
70. An evaluation of characteristics and outcomes of patients with gastrointestinal bleeding following implantation of ventricular assist devices
71. Surgical outcomes in patients with Zollinger-Ellison Syndrome
72. Are Proton Pump Inhibitors (PPIs) associated with a higher risk of bacterial overgrowth, as demonstrated by a positive Lactulose Hydrogen Breath Test?
73. Retrospective Review of Secretin Test

SUBINVESTIGATOR OF GRANTS:

1. A Phase III, Randomized, Double-blind, Placebo-controlled Study of Vemurafenib (RO5185426) Adjuvant Therapy in Patients With Surgically Resected, Cutaneous BRAF-Mutant Melanoma at High Risk for Recurrence (on Dr. Tara Gangadhar's adjuvant melanoma study, UPCC 06612)

CURRENT GRANT SUPPORT

NAME OF FACULTY MEMBER: David C. Metz, MD

DEPARTMENT Medicine/Gastroenterology

DATE _____

<u>Name of Grant</u>	<u>Period of Award</u>	<u>Grant Category*</u>	<u>Role in Grant**</u>	<u>% Effort</u>	<u>Funding Source</u>	<u>Current Annual Direct Cost</u>	<u>Additional Comments***</u>
1. A Phase 3, Randomized, Placebo-controlled, Parallel-group, Multicenter, Double-blind Study to Evaluate the Efficacy and Safety of Telotristat Etiprate in Patients with Carcinoid Syndrome Not Adequately Controlled by Somatostatin Analog (SSA) Therapy	06/01/2014-05/31/2016	CT	PI	0.24	Lexicon, Inc.	\$33,767	
2. A Phase III Study Comparing Treatment With 177Lu-DOTA0-Tyr3-Octreotate To Octreotide LAR In Patients With Midgut Carcinoid Tumours	05/15/2013-05/13/2017	CT	PI	0.24	Advanced Accelerator Applications	\$80,636	

*For **Grant Category**, use code in bold from the following menu:

R01 NIH R01
PP NIH Program Project, Center or Core Grants
FG Federal Grants - Other (including other individual NIH grants and grants from VA, NSF, Dept. of Energy, etc.)

CT Clinical Trials
TG Training Grants
IG Industrial Grants (including pharmaceutical)
PG Private Foundation Grants (including internal Penn grants)
O Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.

*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.

PAST GRANT SUPPORT

NAME OF FACULTY MEMBER: David C. Metz, MD

DEPARTMENT Medicine/Gastroenterology

DATE December 2006

<u>1.</u>	<u>Name of Grant</u>	<u>Period of Award</u>	<u>Grant Category*</u>	<u>Role in Grant**</u>	<u>% Effort</u>	<u>Funding Source</u>	<u>Current Annual Direct Cost</u>	<u>Additional Comments***</u>
	Gastric and symptomatology in Helicobacter pylori gastritis	1/95-12/95	CT	PI	2	NIH (HUP CRC) & Astra Merck	Approx. \$150,000 (CRC plus Astra Merck)	
2.								
	Oleic Acid Effects on Transit and Absorption in SBS	07/01/2003-06/30/2005	R03	Co-I	5%*	NIDDK	\$100,000	*No salary support
3.								
	Intravenous Proton Pump Inhibitors in the Home TPN Patient with Excess Intestinal Output	6/01/2004-12/31/2006		Co-I	2%*	Wyeth Pharmaceuticals	\$175,593	*No salary support
4.								
	CPAP therapy in patients with GERD and Obstructive Sleep Apnea	2/05-3/06	CT	PI	2	TAP Pharmaceuticals	Approx \$120,000	
5.								
	Evaluation of hand held colonoscopy force monitor by expert and trainee endoscopists in the performance of colonoscopy	2/1/10 – 12/31/10	CT	PI	2	Artann Laboratories	\$12,500	
6.								
	A double-blind, randomized placebo-controlled clinical trial investigating the efficacy and safety of somatuline depot (Lanreotide) injection in the treatment of Carcinoid Syndrome.	3/09 – 3/11	CT	PI	2	Tercica, Inc		

7.

Commonwealth of Pennsylvania Formula Fund in Neuroendocrine Tumors	. 01/01/2013-12/31/16 R01	PI	0%	PA DoH	\$56,346
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*For **Grant Category**, use code in bold from the following menu:

R01	NIH R01	CT	Clinical Trials
PP	NIH Program Project, Center or Core Grants	TG	Training Grants
FG	Federal Grants - Other (including other individual NIH grants and grants from VA, NSF, Dept. of Energy, etc.)	IG	Industrial Grants (including pharmaceutical)
		PG	Private Foundation Grants (including internal Penn grants)
		O	Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.

*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.

PENDING GRANT SUPPORT

NAME OF FACULTY MEMBER: David C. Metz, MD

DEPARTMENT Medicine/Gastroenterology

<u>Name of Grant</u>	<u>Period of Award</u>	<u>Grant Category*</u>	<u>Role in Grant**</u>	<u>% Effort</u>	<u>Funding Source</u>	<u>Current Annual Direct Cost</u>	<u>Additional Comments***</u>
1. SPINET	PENDING	CT	PI	2	IPSEN	PENDING	

2.

3.

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5.

6.

7.

*For **Grant Category**, use code in bold from the following menu:

R01 NIH R01
PP NIH Program Project, Center or Core Grants
FG Federal Grants - Other (including other individual NIH grants and grants from VA, NSF, Dept. of Energy, etc.)

CT Clinical Trials
TG Training Grants
IG Industrial Grants (including pharmaceutical)
PG Private Foundation Grants (including internal Penn grants)
O Other

** For program projects, specify whether PI, co-leader or project leader. For center, core and training grants, similarly specify your role.

*** Include any additional, brief information. For clinical trials, for example, specify if multicenter or single center and indicate role of Penn site. Explain any grants in **Other** category.

If space is needed for more entries, use an additional sheet.

Other Contributions to Clinical Research

Name: _____

Department: _____

<u>Name of Trial</u>	<u>Sponsor</u>	<u>Status</u> active/ complete	<u>Role</u> Local P.I., patient recruiter	<u>Name of National PI and Affiliation</u>	<u>No. Patients recruited by candidate</u>	<u>Total N of Study</u>

EXHIBIT B

EXHIBIT B

Exhibit No.	Description
1001	U.S. Patent No. 9,393,208, <i>Method for Delivering a Pharmaceutical Composition to Patient in need thereof</i> (filed Dec. 28, 2015) (issued Jul. 19, 2016)
1004	U.S. Patent No. 6,926,907, <i>Pharmaceutical Compositions for the Coordinated Delivery of NSAIDS</i> (filed May 31, 2002) (issued Aug. 9, 2005)
1005	U.S. Patent No. 8,557,285, <i>Pharmaceutical Compositions for the Coordinated Delivery of NSAIDS</i> (filed Aug. 23, 2011) (issued Oct. 15, 2013)
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Exhibit No.	Description
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1014	Wolfe et al., <i>Acid Suppression: Optimizing Therapy for Gastroduodenal Ulcer Healing, Gastroesophageal Reflux Disease, and Stress-Related Erosive Syndrome</i> , 118 GASTROENTEROLOGY S9 (2000)
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