West Virginia
Medical
JOURNAL

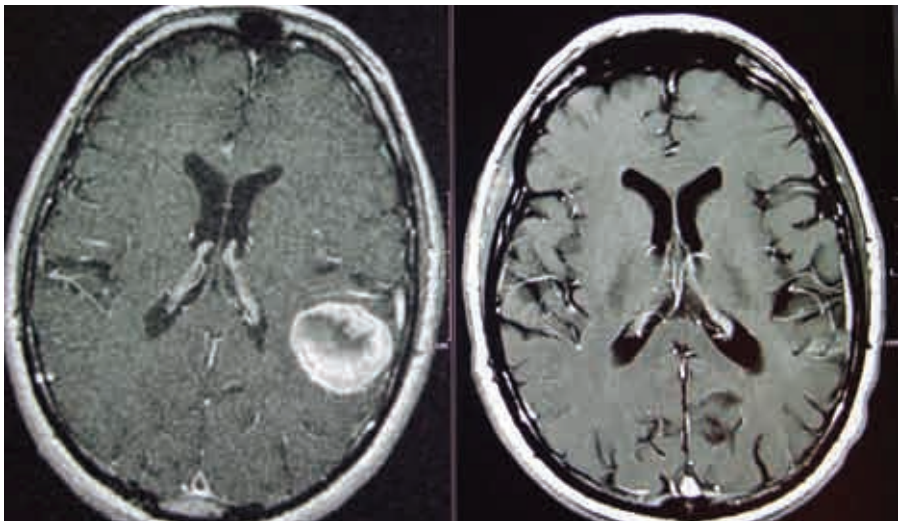
January/February 2014
Vol. 110, No. 1

West Virginia State Medical Association

The Voice of Medicine in West Virginia

Radiation Oncology at the WVU Mary Babb Randolph Cancer Center

Gamma Knife Radiosurgery



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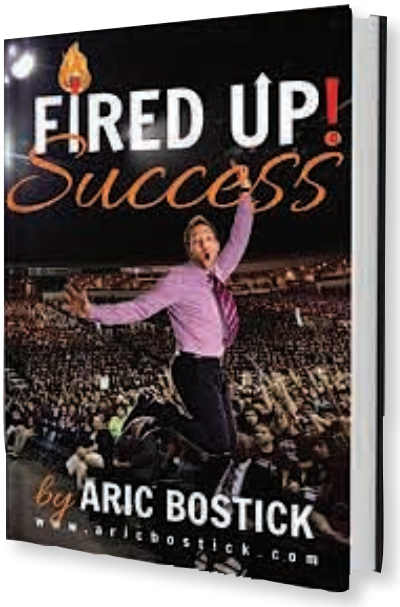

Aric Bostick
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January 24, 2014

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For more information on exhibit opportunities or to register to attend:
wvsma.org/conferences
Karie Sharp 304-925-0342, ext. 12.

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About the cover: Frozen on Cheat Mountain

This weathered tree was frosted in white on the ridge of Cheat Mountain, Pocahontas County, West Virginia. The powdery snow deceptively hid a layer of ice just below the surface which made our ability to stand on this windswept peak tricky.

Photo courtesy of Morehead Photography at www.moreheadphotography.com.

Username: WVSMA

Case Reports, Review, Research & Special Article Features

Upcoming Events

January 24-25
Annual Business Meeting
& Physician Practice Program
Marriott, Charleston, WV

FEATURES

The ***West Virginia Medical Journal*** is published bimonthly by the West Virginia State Medical Association, 4307 MacCorkle Ave., SE, Charleston, WV 25304, under the direction of the Publication Committee. The views expressed in the *Journal* are those of the individual authors and do not necessarily reflect the policies or opinions of the *Journal's* editor, associate editors, the WVSMA and affiliate organizations and their staff. WVSMA Info: PO Box 4106, Charleston, WV 25364 | 1-800-257-4747 or 304-925-0342

President's Message

A Second Look at the AMA

by Reginald McClung, MD
WVSMA President
2013-2014

My first job after finishing my residency program in 1986 was teaching as an assistant professor for the Charleston Division of the WVU Family Medicine residency program. I was a member of the American Medical Association through the University. When I entered private practice in 1990, however, I decided not to continue my AMA membership because, candidly, I did not see the 'return on investment' for my membership dues.

Over the next 15 years, as an actively practicing physician, I've seen the push for more managed care, capitated fees and E&M coding, just to name a few examples. I have witnessed the increased involvement by state and federal bureaucrats in the day-to-day practice of medicine resulting in constraints being placed on the doctor-patient relationship. Like most physicians, I was busy caring for patients and felt excluded from the decision-making processes that have resulted in these constraints. I was frustrated.

I decided to turn my frustrations into action and became more involved in organized medicine. Over the last few years, both at the county medical society and now at the state medical society, I have seen first-hand how we do have a voice and can make a difference.

I also have a new respect and awareness for the work of the AMA. Last month, I attended the AMA's midyear meeting of the House of Delegates in Washington, DC. This was the first AMA meeting I had ever attended. This is also the first year I have been a member of the AMA since 1990. I left the meeting with a new appreciation for the work of the AMA and the level of engagement of physicians from throughout the country. The AMA is the 'house of medicine.'

Critically important issues were discussed, debated, and voted on as Resolutions in the House of Delegates. Our delegates from West Virginia were the chair of our delegation Constantino Amores, MD and Joseph Selby, MD. James Felsen, MD and Hoyt Burdick, MD are our alternate delegates. I attended in my role as your WVSMA president and was credentialed for this meeting as an additional alternate delegate representing the WVSMA. What I found was not only a dedicated and seasoned group of fellow physicians from West Virginia representing us extremely well but the issues being discussed were many of the same topics we are working on here.

Some of the more notable Resolutions adopted were a renewed push and strategy to repeal the Sustainable Growth Rate; require the payment of penalties and interest to physicians who have been wrongly targeted by a RAC audit; pushing for legislation that would allow patients who have had their insurance canceled to be allowed to maintain their current insurance until an acceptable alternative is available and supporting physician-led health teams that promote high quality care in the scope of practice battles being experienced in states throughout the country.

It was interesting to learn that there are two bills pending in Congress that would halt the ICD- 10 implementation set for October 2014. Our AMA and the WVSMA are advocating for these issues and many others that will truly help physicians. As physicians, we must do our part and have our voices heard by contacting our congressional delegation to let them know what we support and what we oppose.

My first-hand experience at the AMA has caused me to give the AMA a second look. The organization and structure is more influential and better positioned to help target solutions to our problems than I realized. The annual dues for our county and state organization and the AMA are minuscule compared to the cost that accompanies the implementation of onerous programs that take time away from our patients for administrative and bureaucratic purposes. I would encourage all physicians to become engaged and join their County Medical Society, West Virginia State Medical Association and the AMA. This is where we can really make a difference as a group, especially with SGR repeal.

Also this fall, I've traveled to many county medical societies to report on the work of the WVSMA and to listen and learn from you on the issues about which you are most concerned to prepare me for the upcoming 2014 legislative session. I have heard loud and clear near unanimous support for maintaining the collaborative arrangements with advanced practice registered nurses for prescribing narcotics and the strong desire to continue to work as a team for high quality patient care. Also, there is strong support for requiring pseudoephedrine products to be made available by prescription only. Both issues will be significant topics during the legislative session.

Please mark your calendar and plan to attend the WVSMA 2014 Physician Practice Conference and Annual Business Meeting January 24 & 25 at the Marriott in Charleston. Visit www.wvsma.org for a complete agenda and meeting information. This is an excellent opportunity for you to learn the latest on the policies and proposals impacting the practice of medicine and have your voice heard!

West Virginia JOURNAL — West Virginia State Medical Association

CALL FOR PAPERS—2014

THEME: West Virginians and Tobacco Cessation: What's Working and What's Not *and* What Now?

WEST VIRGINIA—#2 in the nation for the highest percentage of smokers per capita.
WEST VIRGINIA—#2 in the nation for the highest percentage of deaths related to tobacco use.

Billions of dollars are spent in lost productivity and treatment of tobacco-borne illnesses. Physicians and state government officials are well acquainted with these statistics. Proceeds from tobacco-related litigation have funded cessation efforts throughout the State. For this special issue, the WVMJ seeks review articles and original research papers focused on methods and programs that have produced measurable change.

The *West Virginia Medical Journal* is soliciting articles for this special CME edition to address the following issues:

1. Success of current smoking bans and programs to control second hand exposure – US and WV.
2. Youth tobacco use and success of control efforts – US and WV
3. Update on current use of smoked tobacco and associated disease morbidity – US and WV
4. Update on current use of smokeless tobacco and associated disease morbidity – US and WV
5. Update on current use of tobacco in pregnancy – US and WV
6. Current controversy regarding the use of non-tobacco nicotine delivery devices, e.g., Snus, e-cigarettes - US and WV
7. Impact of education, economics and other political, social and cultural factors on the addictive use of tobacco and other harmful inhaled substances, e.g., marijuana, water pipes.
8. The health care economic consequences of tobacco use in West Virginia in the last decade. Are our efforts saving money?
9. The cost-effectiveness/ comparative effectiveness of various "quit" programs at 6 months, 1 year and 2 years – especially contrasting the use or non-use of pharmacological aides.
10. **Any evidence of any significant decrease in second hand** exposure of children in automobiles and homes by smoking parents or relatives? Are we being aggressive enough in preventing such exposure or do we need to enact measure equivalent to mandatory child car seat use?

Submissions requirements

1) cover letter (include corresponding author's mailing and email address)
2) manuscript (double-spaced)
3) short biography *for each author*
4) three questions and answers pertaining to the manuscript (for CME Post-test Questions)
5) a paragraph stating the objectives of the paper
6) **All figures and photos must be submitted separately as black and white or grayscale .jpg, or .tif files. Files placed in a Word document are** not acceptable.
7) Submissions are limited to 2500 words and five visuals (i.e., 3 tables and 2 figures). Actual figure and table size are left to the discretion of the managing editor as space is available. The word limit includes up to 10 references. Additional references may be abridged, and a notation to contact the author for a full list of references will appear at the end of the article.
8) Reference format follows the same style as *JAMA*—superscript numbers placed AFTER punctuation.
9) Editorial/commentary submissions are limited to 700 words.

Scientific articles should be prepared in accordance with the "*Uniform Requirements for Submission of Manuscripts to Biomedical Journals*." Please go to www.icmje.org for complete details. For additional requirements, please refer to *Manuscript Guidelines* at www.wvsma.org/journal.

For more information or questions about submissions, please contact Angie Lanham, Managing Editor.
angie@wvsma.org / 304.925.0342, ext. 20

DEADLINES:

Manuscript submission:	February 3, 2014
Reviews returned by:	April 1, 2014
Resubmissions Due by:	May 1, 2014
Publication date:	July/August 2014 issue

Guest Editorial

Pseudoephedrine Dilemma

by Brad Henry, MD

As we approach the 2014 legislative session, the prescription status of pseudoephedrine is again being debated. It is imperative the medical community lend its voice to the debate to ensure this decision is based on the facts. This initiative has been side tracked, in the past by a mirage of public outcry and economic shell games that do not take into account the societal costs of methamphetamine abuse and addiction.

Pseudoephedrine is one of two oral decongestants indicated for the temporary relief of nasal congestion associated with allergic rhinitis, sinusitis and upper respiratory infections. It is not a curative medication. It does not reduce the duration of any illness and does not prevent any long term complications. A meta analysis to determine its efficacy suggested a 6 percent decrease in symptoms with one dose and less response with subsequent doses. Studies done in patients with sinusitis failed to show consistent efficacy.

Pseudoephedrine, like most medications, has contraindications and side effects. It is relatively contraindicated in patients with hypertension. It should be used with caution in patients with heart disease, cerebral vascular disease, diabetes, hyperthyroidism, glaucoma, and prostatic hypertrophy. Obviously many individuals should avoid this product due to possible side effects and equivocal benefit. Common side effects include nervousness, insomnia, palpitation, urinary retention and elevations in blood pressure.

Pseudoephedrine is also the only essential ingredient in the manufacturing of methamphetamine. The manufacturing process utilizes toxic and flammable materials. This process endangers those around the manufacturing process and those who are forced to deal with the toxins left behind. This group includes innocent children and our first responders. Recent efforts to limit pseudoephedrine availability have done nothing to curtail the manufacturing of methamphetamine. Lab seizures increased with recent law changes. In states that have enacted "prescription only" laws have seen a dramatic decrease in methamphetamine production.

I had the opportunity to participate with the Kanawha County Drug Task Force. This group consisting of pharmacists, physicians, educators, law enforcement and business representatives, made recommendations for curbing our current drug abuse problems. This group was overwhelmingly in favor of making pseudoephedrine prescription only, except for tamper resistant products. This is the same recommendation provided by the governor's task force.

Arguments against this policy change center around mythical public sentiment against a change. I say mythical, because my practice takes care of approximately 4000 patients and I have yet to hear any concern. The exemption of tamper resistant products still allows for nonprescription access for these products. Another argument concerns the economics of sales and tax revenue losses. This does not take into account the costs of lab clean up, law enforcement costs and the societal costs of addiction. In addition, I would conservatively estimate that over 50 percent of current sales are for illegal activity.

In closing, please inform your patients and allow them to utilize your knowledge to make an informed decision. Pseudoephedrine is a medication whose benefits do not outweigh the societal harm. It is a medication that should be prescription only or done away with completely.

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Electronic Cigarette Smokers... BE WARY!

Electronic cigarettes, also known as e-cigs, sound to some like a good alternative to smoking. Rather than filling the smoker's lungs with tar, toxins and carcinogens, they deliver a vapor of nicotine to satisfy the craving, and without the nasty side effects of cigarette smoking. But remember, the goal for the tobacco industry is not to improve your health but to keep smokers hooked on their addictive products!

E-cigarettes are perceived by many to be a safe alternative to cigarettes and a harmless way to get a 'hit' of nicotine. Millions of people in the U.S. use e-cigs and their use is steadily growing in West Virginia. They have become so popular that the tobacco industry-sponsored a bill defining the products before the 2013 WV Legislature's Regular Session. The bill did not pass.

Annually, almost two billion dollars are spent in West Virginia on health care costs related to cigarette smoking. Any controlled medicine or proven product that could help tobacco smokers quit would be welcomed by public health advocates and residents.

However, e-cigarettes are not a proven prescription for smoking cessation. They may look like a validated product, but the Food Drug Association (FDA) does not yet regulate e-cigarettes so they have not been subjected to the same stringent effectiveness and safety checks as required for foods, medicines and nicotine replacement therapies.

E-cigarettes are a relatively new product so there are no long-term studies on the effects of their use. Research has focused on what is delivered to smokers' lungs in addition to nicotine. In 2009, the FDA analyzed the components of e-cigarette cartridges and identified trace levels of tobacco-specific nitrosamines (TSNAs) – cancer-causing compounds commonly found in higher concentration in traditional cigarettes. The FDA also found diethylene glycol, a component found in antifreeze and brake fluid which is classed as a poison by the World Health Organization. In high quantities, it can cause kidney damage, nerve dysfunction, and respiratory failure.

These drug (nicotine) delivery devices are not tested and regulated like other substances/medicines…

In March 2013, researchers from the University of California examined in detail the aerosol contents of e-cigarettes. They found particles of silver, iron, aluminum and silicate, and nanoparticles of tin, chromium and nickel. The researchers noted that concentrations of these elements "were higher than or equal to the corresponding concentrations in conventional cigarette smoke," and that "many of the elements identified in [e-cigarette] aerosol are known to cause respiratory distress and disease."

Other research has focused on the social effects of introducing a highly addictive drug to a new audience. The *Journal of Adolescent Health* recently identified e-cigarette ad campaigns that disproportionately appeal to the youth market which include "celebrity endorsements, trendy/fashionable imagery, and fruit, candy, and alcohol flavors." The concern is that instead of being an opportunity for current smokers to step down to something less harmful, young people who would not otherwise try cigarettes will start smoking by using e-cigs.

Nicotine is an extremely toxic poison and is sold commercially in the form of a pesticide. Every year, many children go to the emergency room after eating cigarettes or cigarette butts. Sixty milligrams of nicotine (the amount in three or four cigarettes if all of the nicotine were absorbed) will kill an adult, but consuming only one cigarette or another comparable tobacco product is enough to make a toddler severely ill from nicotine poisoning.

We should all remain skeptical of the tobacco and e-cigarette industry, and the lobbyists and marketers of these unregulated products. Again… their goal is to keep folks addicted to these potentially dangerous products.

It is clear that we do not know the long-term risks of using electronic nicotine delivery devices and the potential for harm is significant. Until the same regulations as other nicotine replacements therapies are enacted, e-cigarettes should not be considered a safe alternative.

Bruce W. Adkins, Director
Division of Tobacco Prevention
West Virginia Bureau for Public Health

Intraoperative Utilization of Dexamethasone/ Bupivacaine/Gentamicin Solution in Laparoscopic Assisted Vaginal Hysterectomy and Pain Management

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Acknowledgements

We would like to give special acknowledgement to Daniel S. Foster, MD, Physician Advisor, Charleston Area Medical Center and Clinical Professor of Surgery, WVU School of Medicine, Charleston Division who developed the DMG solution.

Abstract

Adequately controlling pain is a key component of postoperative care after a hysterectomy. The purpose of this study was to evaluate the effects of two intraperitoneal (IP) administered solutions during Laparoscopic Assisted Vaginal Hysterectomy (LAVH), on the amount of postoperative self-administered morphine. In this prospective, randomized, double blinded study, twenty women undergoing LAVH randomly distributed to two treatment groups: (1) 100 ml dexamethasone/ bupivacaine/ gentamicin (DMG) solution: 60 cc injected vaginally at cuff and 40 cc placed topically via laparoscopy over intra-peritoneal post-operative surfaces (IP) and 5 ml bupivacaine or 5 ml saline injected at the laparoscopic incision sites, (2) 100 ml saline solution: 60 cc injected vaginally at cuff and 40 cc placed topically via laparoscopy over intra-peritoneal post-operative surfaces (IP) and 5 ml bupivacaine or 5 ml saline injected at the laparoscopic incision sites. The amount of morphine utilized by the patients was documented from their patient controlled anesthesia (PCA) pump. Patient parameters recorded included perceived pain score, height, weight, age, race, reason for surgery, pre-surgery medications, American Society of Anesthesiologist (ASA) classification, length of the surgery and estimated blood loss (EBL). Age, EBL, length of surgery, and ASA classification were not significantly different between the groups. The postoperative amount of morphine utilized was higher at 4 ($p = .02$) and 16 hours ($p = .04$) and tended to be higher at 8, 12 hours ($p = .06$), and 24 hours ($p = .09$) in the saline IP group. Overall the saline IP group (n = 10) used (median; range) 21.5; 8-82 mg of morphine while the DMG IP group (n=10) used 10.5; 1-23 mg. No participants reported a postoperative infection. This study demonstrates that intraoperative utilization of DMG solution during LAVH enables patients clinically to have less perceived pain and subsequently tend to utilize about half the amount of morphine, helping to avoid the potential harmful side effects and adverse reactions of morphine.

Introduction

Pain relief is an important component of postoperative care. Inadequately controlled postoperative pain may result in hypertension, tachycardia, ileus, impaired respiratory effort and delayed ambulation.[1] Following major surgery, morbidity is increased and patient discharge from the hospital is often delayed with inadequately controlled pain. A solution comprised of dexamethasone, bupivacaine (generic form), and gentamicin (DMG) is being utilized intraoperatively by some gynecologists in Charleston, West Virginia for Laparoscopic Assisted Vaginal Hysterectomy (LAVH) procedures. DMG has been utilized in some abdominal hysterectomies by injecting the solution into the infundibular, round and uterosacral ligaments prior to closing the fascia. To date, there have been no recorded complications with the use of DMG. Clinical observation of these patients indicates a reduction of self-administered morphine, followed by more rapid ambulation leading to a decreased hospital stay. Currently, there are no published studies to validate and confirm such observations.

The primary purpose of the study was to explore if patients who receive DMG solution during LAVH use less morphine patient controlled anesthesis (PCA). The secondary objectives were to compare DMG and saline groups for, 1) indicators of pain (i.e., blood pressure, heart rate, and patient perceived pain), 2) the potential effects of patient age, BMI, race, American Society of Anesthesiology (ASA) classification, anesthesia factors, estimated blood loss (EBL), infection rate and length of surgery on patient pain perception and morphine use.

Methods

This prospective, randomized, double-blinded study was designed to evaluate the effects of four different groups of solutions

administered intraoperatively during LAVH on patients at a tertiary medical center. Two 100 ml intraperitoneal (IP) solutions and two 5 ml incision site solutions were distributed into four treatment groups which included; 1) saline IP with saline at the incision site, 2) saline IP with bupivacaine at the incision site, 3) DMG IP with bupivacaine at the incision site and 4) DMG IP and saline at the incision site. DMG specifically is comprised of 5 ml of dexamethasone (4mg/ml); 50 ml of bupivacaine (bupivacaine 0.25% with epinephrine 1:200,000); and 4 ml of Gentamicin (40 mg/ml in saline). Suboptimal enrollment numbers spurred analysis of differences between the injection site solutions. Incision site solution groups were combined into their respective IP groups when no significant differences were found. Thus, the following groups were analyzed 1) DMG IP with bupivacaine or saline at the incision site, 2) saline IP with bupivacaine or saline at the incision site.

The individual components of DMG are FDA-approved for the treatment of inflammation and swelling, pain, and risk of infection, respectively. Recognizing that dexamethasone may decrease the immune response in contact tissue, the investigators added an antibiotic. Gentamicin was chosen over other antibiotics because of its gram negative coverage, as gram positive coverage is generally recommended preoperatively. Thus, no FDA IND was required for this investigation. This study was approved by the Institutional Review Board and informed consents were obtained.

Patients were class 1 and 2 according to American Society of Anesthesiologist (ASA) classification. Exclusion criteria included allergies to any of the components of DMG or morphine, history of chronic pain, or use of opioids to control pain preoperatively. No patients were diabetic, had renal insufficiency, or underwent additional procedures simultaneously. Intraoperative parameters included EBL and the total time of the procedure.

SAS (Cary, NC)[2] was used to randomly assign the two IP administered solutions and two incision site administered solutions within the predetermined number of patients. The pharmacy was given a randomization schedule for each sequential patient. As patients were consented they were assigned the solutions which appeared next in the randomization schedule. Physicians and patients were blinded to the composition of the solutions. Because the solutions had different physical appearances, that would be noticeable for the physicians, the solutions were shrouded by the pharmacist who covered the syringe so that the solution was not visible.

All patients were anesthetized utilizing the same induction and maintenance medications, including Diprovan, N2O, and Isoflurane. Fentanyl and Versed were also given to some patients, especially immediately before endotracheal intubation. The LAVH was performed in the usual fashion with an approximate 10 mm vertical infraumbilical skin incision and placement of the trocar by an open technique. Two other skin incisions were made for trocar placement, one in each lower quadrant. The Klepinger Bipolar was utilized for ligating either the infundibular or utero-ovarian ligament. Transection was accomplished with laparoscopic scissors and the uterine vessels skeletonized. The remainder of the procedure was performed vaginally. The peritoneum was closed in a purse string fashion. Many of the gynecologists performing the LAVHs for this study were trained by the same residency program (WVU-Charleston) and thus share a similar technique. Once the vaginal cuff was closed, in an interrupted vertical mattress fashion utilizing chromic or vicryl suture, approximately 60 ml of test solution was injected into the cuff, primarily targeting the uterosacral ligaments. Inspection of the intra-abdominal cavity by laparoscopy was performed to confirm hemostasis. The IP cavity was irrigated with saline and 40 ml of test solution was placed topically onto the post-hysterectomy closure site. Upon reapproximating the skin at the umbilicus and lower quadrants on either side, 5 ml of either bupivacaine or saline was instilled into the incisional trocar sites.

Once the patient was admitted to the recovery room, a morphine PCA pump was ordered. Parameters on all pumps included no background infusion, 1 mg demand dose, an every 6 min lockout time and maximum dose/hr of 10 mg. Patients were asked by the nurse to view a numerical and faces pain scale with '0' being anchored to 'no pain' and '10' being anchored to 'worse possible pain' at the prescribed time intervals. The nurse entered the pain score on the data collection form.

Pain score along with heart rate, blood pressure, and amount of morphine given, were assessed at the time the patient entered the recovery room, at 30 minutes, at 1 hour, once admitted to the ward and at 4-hour intervals until 24 hours postoperatively. Any additional postoperative pain medications given were recorded. From recovery, patients were placed on a clear liquid diet to be advanced to a regular diet. The PCA pump was removed the morning of postoperative day one if liquids were tolerated well by the patient. Acetaminophen/oxycodone (500/5 mg) was given on an "as needed" basis, once the morphine PCA pump was removed. After discharge, patients were contacted to discern if they had

Figure 1. *Comparison of cumulative PCA morphine (mg) use between DMG and saline groups.*

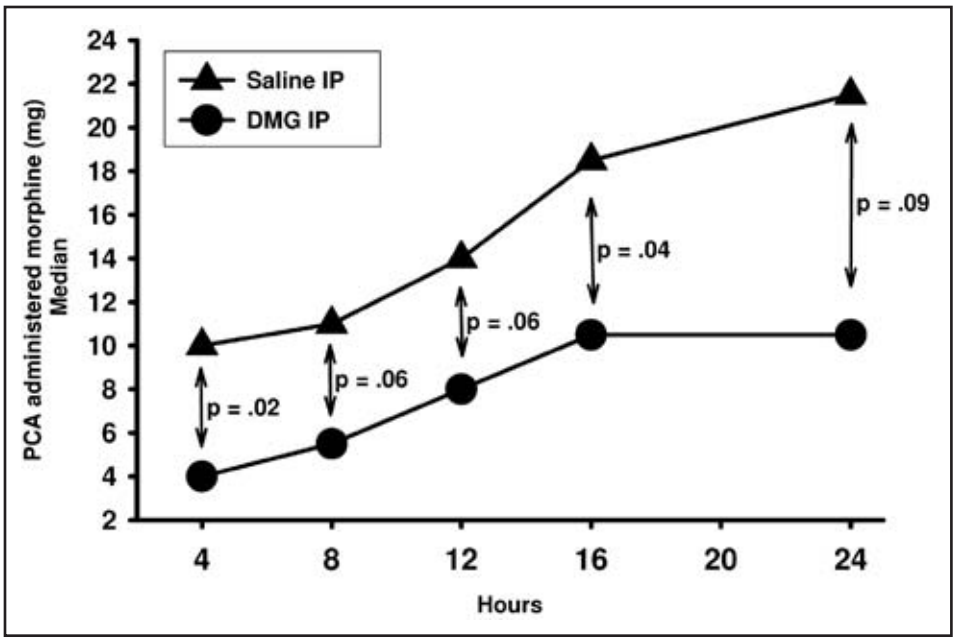
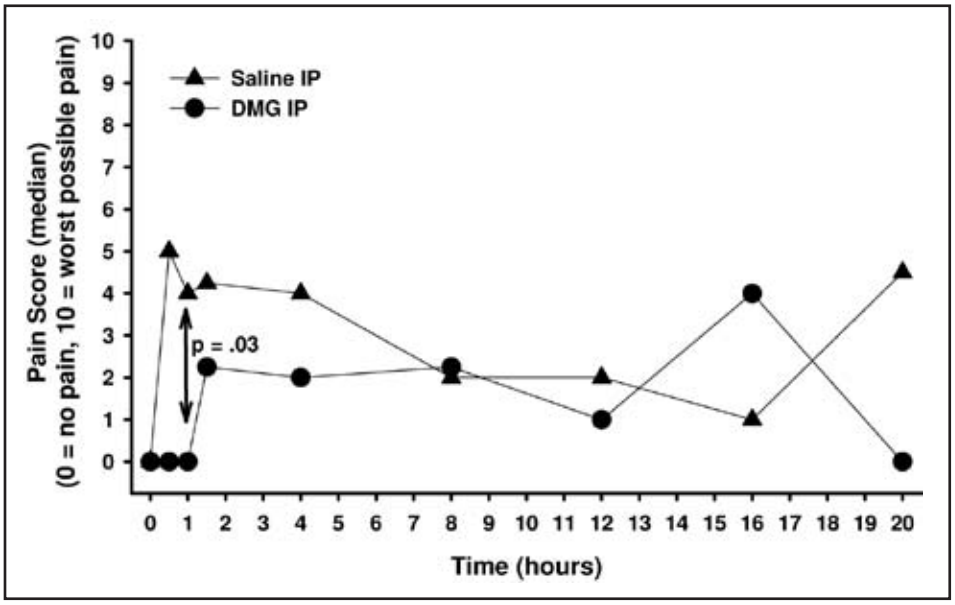


Figure 2. *Comparison of DMG and saline groups, patient median perceived pain scores over time.*



been treated for any infections and to allow them to rate their feelings for the level of postoperative pain control they were given.

Analysis of the data to determine differences between the treatment groups was accomplished utilizing SAS (Cary, NC).[2] The Shapiro-Wilk test was used to determine the normality of the data. Normal data is reported as means ± standard deviation and the 95% CI while skewed data is reported as median and range. Differences between treatment groups were considered significant at $p < 0.05$. Chi square and Fisher's exact tests were utilized for categorical variables and the general linear model, t-test and Wilcoxon rank sum test were used to detect differences in continuous variables.

Results

Twenty patients, ages 40.9 ± 7.8 years with a range of 28 to 59 years, requiring a hysterectomy for benign reasons met the inclusion/exclusion criteria and were randomized into the study groups. The cumulative median amount of morphine utilized in each group is presented in Figure 1. At four hours there was a significant difference between the two groups, (p = .02), at 8 and 12 hours the trend was for higher morphine use in the saline group (p = .06), with a significant difference once again at 16 hours (p = .04) which by 24 hours trended toward higher morphine use in the saline group (p = .09). Cumulatively the saline IP patients utilized a median of 21.5 (range: 8-82) mg of morphine while the DMG group self-administered a median of only 10.5 (range: 1-23) mg in the 24 hours post surgery. While in the recovery room, 25% and in the ward, 30% of the patients in the saline group required additional pain medication beyond their PCA pump, while no patients in the DMG group required extra pain medication.

The patient perceived pain scale is shown in Figure 2. Though patients were allowed self-administration of morphine as needed, the pain scale for the saline group trended higher, for the first 4 hours, than the DMG group. After 60 minutes in the recovery room [(DMG (median = 0; range: 0-6) and saline (median = 4; range: 0-8)] the saline group had a significantly (p = .03) higher pain score. There was no difference between the groups in the proportion of patients out of the normal heart rate range between 60 and 100. Using > 140 as the upper cut off for the diastolic pressure and > 90 for the upper cut off for the systolic

pressure, there was no difference in the proportion of patients between the groups who exceed this measure. Blood pressure for both groups also remained in a clinically normal range.

None of the demographic or operative variables were statistically significant between the DMG and saline groups (Table 1). The mean age was 42.0 ± 9.0 (95% CI: 35.53-48.47) and 39.7 ± 6.6 (95% CI: 35.02-44.39) for the DMG and saline groups, respectively. The mean BMI for the DMG group was 26.4 ± 5.6 (95% CI: 22.39-30.40) while the mean BMI for the saline group was 29.5 ± 5.0 (95% CI: 25.94-33.14). Procedure time and EBL were also not statistically significant between the treatment groups. In addition, no differences were observed in the ASA class or the time from the end of the procedure to hospital discharge. No postoperative infections or complications were noted by any of the discharged study patients. Patient satisfaction with their postoperative pain control according to the follow-up questionnaire was not statistically different between groups with all patients reporting either excellent or good in both groups.

Discussion

Our findings confirm the clinical observation by physicians at WVU-Charleston Division regarding utilization of DMG during LAVH in reducing postoperative pain. After 60 minutes in the recovery room, the DMG group had a significantly lower pain score than the saline group. The amount of morphine was significantly lower at 4 and 16 hours and tended to be lower at 8, 12, and 24 hours for the DMG group. Overall the saline group used twice as much morphine. By minimizing the amount of morphine utilized for postoperative pain, patients can avoid its potential harmful side effects and adverse reactions such as respiratory depression and potential withdrawal symptoms. Our faculty have been so impressed with the results of the DMG solution, both documented here and through personal experience, that most physicians are no longer prescribing PCA pumps after LAVH. The trend is to primarily use Ketorolac IV, morphine IV on an as needed basis, and an oral Oxycodone/Tylenol combination when tolerated by the patient.

Study limitations include a limited sample size. Patient PCA lockout which required additional medication in 30% of the saline group were unexpected and may have decrease the amount of morphine used in the next PCA

Table 1. Univariate comparison of study variables between DMG and saline.

			p value
Age (mean ± std dev) (95% CI)			
DMG	42.00 ± 9.04	35.53-48.47	.52
Saline	39.70 ± 6.55	35.02-44.39	
BMI (mean ± std dev) (95% CI)			
DMG	26.40 ± 5.60	22.39-30.40	.20
Saline	29.54 ± 5.03	25.94-33.14	
Surgery Time (hr) (median and range)			
DMG	1.50	1.13-2.63	.67
Saline	1.68	1.27-2.27	
Estimated blood loss (mean ± std dev) (95% CI)			
DMG	147.5 ± 78.57	91.29-203.71	.23
Saline	108.0 ± 61.70	63.86-152.14	
Surgery to discharge (hr) (mean ± std dev) (95% CI)			
DMG	25.83 ± 2.96	23.71-27.94	.88
Saline	26.05 ± 3.36	23.65-28.45	
ASA Classification (median and range)			
DMG	2.00	1.0-2.0	.63
Saline	2.00	1.0-2.0	

cycle. Though a similar procedure was performed on all patients' slight surgical differences and individuals' tolerance and perception of pain could not be documented. This is the first study to evaluate the effects of IP administered DMG solutions during LAVH, on the amount of self-administered morphine. There are a few studies that evaluated the postoperative pain relief after application of bupivacaine during gynecological laparoscopy.[3-5] Cook and Lambert, in their prospective, double-blind study (n=60) investigated the effects of bupivacaine applied to the abdominal wall and fallopian tubes during tubal ligation and reported a lower but not significant reduction in mean pain scores when compared to the group with no local anesthetic.[3] A double-blind study by Thompson et al. compared 4 groups of women undergoing laparoscopic tubal sterilization (n= 200) in which the mesosalpinx was infiltrated with (Group 1) lidocaine (Group 2) bupivacaine (Group 3) normal saline solution and (Group 4) no infiltration.[3] The bupivacaine group had significantly lower self-assessed pain levels up to 24 hours postsurgery. In a more recent prospective, double-blind randomized controlled trial, Chou et al. evaluated the efficacy of intraoperative infusion of bupivacaine solution for the relief of pain after operative gynecologic laparoscopy.[4] Three groups were identified: Group A (n=30) postoperative intraperitoneal infusion of a mixture of 10 ml of 0.5% bupivacaine (50 mg) with epinephrine (1:500) in 40ml Ringer's lactated solution, Group B (n=30) the same mixture solution infused IP pre- and post- hysterectomy (total 100 mg bupivacaine), and Group C (n=31) placebo. There was significant reduction in the intensity of abdominal visceral pain but not shoulder and abdominal parietal pain 24 hours following surgery.

Other laparoscopic studies measured the effects of bupivacaine not administered intraoperatively. One such study, a randomized, double-blind placebo controlled study of 120 patients undergoing laparoscopic cholecystectomy examined the IP application of bupivacaine; however, this study evaluated if a block before or after surgery was most efficacious. Pain intensity and analgesic consumption were both lower for patients treated prior to as compared to following surgery.[6] Other studies[7-9] infiltrated the agents prior to surgery and concluded that local anesthetic infiltration with bupivacaine reduced postoperative pain.

Studies on the analgesic effects of dexamethasone on surgical patients undergoing laparoscopic cholecystectomy included an epidural administration during surgery [10] and IV administration prior to surgery.[11] Both report a reduction in pain and the epidural study reported a reduction in morphine consumption.[10]

Outside of laparoscopic surgeries, some studies examined both dexamethasone (via IV administration during or prior to surgery) and bupivacaine (via spinal, infiltration or injection) and reported a reduction in postoperative pain.[12-14] Another study concluded shorter time for first feeding and length of stay.[15] Finally a study of bupivacaine and dexamethasone administered prior to or following surgeries, found no better pain control with preincisional or postincisional infiltration with bupivacaine.[16] One found lower pain scores and reduction in morphine use with bupivacaine injected as a paracervical block before vaginal hysterectomy[17] and another when compared to Tramadol, found significant prolonged analgesia.[18]

While these studies corroborate the prolonged analgesic effect of dexamethasone and bupivacaine, only a few studies utilized both of these agents. In addition, the present study is novel because

of the way in which these agents were administered both intraoperatively and IP. Most of the studies we examined administered dexamethasone as an IV and several studies only examined presurgical or postsurgical administration.

Conclusions

The present study demonstrated that a novel solution of DMG during LAVH might be of help in diminishing perceived postoperative pain and subsequently self-administering less morphine for pain control. A study with an even larger population might statistically amplify these differences. The results of our study indicate the potential use of DMG during surgery to decrease the amount of morphine in the early hours post surgery and overall decrease by half the amount of self-administered morphine in the first 24 hours post surgery and thus help impede the harmful side effects and adverse reactions of morphine.

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Proton Pump Inhibitor Prescribing and Costs in a Large Outpatient Clinic

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Abstract

Concerns have been raised regarding potential adverse effects and high costs of proton pump inhibitors (PPIs). Our objective was to assess issues of PPI utilization and expense in a large outpatient clinic population.

METHODS: Two hundred-fifty-nine outpatient records were reviewed regarding PPI prescribing and indications during 2009. A cost analysis was performed to project cost differences if histamine-2 receptor antagonists (H2RAs) were used as an alternative to PPIs in appropriate clinical situations.

RESULTS: Eighty-three (32.0%) were taking PPIs. Problem-listed gastroesophageal reflux disease (GERD) was the primary diagnosis in 69 (83.1%) of patients on PPIs. GERD was not apparent by documented history and/or endoscopy in 46.3% of problem-listed GERD patients. Symptom severity had been documented in only 36.2%. Cost analysis projected substantial savings if H2RAs had been used initially for mild to moderate symptoms.

CONCLUSIONS: Outpatient PPI prescribing indications are not well documented and PPI use is probably excessive. H2RA therapy is likely underutilized.

Introduction

Proton pump inhibitors are among the most widely prescribed medications in the US and worldwide. These agents have been used as treatment in a variety of acid related disorders. However, their use appears to have become excessive in many settings.[1-6] PPIs are the third most frequently prescribed drugs in the US, with 113.4 million prescriptions per year and $13.9 billion in sales in 2009.[7] Since introduction of the first PPI (omeprazole) in 1989, these agents were found to be very effective in managing acid-peptic disorders, particularly GERD, and eventually replaced H2RAs as first-line anti-secretory treatment. PPIs supplanted H2RAs in the treatment of chronic dyspepsia, peptic ulcer disease (as maintenance or as part of Helicobacter pylori eradication regimens), hypersecretory states (Zollinger – Ellison syndrome) and gastroprotection in patients on non-steroidal anti-inflammatory drugs (NSAIDs) and/or low dose aspirin (ASA). Nonetheless, because of their high costs and concerns about long-term safety (e.g. osteoporosis/fracture risk,[8-11] increased infection risk,[12-17] possible drug interactions[18,19] and hypomagnesemia[20]), this class of pharmaceutical has come under increasing scrutiny. It has become apparent that these agents may be often over-prescribed for minimal or unclear indications, but US outpatient data has been sparse. We sought to evaluate the appropriateness and costs regarding PPI utilization in our outpatient clinic population, and assess H2RA step-up therapy as a viable alternative.

Methods

Setting: This was a retrospective review of clinic patient records (EMR not on-line at time of study) from the Charleston Area Medical Center (CAMC) Outpatient Care Clinic, Charleston, WV, which serves as the teaching clinic for the WVU Internal Medicine Department. Two-hundred fifty-nine records of continuity patients who visited the clinic at least once from January 1, 2009, to December 31, 2009, were reviewed.

Patients: All patients were 18 years or older. From a computer generated list of patients seen in 2009, only general medicine patients were included for review. Those who were followed by a specialist (gastroenterologist, geriatrician, cardiologist, urologist, surgeon, etc.) were excluded, as so doing would provide a more accurate estimation of primary care prescribing. Additionally, records of patients having less than 3 years follow-up in the clinic were excluded. The following data were extracted from the outpatient records: patient demographics (age, gender, race and co-morbidities), the percentage of patients on PPIs, source of prescription (initiated in hospital or as outpatient), indication for usage (historical and/or endoscopic), and duration of treatment. Concomitant use of NSAIDs, aspirin, and clopidogrel was determined. For patients undergoing esophagogastroduodenoscopy (EGD), the procedure record was reviewed.

Data Analysis

The data analysis was performed using SPSS Statistics 17.0. Basic descriptive statistics, such as means and standard deviations for continuous variables and proportions and frequencies for categorical variables, were used to analyze patient and prescribing characteristics.

Table 1. Patients (83) prescribed proton pump inhibitors (PPIs) in 2009.

	Frequency	Percent
Esomeprazole (Nexium)	38	45.8%
Cost per month – no generic: $173		
Mean number of months patients were on PPI for 2009	9.8±3.5	
Lansoprazole (Prevacid)	23	27.7%
Cost per month – generic: $100		
Mean number of months patients were on PPI for 2009	9±3.7	
Omeprazole (Prilosec)	18	21.7%
Cost per month – generic: $30		
Mean number of months patients were on PPI for 2009	10.1±3.3	
Pantoprazole (Protonix)	8	9.6%
Cost per month - $110		
Mean number of months patients were on PPI for 2009	6.8±4.4	
Rabeprazole (Aciphex)	8	9.6%
Cost per month – no generic: $195		
Mean number of months patients were on PPI for 2009	8.2+4.2	
Dexlansoprazole (Dexilant)	1	1.2%
Cost per month – no generic: $128		
Mean number of months the patient was on PPI for 2009	12	

Cost Analysis

There were 11,460 patient visits in 2009 at an average of four visits per year per patient, indicating that approximately 2865 patients were followed that year. Thirty-two percent of study patients were on PPIs. Cost analysis was therefore based on 917 patients. Cost of PPI use in the year 2009 was calculated considerate of brands prescribed, generics available during this time, costs per month,[21,22] and average months used (see Table 1). Projected H2RA cost was based on ranitidine 150 mg twice daily (at $12 per month) for 9.3 months (comparable to time of PPI use in 2009) as initial anti-secretory agent (instead of PPI) in those with mild to moderate heartburn/UGI symptoms (estimated at 40% of total based on our data and others),[23-25] and estimated response rate of 55%.[26-28] Cost was also calculated for H2RA failures at 3 months, that would require subsequent PPI coverage (averaged PPI cost $125/month x 6.3 months), and this sum was subtracted from overall projected cost savings.

Ethical Considerations

This study is based on retrospective chart review of all patients who met inclusion/exclusion criteria. Since this study is a historical cohort review, it did not provide any direct, immediate benefit or harm to the subjects involved. During data collection, the medical record number was linked to an anonymous patient number so data could be extracted without compromising patient privacy. The principal investigator kept all data in a password protected database. Only researchers involved in this investigation had access to the locked protected database, ensuring that all patient information was kept confidential.

Results

A total of 259 patient records were reviewed. The mean patient age was 52.6 years (range 19-99), 144 (55.6%) were female, and 194 (74.9%) were Caucasian. Our patients were insured predominantly by Medicaid (35.9%) and Medicare (32.8%). The most prevalent co-morbidities were hypertension (67.6%), diabetes (36.3%), and coronary artery disease (20.1%). Eighty-three patients were prescribed PPIs in 2009 (32.0%), with a mean treatment duration of 9.3 months, Figure 1. Four (1.5%) patients were on both a PPI and an H2RA. Sixteen patients (19.3%) received more than one PPI in sequence during 2009. A breakdown of all PPIs prescribed is provided in Table 1. Esomeprazole (Nexium) was prescribed for almost half the cohort (45.7%). Original source of PPI prescription was unknown in 59%, from the outpatient clinic in 28.4%, from hospital in 6.8%, and OTC in 4.5%.

Problem lists of clinic charts were reviewed for past and present

Figure 1. *Anti-secretory prescribing in 2009. PPI = proton pump inhibitor, H2RA = histamine-2 receptor antagonist.*

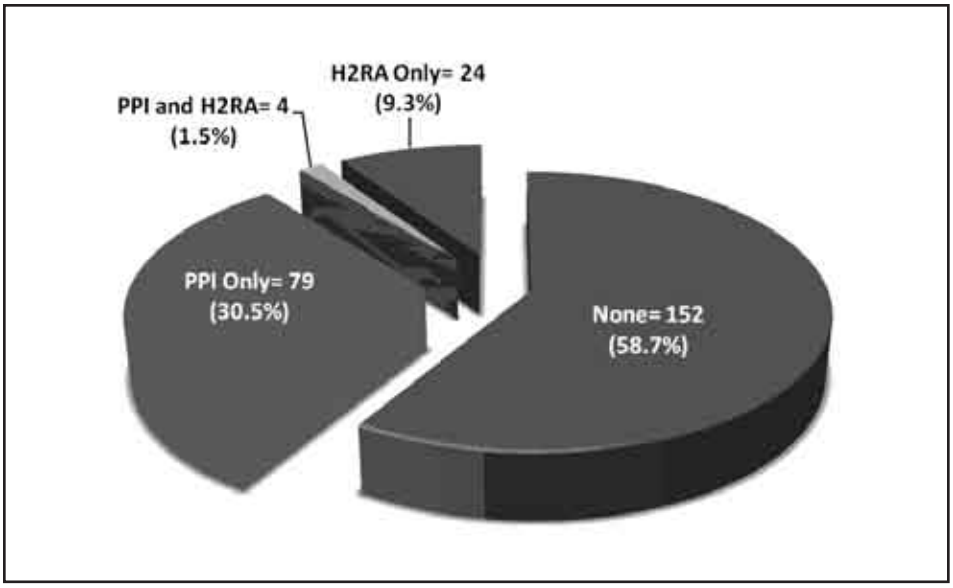
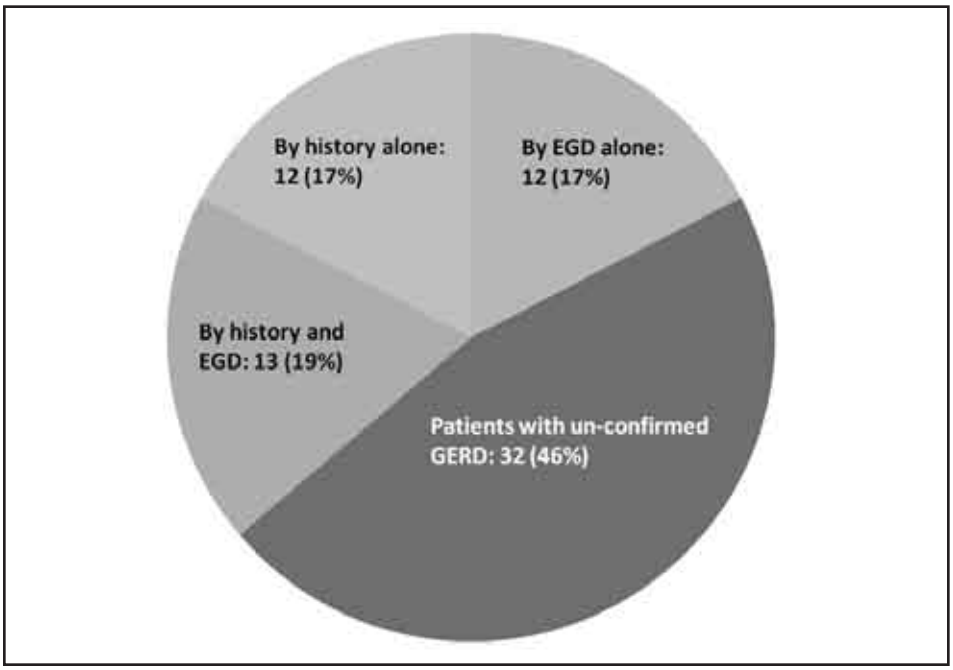


Figure 2: *GERD (on problem list) confirmed by history and/or endoscopy. GERD = gastroesophageal reflux disease; EGD = esophagogastroduodenoscopy.*



diagnoses. In the 83 patients on PPIs, evident UGI diagnoses were recorded. "GERD", "abdominal pain", and "gastritis" were the 3 most prevalent; 69 (83.1%), 27 (32.5%), and 16 (19.3%) respectively. "Chest pain" was listed in 9 (10.8%), but there was no indication as to etiology considered. Progress notes of patients with problem-listed UGI diagnoses were then assessed for corresponding documentation by history. "Burning in chest" was reported in 25 of the 69 problem-listed GERD patients (36.2%). "Abdominal pain" and "nausea" were listed in 37 (44.5%) and 20 (24.0%) of the 83 PPI patients. Of PPI patients listed as having GERD, 25 (36.2%) had documentation of symptom severity (e.g. daily, nocturnal, "severe"). Twelve (48.0%) had mild to moderate symptoms. Thirty-eight of the 69 listed GERD patients on PPIs had prior EGD within 2 years of the study, revealing reflux esophagitis in 25 (36.2%). Of endoscopic esophagitis, non-erosive was present in 18 (75%). Concomitant non-erosive gastritis was reported in 13 (18.8%), and gastric or duodenal ulcer in 4 (5.7%). By documented history and/or endoscopy, 46.3% of patients (with problem-listed GERD) had no clinical confirmation of GERD, Figure 2. In PPI patients, frequency of NSAID use, low-dose ASA use, and clopidogrel was 20 (24.0%), 42 (51.6%), and 8 (9.6%) respectively. There was no recorded evidence of PPI tapering to lower dose or discontinuation, nor was there documentation of PPI prescription use for "gastroprotection".

Cost analysis

An estimated $1,506,936 was spent on PPIs during 2009 in our outpatient clinic. Sixty-nine of the 83 PPI patients (83.1%) had problem-listed GERD (cost of treatment approximately $1,250,756). An estimated 40%[23-25] of these patients would be expected to have mild to moderate GERD symptoms. If H2RA treatment were then utilized instead of PPI, up to $358,488 in cost savings might be expected per year in our clinic.

Study Limitations

Our intent was to assess a one year period of prescribing characteristics and documentation of rationale for treatment. We did not review records prior to 2009. Thus, we may have included supposed poorly documented cases who actually had previously well detailed onset and

severity of symptoms appropriately managed with PPIs. The high percentage of unknown prescription source probably relates in part to data obtained from 2009 only. With regard to cost-analysis, the estimated percentage (40%) of GERD patients expected to have mild to moderate symptoms is based on sparse data, but we feel our estimate is reasonable and conservative. Indications for procedures and interpretations may vary between operators. Finally, this was a retrospective study with known inherent limitations.

Discussion

PPIs are clearly effective in the management of UGI disorders, particularly GERD. Current consensus guidelines state: "empirical PPI therapy is appropriate for uncomplicated heartburn," and recommends once-daily PPI as the initial anti-secretory category of choice.[29,30] Yet there are increasing concerns regarding adverse effects of PPIs, which include increased incidence of Clostridium difficile infection and recurrence,[14,15] pneumonia,[13,17] gastroenteritis,[12] spontaneous bacterial peritonitis,[16] fractures,[8-11] vitamin and mineral deficiencies,[20] drug interactions[18,19] and some concern for increased cardiovascular event rate.[7,20] In addition, due to the expense of PPIs, excessive and unnecessary use may contribute significantly to healthcare costs.

In view of these concerns, we sought to assess the magnitude and indications for PPI prescribing in our large outpatient facility, focusing on GERD. One-third of clinic patients were prescribed PPIs, most having no documentation as to why. In addition, although PPI therapy may have been appropriate for gastroprotection in given patients, there was no documentation for such use. Finally, despite guidelines, we found no recorded evidence of efforts to taper or withdraw PPI therapy once symptom control was established. These findings appear to be in line with other studies suggesting poorly documented and excessive PPI utilization.[3-6] Recently, alternative approaches to PPI treatment have been suggested, including a return to initial and long-term H-2RA use for many patients.[31]

Emphasis then should be placed on better primary caregiver documentation of UGI complaints coupled with continued review of indications and approaches to PPI use. Although PPIs are known to be more effective in the treatment of erosive esophagitis and severe GERD symptoms compared with H2RAs (86% compared with

52%),[29,30] uncomplicated less severe GERD/UGI disorders may be quite adequately managed with initial H2RA use.[26,28] By consensus, GERD has been defined as "a condition which develops when the reflux of stomach contents causes troublesome symptoms and/or complications," without need for endoscopic or other evaluation unless presence of alarm signs.[32] Thus, for mild to moderately "troublesome symptoms", it is our impression that H2RAs may be preferable initial treatment. While the definition of mild or moderate GERD may be unclear, we identify such symptoms as chest/epigastric burning, which is not daily or nocturnal, and not described as "severe."

If, however, PPI therapy is elected based on patient evaluation, low dose PPI should be considered initially as efficacy has been confirmed, and dose titrated up or down to provide satisfactory symptom control.[30] Low doses of PPIs include esomeprazole 20 mg, omeprazole 20 mg, lansoprazole 15 mg, and pantoprazole 20 mg, per AGA technical review.[30] In those who have attained complete symptom control after three months, step-down therapy to on-demand or complete discontinuation of PPIs may be successful in over 50% of patients.[33,34] By our experience and others, this approach is not commonly undertaken.[1,4] We now attempt to step down incrementally, e.g. to half original daily dose for 2 weeks, then to qod dosing and lower, using prn H2RA for breakthrough.[35] Otherwise, acid rebound may complicate tapering. In a study of healthy volunteers placed on daily pantoprazole for 4 weeks, 44% experienced dyspeptic symptoms (vs. 9% of those on placebo) following abrupt discontinuation.[36] Without diligent tapering, excessive use of PPIs may be perpetuated. Finally, gastroprotection in patients on low-dose ASA and/or NSAIDs may be comparably managed on high dose H2RA such as famotidine 80 mg bid, or a PPI.[37] Elderly patients, those on anticoagulation or anti-platelet therapy, and those with a past history of ulcer, dyspepsia or UGI bleeding should be considered for gastroprotection.

Finally, PPI costs remain an important issue regarding PPI utilization.[4] With multiple currently available PPIs including generics, pharmacy benefit managers are able to effectively negotiate for discounts and rebates, possibly allowing for ultimate cost savings to the system.[38] Since there are "no major differences in efficacy or adverse effects" between PPIs[29], the clinician should not bear concern regarding required PPI interchanges. Nonetheless, without improved PPI dosing stewardship by caregivers, overall usage is unlikely to be curtailed. The clinician's role then continues to involve diligence regarding initial choice of anti-secretory agent, initial lowest possible dosing, and step-down approaches as tolerated. Further, in examination of dyspepsia, the DIAMOND study reported improved cost effectiveness using the step-up approach (initial H2RA), with equal efficacy.[39] In our clinic alone, projected medical system yearly savings by step-up anti-secretory therapy (using initial H2RA) may amount to several hundred thousand dollars.

Conclusion

Primary care providers often fail to adequately document UGI/GERD symptoms. Subsequently PPIs appear to be prescribed excessively. Quality improvement initiatives should emphasize detailed symptom documentation and continual review of PPI indications and step-down approaches. H2RAs may provide satisfactory control in mild to moderate GERD. Judicious use of anti-secretory agents on a large scale may result in a decrease in adverse medication events and substantial cost savings to the medical system.

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Datura Stramonium Toxicity Mistakenly Diagnosed as "Bath Salt" Intoxication: A Case Report

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Abstract

Datura stramonium is a wildly growing plant found in West Virginia and in temperate regions throughout the world that is sometimes abused by young people because of its hallucinogenic effects. *D. Stramonium* overdose produces a classic anticholinergic syndrome that can lead to severe and sometimes fatal complications. Poisoning can be confused with more commonly seen drugs of abuse, particularly synthetic drugs which are not revealed by standard drug screens. Misdiagnosis can delay appropriate care and potentially lead to poorer outcomes. We present a case of a 15 year-old male with acute *D. Stramonium* poisoning initially misdiagnosed with bath salt intoxication who required treatment by two Emergency Departments, a Pediatric ICU, and who was ultimately transferred to an inpatient psychiatric facility. We then discuss differential diagnosis of *D. Stramonium* poisoning and bath salt intoxication and present management strategies for the two conditions.

Introduction

Datura stramonium is a wildly growing plant found in West Virginia and temperate regions throughout the world that is sometimes abused by teens and young adults because of its hallucinogenic effects. Intoxication occurs due to the presence of belladonna alkaloids - atropine, scopolamine and hyoscyamine - throughout all structures of the plant.[1] The plant is dangerous in part because the amount required to produce intoxication is near the amount needed for overdose. Additionally, alkaloid concentrations vary from plant to plant, within parts of the plant itself, and even change depending on the seasons and the soil in which it is grown. These factors make abuse of *D. Stramonium* unpredictable and overdose is not uncommon. Overdose produces a classic anticholinergic syndrome that can lead to severe and sometimes fatal complications. Anticholinergic effects can include dry skin and mucosa, flushing, mydriasis, hypertension, tachycardia, fever, decreased GI motility, and urinary retention. Intoxication delirium can involve agitation, paranoia, hallucinations, disorientation, and confusion.[2] Seizures, rhabdomyolysis, fulminant hepatitis, respiratory arrest, coma, and death have been described.[3]

D. Stramonium intoxication presents a clinical challenge for practitioners because the offending alkaloids do not show on traditional drug screens.[4] Many synthetic drugs of abuse are also undetectable on standard screens and may present with similar psychiatric, behavioral, and autonomic symptoms.[5] Approaches to care for the two conditions are divergent, however, with traditional management of bath salt induced agitation having the potential to worsen the symptoms of anticholinergic delirium.[4]

We present a case of a 15 year-old male with acute *D. Stramonium* poisoning initially misdiagnosed with bath salt intoxication requiring treatment by two Emergency Departments, a Pediatric ICU, and ultimately an inpatient psychiatric facility. We then discuss differential diagnosis of *D. Stramonium* poisoning and bath salt intoxication and present management strategies for the two conditions.

Case presentation

A 15-year-old male previously in good health presented to a rural Emergency Department with altered mental status. The family reported he had returned home from being with friends and shortly after became confused, agitated, and was chasing nonexistent dogs in the house. He was assaultive to EMS on transport and on arrival at the ED he was given Haldol 5mg and Ativan 2mg for his agitation. When his combative behavior did not diminish, he was sedated and intubated using midazolam and propofol. After initial examination the patient was transferred to a larger teaching hospital for more intensive care. The suggested diagnosis was bath salt ingestion. On arrival at the teaching hospital the patient's exam revealed mydriasis, tachycardia with rate of 156, fever with a temperature of 100.9, and hypertension with blood pressure of 180/115. A complete blood count and comprehensive metabolic panel were within normal limits. His CPK was mildly elevated and an ECG showed sinus tachycardia. Urine drug screen was negative and his family reported no history of alcohol or drug abuse. The family further reported that the patient had a medical history significant for epilepsy which was well controlled on topiramate 50mg twice daily. A maternal uncle had been diagnosed with bipolar disorder but the family history was otherwise unremarkable. The social history was significant for

Figures 1 & 2. *Datura stramonium. Photos used with permission from H. Zell.*

the patient living with his mother, stepfather, and two sisters in a home just outside a small town. He was in the tenth grade and received special education services for an unspecified "learning disability". Emergency Room clinicians contacted the Poison Control Center and were told that the patient's presenting symptoms were indeed consistent with a bath salt overdose. Poison control recommended supportive management for when the patient was extubated. He was then transferred to the Pediatric Intensive Care Unit where he was given a diagnosis of "unknown drug intoxication". An EEG performed the next day showed slow, low amplitude background activity consistent with diffuse cerebral dysfunction. The patient was roused from sedation and self-extubated both his ventilator tube and Foley catheter. Over the next 24 hours, he displayed emotional lability, combative and threatening behavior, and demanded release from the hospital. He stated that he "just wanted to die". The patient's mother felt she could not keep him safe at home, so he was transferred to an inpatient psychiatric facility. On interview, the patient reported that he and several friends had recreationally used a plant that they found growing near his home called "thorn apple" by ingesting the seeds, smoking the leaves, and boiling the leaves to make a tea. It was later learned that one of his friends was treated at a separate hospital for similar symptoms. Within 24 hours of psychiatric admission, the patient's symptoms had resolved and his mental status had returned to baseline. He was provided education regarding *D. Stramonium* abuse and he participated in group therapies with a substance use focus.

Discussion

The hallucinogenic properties of *Datura stramonium* have been described for centuries and across many countries. It was introduced into the New World in colonial Jamestown from seeds brought by early settlers. In fact, the original name for the plant in the United States was Jamestown weed, later shortened to Jimson weed. Today it has many additional names including stink weed, angel's trumpet, loco weed, devil's trumpet, and thorn apple (Figure 1 and 2).[1] Numerous case reports from around the world describe abuse of the plant, typically by ingestion of seeds or boiling for tea. Most reports describe use by teens or young adults, though accidental ingestion by children is also mentioned.[3,6] Accidental overdose by using the drug as a homemade remedy for self-medication[7] as well as food-related outbreaks have been described.[8,9] No readily available clinical laboratory test exists for the detection of *D. Stramonium* though less common gas chromatography-mass spectrometry may be available in certain areas.[9,10]

Recent years have seen the introduction of numerous synthetic drugs of abuse that can cause similar symptoms of altered consciousness and agitation and that do not show up on standard drug screens.

Table 1. Differentiation of Datura stramonium poisoning and bath salt intoxication

	Diagnostic features	Pharmacologic Treatment
Datura stramonium	Flushing (Red as a beet) Dry skin (Dry as a bone) Mydriasis (Blind as a bat) Psychosis (Mad as a hatter) Hyperthermia (Hot as hades) Hypertension Tachycardia Reduced GI motility Urinary hesitancy Amnesia Seizure Coma, respiratory depression, death	Gastric lavage Activated charcoal Physostigmine (severe cases) Benzodiazepines for severe agitation. Antipsychotics are avoided. Supportive for other symptoms.
Cathinones - "Bath salts"	Varied depending on exact substance(s) but can include Agitation Psychosis Tachycardia Hyperthermia Seizure Excited delirium and death	Primarily supportive with antipsychotics, antihistamines, and benzodiazepines alone or in combination for agitation. Cooling is used for severe hyperthermia.

They are easily accessible as they are purchasable over-the-counter in many communities or can be obtained over the Internet. Most have active compounds that are derivatives of cathinone, a structural analog of amphetamine.[5] Acute intoxication with *D. Stramonium* in a non-cooperative or non-communicative patient can be easily confused by Emergency Department personnel with these more commonly seen drugs of abuse and lead to delays in diagnosis and possibly treatment.

While agitation, psychosis, violent behavior, paranoia, hypertension, hyperthermia, and confusion may be common to both conditions the physical examination can reveal important differences. Anticholinergic syndrome is characterized by a constellation of symptoms readily recognized by using the familiar mnemonic – "red as a beet, dry as a bone, blind as a bat, mad as a hatter, hot as Hades".[2] Thus, patients with *D. Stramonium* overdose will present with notable mydriasis, dry and flushed skin, and urinary retention. These symptoms will be absent in the individual intoxicated with bath salts.[5] Although more rare, a pattern of coma and focal neurological symptoms to include decorticate posture and bilateral Babinski signs has been described.[3,11,12]

Differentiation of anticholinergic delirium is important because it alters the treatment paradigm (TABLE 1). *D. Stramonium* overdose has been successfully treated with activated charcoal and gastric lavage with more serious cases requiring physostigmine.[13] Physostigmine use is limited to the most serious cases due to the risks of cholinergic excess that can occur with the drug.[14] Agitation is managed supportively or with benzodiazepines, as antipsychotics and antihistamines are contraindicated with anticholinergic delirium.[4] Indeed, the anticholinergic properties of antipsychotics, as well as the antihistamines often used concomitantly with them, can prolong the course of *D. Stramonium* poisoning[14] and possibly increase the severity of the symptoms.[15] In contrast, less is known about appropriate management of bath salt intoxication and most cases are treated supportively. Agitation and psychosis is typically managed with antipsychotics, benzodiazepines, or antihistamines either separately or in combination. Extreme hyperthermia sometimes requires management with external cooling procedures.

Conclusion

West Virginia is rich in plant life, some of which are abusable. *Datura stramonium* abuse may be decreasing due to the increasing availability of

newer drugs and physicians may be less aware of the plant and its adverse effects. *D. Stramonium* use will likely never disappear entirely. Therefore, physicians practicing within the State should consider plant overdose as a potential cause of any suspected drug-induced delirium and treat accordingly.

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A Pilot Study on the Utility of a More Informative Living Will

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Abstract

Most written advance directives are designed to help people prescribe the care they would desire at the very end of their life. They provide little guidance for elderly patients with potentially treatable diseases who may be temporarily incapacitated and thus unable to articulate their wishes. The authors developed an alternative living will format with the intent of better documenting the care wishes of this population.

A convenience survey of patients, surrogates and physicians compared the pilot version with the commonly available West Virginia Living Will to determine whether the pilot version was able to provide clearer direction for health care providers and surrogate decision makers. The majority of respondents indicated the pilot version better met their needs when compared to the commonly utilized version. This study suggests there is a need for an alternative living will that addresses the needs of those not at the very end of their life.

Introduction

Written advance directives (living wills) provide people with a means of expressing their health care wishes in writing should they be incapacitated at the time medical decision-making is required. The primary focus of living wills is to make known the care one would wish to receive near the end of their life. There are three primary stakeholders of living wills. There is the person (patient) completing the living will to document their treatment wishes. There is the health care team using the living will to help direct decision-making should the patient lack capacity. Finally, there are the surrogate decision-makers looking at the patient's living will for guidance when making acute as well as end-of-life treatment decisions.

The general shortcomings of living wills have been well described. Concerns included living wills' "one size fits all" design and lack of specific guidance as well as the stability of patients' expressed wishes.[1] The lead author has over 20 years of experience attempting to apply living wills in the critical care setting and believes there are several specific limitations to the commonly available West Virginia living will. The current form does not provide enough information for most lay persons to understand the implications of the form and how it may be used in the setting of an acute illness. It does not address the situation of a potentially reversible illness or the temporary loss of capacity. It provides space for one to fill in specific directives about more aggressive care (mechanical ventilation, dialysis, CPR, etc.) without providing any context for these treatments.

Like many advanced directives, the WV living will requires patients to make the same broad care decisions for a terminal condition or a persistent vegetative state. The medical literature has clearly shown that patients with a terminal or end-stage medical condition would desire more aggressive care (surgery, mechanical ventilation, etc.) for a potentially treatable condition than should they be in a persistent vegetative state.[2,3] In other words, people distinguish between having a terminal diagnosis (a disease they will eventually die from despite aggressive treatment but may still have an acceptable quality of life) and being in a terminal state (near death with no chance of improvement).

The commonly available WV living will is designed to ensure one receives only care aimed at comfort and dignity when there is no longer acceptable quality of life. However, living wills are referred to by surrogates and health care providers in a multitude of clinical scenarios including those where there is still some hope for return to an acceptable quality of life. This is especially true in the critical care setting where elderly patients routinely suffer temporary loss of capacity either from their acute disease process or from treatments provided (ex. sedation to tolerate mechanical ventilation). In these scenarios, the current living will provides little if any meaningful direction.

We developed a new living will with the goal of providing more information and structure for those scenarios outside of comfort care, in particular focusing on the common

clinical decisions faced by health care providers and surrogates in the intensive care unit. The goal of this pilot study was to determine whether this new format better met the needs of the three primary stakeholders.

There are two hypotheses. 1) The pilot version will be more informative for those completing a living will and would better express their care wishes than the commonly utilized format; and 2) The new format will provide surrogates and health care providers with clearer guidance when making health care decisions for the incapacitated adult patient.

Methodology

This pilot study was a convenience sample of the three stakeholders described above. Participants were asked to review two different living will formats, a commonly available West Virginia living will and the proposed version. (Appendix A&B) The living wills were de-identified as Living Will 1 and Living Will 2.

After reviewing both formats, participants were asked to complete a short survey. Each survey collected basic demographics, followed by 5 questions such as, "Which living will did you find easier to read?" Each stakeholder's questions differed slightly to reflect their perspective roles.

Residents of a local retirement complex completed the Patient's Survey prior to an open forum on end-of-life planning. Visitors to the Medical Intensive Care Units at Charleston Area Medical Center's (CAMC) General Division completed the Surrogate Survey. Physicians in the CAMC Hospitalist Service completed the Health Care Provider Survey. The Patient and Surrogate surveys were paper surveys while the hospitalists completed an on-line survey.

Acknowledging there is more than one version of the West Virginia living will publicly available, a Google search on "WV Living Will" revealed the most commonly available on-line version. The top two matches provided the same living will format.[4,5] CAMC provides the same version to patients wishing to complete a living will during their hospitalization. This version is also provided by the Human Resources Department of West Virginia University. This version was identified as the "commonly used WV living will".

Participation in this convenience survey was voluntary for all three survey populations. The protocol and consent were IRB approved. Participants were provided with information regarding the pilot and asked to sign a consent form (paper or electronic) prior to completing the survey. Descriptive

Table 1: Demographics

Patient Survey (n=11)	
Gender	Male: **2** Female: **9**
Age	Mean: **80** ±14 years
Ethnicity	Non-Hispanic White (NHW): **11**
Highest level of education	High School Degree:**3** College degree: **7** Post-grad degree: **1**
Prior experience with living will?	Yes: **7** No: **3**

Surrogate Survey (n=25)	
Gender	Male: **10** Female: **15**
Age	Mean: **52** ±17 years
Ethnicity	Non-Hispanic White : **25**
Highest level of education	High School Degree: **14** Did not finish HS: **1** College degree: **10**
Prior experience with living will?	Yes: **11** No: **13**

Physician Survey (n=12)	
Gender	Male: **4** Female: **8**
Ethnicity	Non-Hispanic White: 9 Other: 3
Years in practice: < 2 years: **2** 2-5 years: **4** >5-10 years: **1** > 10 years: **5**	
Specialty: Internal Medicine: **7** Family Medicine: **4** Other: **1**	

Table 2: Survey results

Patient Survey	WV Living Will	Pilot Living Will
Which living will did you find easier to read?	7	4
Which living will better helped you understand the types of medical decisions you need to think about when filling out a living will?	2	9
Which living will would better help you express your health care wishes if you were unable to tell your doctors yourself?	3	8
Which living will do you think would be more helpful for your family if they had to make medical decisions for you?	3	8
If you wanted to fill out a living will, which would you prefer to use?	3	8
Surrogate Survey		
Which living will did you find easier to read?	9	16
Which living will better helped you understand the types of medical decisions you may need to make as a surrogate decision maker for someone else?	1	24
Which living will did you think better allowed someone to express their health care wishes in writing?	3	22
Which living will would be more helpful to you if you had to make medical decisions for the person who filled out the form?	1	22
If you wanted to fill out a living will for yourself, which would you prefer to use?	6	17
Physician Survey		
Which living will was easier to read?	6	6
Which living will would better help you understand your patient's general attitudes towards end-of-life treatment preferences?	2	10
Which living will would be more helpful when making specific treatment decisions for your patient?	2	10
Which living will would better facilitate end-of-life discussions with your patient's surrogate decision-makers?	1	11
If your patient indicted they wished to complete a living will, which form would you recommend?	2	10

statistics are provided for the different stakeholder groups.

Results

Forty-eight (48) participants completed surveys: 11 Patient Surveys, 25 Surrogate Surveys and 12 Health Care Provider Surveys. The demographics for each group are provided in Table 1. The questions asked and responses are provided in Table 2.

Over 70% of respondents to the Patients' Survey indicated the pilot version would allow them to better express their health care wishes and felt it would provide better guidance for their surrogates. There was also a clear preference for the pilot version for health care providers and surrogate decision makers. In response to questions (2-4) exploring how well each living will assisted their decision-making, 89% of responses to these questions favored the pilot form.

Discussion

The results of this pilot study support our hypothesis that there is a need for a living will that provides more information and direction than the version currently used in most settings. Specifically, one that better addresses the needs of all who might complete a living will and not just those who desire

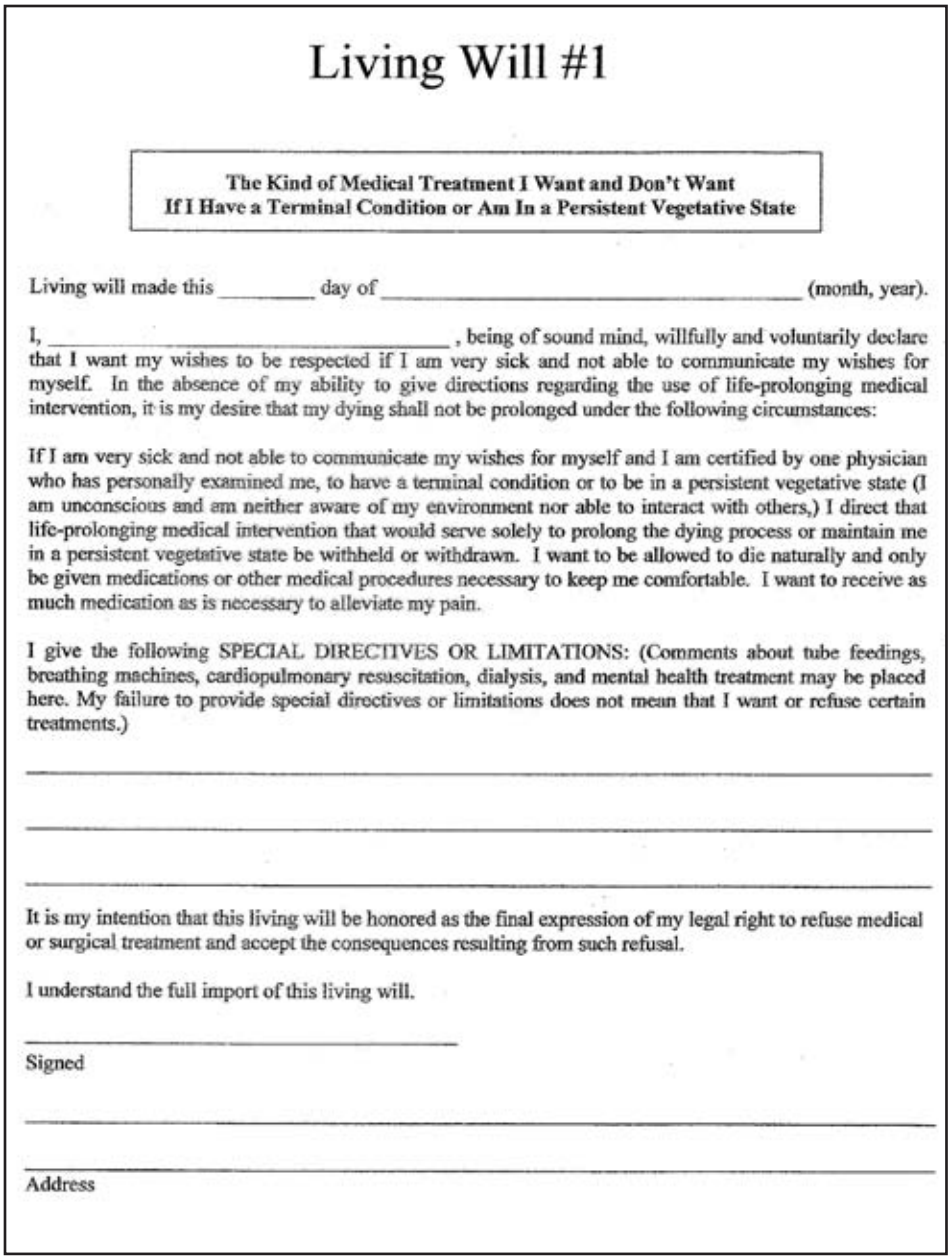
little, if any, aggressive care. The majority of respondents in all three stakeholder groups indicated a preference for the pilot version.

The goal of this study was not to show that our pilot version is the optimal format for a living will. It is also not meant to suggest the current West Virginia living will needs to be replaced. The current version clearly meets the goals stated at the top of the form, to help a patient describe "the Kind of Medical Treatment I Want and Don't Want if I have a Terminal Condition or Am in a Persistent Vegetative State."[4] In addition, the West Virginia Center for End-of Life Care has developed a FAQ pamphlet that wonderfully explains the rights of the patient and the procedural elements when completing an advance directive.[5] Thus the needs of those at the very end of their life are well met by the currently available living will and supporting literature.

These results support our hypothesis that patients, caretakers and providers may prefer a more detailed living will that covers specific scenarios. As discussed earlier, the critically ill elderly patient routinely presents the scenario of a patient with 1) significant co-morbidities that have some impact on their quality of life, 2) temporary incapacity and 3) a reasonable chance of recovering to their pre-morbid quality of life. In these scenarios, and especially those where the patient carries a terminal diagnosis but hasn't reached a terminal state, there is a need for a different, or expanded, living will that attempts to provide more specific guidance.

Forty-six percent (46%) of respondents indicated they found the currently utilized living will easier to read than the pilot version, including 50% of physician respondents. The survey questions did not address why respondents found either version easier to read. Reading analysis of the two living wills suggests that the pilot model is easier to comprehend. The Flesch Reading Ease Scores (100: very easy to read, 0: very difficult to read) 3 were 14 for the current WV living will and 36 for the pilot version. The Flesch-Kincaid score, (which correlates ease of comprehension to educational grade level) 3 was 19.3 for the current living will compared with 12.8 for the pilot living will. One simple reason might be that the current WV living will is shorter than the pilot version.

The new living will's Flesch-Kincaid score of 12.8 is still significantly higher than the usual target of 6-8 for a consent form.[4] The challenge in balancing content with ease of reading for a living will is unique. Most consent forms cannot replace the verbal consent process and serve to supplement and document this critical discussion. Inherent in these discussions



Living Will #1

The Kind of Medical Treatment I Want and Don't Want
If I Have a Terminal Condition or Am In a Persistent Vegetative State

Living will made this _____ day of _____ (month, year).

I, _____, being of sound mind, willfully and voluntarily declare that I want my wishes to be respected if I am very sick and not able to communicate my wishes for myself. In the absence of my ability to give directions regarding the use of life-prolonging medical intervention, it is my desire that my dying shall not be prolonged under the following circumstances:

If I am very sick and not able to communicate my wishes for myself and I am certified by one physician who has personally examined me, to have a terminal condition or to be in a persistent vegetative state (I am unconscious and am neither aware of my environment nor able to interact with others,) I direct that life-prolonging medical intervention that would serve solely to prolong the dying process or maintain me in a persistent vegetative state be withheld or withdrawn. I want to be allowed to die naturally and only be given medications or other medical procedures necessary to keep me comfortable. I want to receive as much medication as is necessary to alleviate my pain.

I give the following SPECIAL DIRECTIVES OR LIMITATIONS: (Comments about tube feedings, breathing machines, cardiopulmonary resuscitation, dialysis, and mental health treatment may be placed here. My failure to provide special directives or limitations does not mean that I want or refuse certain treatments.)

_____

_____

_____

It is my intention that this living will be honored as the final expression of my legal right to refuse medical or surgical treatment and accept the consequences resulting from such refusal.

I understand the full import of this living will.

_____
Signed

_____

_____
Address

is the opportunity for the lay person to ask questions to clarify any terms or concepts they don't understand. Living wills can be completed without speaking with anyone, increasing the pressure to provide written content that can address life and death concepts in the simplest language possible.

We believe the greatest potential for this living will pilot is improving communication between the patient and their designated Medical Power of Attorney (MPOA). A living will can never anticipate and plan for all medical scenarios one may face. We agree with the West Virginia Center for End-of Life Care that a MPOA provides the greatest flexibility for surrogate decision-making.[5] A MPOA is empowered to make any medical decisions a patient might make for themselves, covering every possible scenario. Unfortunately, most people given a MPOA are no more knowledgeable of the potential medical decisions they could face as a surrogate than the patients themselves. Thus, a more informative living will could serve as a discussion guide to help address in advance some of the common decisions the patient and surrogate may face at a critical time.

The limitations of this study are consistent with many pilot studies, in particular the small number of respondents. While the study population demographics are fairly consistent with state-wide demographics this further limits generalization of this these results. Convenience sampling also interjects the potential for bias but was unavoidable given the logistical support available. Finally, all but one respondent indicated they had at least a high school diploma. Given the 12th grade comprehension level of the pilot living will, patients with less education might not be able to comprehend this version adequately enough for it to be useful.

Conclusion

The most commonly available West Virginia living will may provide sufficient documentation for patients at the very end of their life. However, for patients who might desire more aggressive care where there is hope for a return to their present quality of life, this version is not adequate. For these patients, our preliminary data suggests a need for a more informational and instructional written advance directive. This expanded directive should be made available to patients along with the current version so they might select the living will that best meets their situation. Most importantly, this living will might serve as an important adjunct to a medical power of attorney.

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Living Will # 2

Things to remember as you fill out this Living Will:

- Your living will only applies if you become incapacitated (unable to speak for yourself) and are unable to tell your doctors what care you would want to receive at the time they need to know your wishes.
- With some acute illnesses, you may lose capacity (the ability to make decisions for yourself) because of their medical illness. Often times this is only temporary. In many cases, as you recover you will regain the capacity to make your own decisions again.
- A terminal or end-stage medical condition means a medical condition (like cancer or severe lung disease) that you will eventually die from even with aggressive medical care. However, some people with end-stage medical conditions still have a quality of life they find acceptable and may continue to do so for some period of time.
- A persistent vegetative state, or coma, is a condition where you are not aware of your environment and you are not able to interact with anyone around you.
- You don't always die from your end-stage medical condition. You may also develop an acute medical condition that can be life threatening. Examples would include pneumonia, heart attack, blood clots or a stroke. While these conditions can be life threatening, many are also treatable and you may recover from them.
- However, your chronic condition not only makes you more likely to develop a complication like pneumonia, it makes you less likely to recover, even with aggressive treatment. It also means that your recovery will often be prolonged, requiring you to go to a skilled nursing facility or rehabilitation center. Even if you recover from your acute illness, you may not ever get back to the quality of life you had before the acute illness.
- If you require a respirator to support you through your acute illness, your doctors may recommend a tracheotomy tube. This is where they surgically place the breathing tube in your neck. These are usually placed with the goal of the tube being temporary and eventually being removed once you become stronger. But this doesn't always happen.

What kind of treatments can you choose?

- You can choose to receive regular medical care. This type of care could include routine tests like blood work and x-ray studies. It could include medications, intravenous fluids, nutrition and blood transfusions.
- You can choose to have more invasive procedures performed like surgery or heart catheterizations.
- You can choose to receive temporary life support from a respirator or kidney dialysis machine. If you agree to a respirator, would you be willing to have a temporary tracheotomy?
- You can choose to receive comfort care only. This means you will only be given medications that can ease your suffering and keep you comfortable.
- You can choose to receive intravenous fluids and tube feedings in addition to your comfort care.

Common Scenarios

Read each scenario closely and decide what you would want done in that situation. If you aren't sure what you would want done for any of the scenarios below, simply indicate so. Remember that no written document can cover every medical situation you might face in the future.

The goal of this living will is to address broad situations and to give your family, friends and health care team some guidance on how aggressively you would want to be treated. It should also serve as a guide for discussing your general wishes with those that will have to make medical decisions for you should you lose capacity. We strongly suggest you name a medical power of attorney and discuss this document with them.

1. **My current quality of health. I am able to take care of myself or require minimal assistance.**
If I develop an acute medical illness that may be treated, and my doctors think I have a reasonable chance of surviving the illness and leaving the hospital, I wish the following: (Check any that apply)

___ Comfort care medications only.
___ Comfort care, to include intravenous fluids and tube feedings.
___ Regular medical care
___ Invasive procedures like surgery or heart catheterizations.
___ Temporary support from a respirator
___ Temporary support from a kidney dialysis machine
___ CPR if my heart stops
___ I'm not sure

continued on next page

2. **My general health has deteriorated to the point I can no longer take care of myself and must live in an assisted living or nursing home.**

   If I develop an acute medical illness that may be treated, and my doctors think I have a reasonable chance of surviving the illness and leaving the hospital, I wish the following: (Check any that apply)

   ___ Comfort care medications only.
   ___ Comfort care, to include intravenous fluids and tube feedings.
   ___ Regular medical care
   ___ Invasive procedures like surgery or heart catheterizations.
   ___ Temporary support from a respirator

3. **I have been diagnosed with an end-stage medical condition but have been told I could live for a year or more. I am still able to take care of myself or require minimal assistance.**

   If I develop an acute medical illness that may be treated, and my doctors think I have a reasonable chance of surviving the illness and leaving the hospital, I wish the following: (Check any that apply)

   ___ Comfort care medications only.
   ___ Comfort care, to include intravenous fluids and tube feedings.
   ___ Regular medical care
   ___ Invasive procedures like surgery or heart catheterizations.
   ___ Temporary support from a respirator
   ___ Temporary support from a kidney dialysis machine
   ___ CPR if my heart stops
   ___ I'm not sure

4. **I am dying from an end-stage medical condition with no hope of improvement.**

   If I develop an acute medical illness that may be treated, I wish the following: (Check any that apply)

   ___ Comfort care medications only.
   ___ Comfort care, to include intravenous fluids and tube feedings.
   ___ Regular medical care
   ___ Invasive procedures like surgery or heart catheterizations.
   ___ Temporary support from a respirator
   ___ Temporary support from a kidney dialysis machine
   ___ CPR if my heart stops
   ___ I'm not sure

5. **I am in a coma or persistent vegetative state with no reasonable hope that I'll ever wake up or be able to interact with anyone.**

   If I develop an acute medical illness that may be treated, I wish the following: (Check any that apply)

   ___ Comfort care medications only.
   ___ Comfort care, to include intravenous fluids and tube feedings.
   ___ Regular medical care
   ___ Invasive procedures like surgery or heart catheterizations.
   ___ Temporary support from a respirator
   ___ Temporary support from a kidney dialysis machine
   ___ CPR if my heart stops
   ___ I'm not sure

   Any other requests? _____
   _____

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Opiate Drug Abuse: Discovering Problematic Patients in the Office and What to Do About It

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Overview

The authors identify the risk factors and the maladaptive behaviors associated with opiate abuse and the protective factors that tend to increase our odds against abuse. Age, family dynamics, and social and legal factors all play a role in abuse. For-profit clinics and some programs have had a significant impact on the use/misuse of prescription pain pills. Many refer to these clinics as legalized drug pushers. Research suggests condemnation of drug abuse by the family and society and stricter laws and higher penalties tend to deter abuse. Treatment options are discussed. Using injectable or implantation of naltrexone has shown promising results, however, the costs have made treatment out of reach for most. Recommendations for addressing the issues are made.

Drug Abuse 1

Prescription medications, especially opiates, have greatly increased escalating healthcare costs and lead to a growing number of untimely deaths. Research indicates that approximately 14% of American adults are using pain medications, predominantly opiates, for nonmedical purposes.[1] 2008 estimates indicate that poisoning was the leading cause of death from injury in the United States.[2] Roughly 90% of the deaths were related to drug exposure with 40% of the deaths due to prescription opiates. The number of emergency room visits for nonmedical use opioids jumped 111% between 2004 and 2008 with the highest number of visits related to oxycodone, hydrocodone and methadone.[3] This has caused considerable concern not only in the medical community but also law enforcement. Lawmakers have passed laws in West Virginia, Kentucky and Ohio in an attempt to curb this medication-taking behavior. The purpose of this article is to first identify the complex clinical challenges facing the medical community and second to identify techniques to detect the patient's aberrant medication taking behavior in the office and strategies to deal with such behaviors.

Before continuing the article, specific terms need to be clarified. The word "addiction" was removed from the DSM IV in an attempt to decrease social stigma associated with substance dependence.[4] The changes proposed in the DSM V will hopefully clarify controversies that have arisen as a consequence (eg. Patients with chronic opioid analgesia who become dependent on opiates but do not meet the criteria for substance dependence).[5]

TERMINOLOGY ASSOCIATED WITH PRESCRIPTION ABUSE OPIATE DISORDERS:[5,7]

1. Appropriate use means taking prescriptions as prescribed and only for the conditions associated and indicated.
2. Drug misuse means taking the prescription for reasons or at a dose or frequency other than for which the drug was prescribed. This may or may not reflect Prescription Opiate Abuse Disorder.
3. Substance dependence (or drug addiction) refers to a chronic relapsing disorder characterized by compulsion to seek and take the drug, loss of control in limiting intake, and emergence of a negative emotional state such as dysphoria or anxiety when access to the drug is prevented.
4. Pseudo addiction is an iatrogenic syndrome resulting from the misinterpretation of relief-seeking behaviors as though they are drug-seeking behaviors that are commonly seen with addiction. The relief-seeking behaviors often resolve on institution of an effective analgesic therapy.
5. Tolerance is the physiological state resulting from regular use of the drug in which an increased dosage is needed to produce a specific effect or a reduced effect is seen with a constant dose over time. Tolerance develops either by reduced end-organ response to the drug (pharmacodynamic tolerance) or increased metabolism (pharmacokinetic tolerance) though other physiological mechanisms may also play a role.
6. Addiction is a chronic, neurological disease with genetic, psychosocial, and environmental factors that influence its development and manifestation. Behavior is characterized by cravings and compulsive use and continued use despite harm. Addiction has typically been used interchangeably with substance dependence; however, with the proposed changes in the DSM V hopefully, this controversy will be removed.

7. Detoxification is the process of stopping the drug on which the person has become physically dependent by various means including gradual reduction of the same drug, use of other drugs that produce cross tolerance, use of drugs that provide symptomatic relief, and the use of drugs that effect the mechanisms by which withdrawal was expressed. Detoxification can be done on both an inpatient, outpatient basis or in a residential day program.
8. Chronic pain refers to pain that extends beyond the healing period indicated by tissue damage or appropriated by the interaction between physiological, psychological and environmental factors.
9. Chronic nonmalignant pain means pain associated with the diagnostic syndromes that are not terminal but affect a person's day-to-day functions.
10. Drug seeking behaviors are defined as attempts to obtain controlled substances driven not for relief of the condition for which the drug was prescribed but rather for maladaptive gain. This may or may not be associated with Prescription Opiate Abuse Disorder.
11. Aberrant medication behaviors are defined as taking a controlled substance medication in a manner that is not prescribed, which may include lack of understanding how to take the opiate appropriate, external pressures such as giving the drug to a friend or family member, chemical coping, pseudo addiction, opiate resistant pain, addiction, or Substance Abuse Disorder.[5]

The incidence of prescription abuse is variable and not clear. Abuse may range from a low of 3% to as high as a lifetime prevalence of 35%.[1] The DSM V estimates that Prescription Abuse Mood Disorder may account for as high as 35% of the mood disorders. Research suggests that approximately 75% of opiate use for non-medical purposes was prescribed to someone else, 20% was prescribed to the user and 4% came from other sources.[10]

RISK FACTORS FOR OPIATE ABUSE:[1,6,8]

1. Younger age; usually below 45.
2. A history of substance abuse or dependence and/or psychiatric disorder associated with novel seeking behaviors or impulsivity in the past. Research suggests if a person does use drugs including nicotine by the age of 20, the person is likely to develop drug-related problems.[10]
3. Lack of any religious affiliation.
4. Dysfunctional family background with history of substance abuse or dependence in the family.
5. Dependent immature personality characteristics.
6. Bereavement, especially in childhood.
7. Genetics.
8. Physical/emotional abuse in children and/or the diagnosis of Conduct Disorder/Attention Deficit Hyperactivity Disorder.
9. High availability of drugs.
10. Relaxed laws and social norms that sanction drug abuse.
11. Low socioeconomic status, impoverished environment, gang influence, easy availability of the drug, and discrimination.

PROTECTIVE FACTORS[11]

1. Older age.
2. Stable and resilient family.
3. Condemnation of drug culture by family and society at large.
4. Lack of drug use and dependence in family.
5. Lack of associated psychiatric illness in patient and family.
6. Regular exercise and taking care of one's physical and spiritual needs from early life.
7. Lack of availability of drugs.
8. Society frowning on such behaviors.
9. Stricter laws with higher penalties.
10. Strong religious beliefs and affiliations.

MALADAPTIVE BEHAVIORS IN PATIENTS USING OPIATES:[10,12]

1. Complaints for more medications.
2. Requests early refills.
3. Deterioration in functioning (work and social) such as missing work or social obligations. Periodic time off for no reason.
4. Altering the route of administration such as snorting or injecting the drug.
5. Multiple episodes of lost, stolen or forged prescriptions.
6. Resistance to change in therapy despite negative outcomes.
7. Resistance to comply with toxicology testing.
8. Concurrent abuse of alcohol or other drugs including benzodiazepines, especially alprazolam.
9. Multiple physicians and pharmacies to obtain prescriptions.
10. Buying the medications on the streets and from other providers.
11. Requesting specific medications for pain and "nerves".
12. Telling the clinician the diagnosis such as "bipolar" at the onset of treatment and the need for specific drugs such as Xanax.
13. Refusing other modalities of treatment stating that they did not help.
14. Hoarding medications.
15. Complaints of increased pain despite no evidence.

16. Calls from neighbors, family or friends of selling drugs or buying drugs off the street.

While the list of maladaptive behaviors and the identification of the abnormal medication behaviors is helpful; often, it is difficult to identify the origin of the disorder. Approximately 50% of those who complain of chronic pain also have an associated underlying psychiatric disorder or alcohol/substance abuse/dependence disorder.[12] The few tools that have been developed such as the Opiates Misuse Measure and the Opiate Risk Tool are subjective, not standardized. There is limited evidence to support their use.[9] The diagnosis is basically clinical and subjective; however, there are some questions that can be used to facilitate the collection of significant information.[6] The questions include:

1. Do you feel good when you take the medications?
2. Is that the reason you take the medications?

As the diagnosis is predominantly clinical, toxicological reports should be obtained randomly and routinely for opiates as well as for synthetic drugs including methadone, opiates and hydrocodone. The absence of the drugs in patients who are prescribed and use drugs chronically is indicative of either not taking the medications or selling them.

INDICATORS OF ADDICTION IN NONMALIGNANT PATIENTS:[6,11]

1. Time spent using, finding or recovering such drugs.
2. Use of multiple pharmacies as seen in Pharmacy Profiles.
3. Continued use despite harm from opiates with decline in social function, opiate intoxication and prescribed sedation.
4. Preoccupation with opiates and sedatives.
5. Frequent request for drug dose escalation despite no evidence.
6. Physical dependence and withdrawal including seizures.
7. Request for early refills with frequent loss of medication including such excuses as "the dog ate it" or "it fell in the toilet" despite having an adequate supply of medication thus indicating impaired control, use or diversion.

TREATMENT

1. Treatment is biopsychosocial involving the patient including periodic pill counts, family, pharmacy, police, physicians and any other source of information to help when needed.[13] The recent shift of treating pain by society (that has long neglected the subjective experience of pain) while benefiting some with intractable pain has also had devastating consequences by lax opioid prescribing which has resulted in an increase in iatrogenic addiction.
2. Treatment requires establishing a therapeutic alliance with the patient and educating the patient and family about relapse and risk factors. Provide the patient with information about the side effects of abuse and treatment. Replacing "a pill with another pill is not the complete answer".
3. Various forms of treatment which include education, pharmacotherapy, cognitive behavioral therapy, motivational enhancement therapy, TSF (Twelve Step Facilitation Therapy), and other psychosocial programs that include NA and AA show some promise. If the pain is genuine and appropriate, treatment must involve pain management.

While methadone has been recommended as standard care for opiate addiction by the National Institute of Health, its image is poor and the patients are often viewed negatively by patients, physicians and society in general.[15]

While no doubt methadone has decreased opiate abuse and crime through decreasing the craving associated with opiates (including heroin), it has not been extremely successful as for-profit clinics (which usually run such clinics) have shown little inclination to reduce the use of methadone. The relapse rate is fairly high among these patients. Buprenorphine treatment, a semi-synthetic opioid, has been found to be as effective as methadone and does decrease mortality among opiate dependent patients. Relapse rate is high and it is unclear as to how long the treatment should last. There have been no studies in that context either for methadone or buprenorphine. Some pain experts feel that this medication is a lifelong treatment while others do not. It is also estimated that 50% of the patients on methadone would like to get off the drug if they had the option.[15] Naltrexone, an opiate antagonist, available in tablet, injectable, and implantable forms, has been used more recently in the treatment of opiate abuse/dependence. Use has been limited and results are variable. Naltrexone has not been very helpful among these who do not want to take agonists or partial agonists.[17] Adequate double blind studies have not been done.

Contingency Management done with physicians, licensed professionals and incarcerated people where there is something important to lose (e.g. license) has been found to be an effective tool, including the use of naltrexone, preferably the monthly injectable form.[7]

TECHNICAL ISSUE

Most physicians and companies who are offering methadone and buprenorphine operate on a cash only basis. This practice has played a role in the general public's reluctance to accept this treatment. Though

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helpful in a small percentage of patients, a cash only treatment option has been found to be counterproductive and creates a negative attitude towards physicians and clinics.[13] Using injectables or implantation of naltrexone in selected patients (e.g. convicted felons) may help in decreasing use and overcrowding in prisons.[17] Tapering these medications and supporting individuals with NA-AA and religious affiliations has been helpful in some patients along with regular exercise. High costs of drugs, especially injectable naltrexone has made treatment out of reach for most individuals as they cannot afford a $1200 naltrexone injection. Research on this topic is desperately needed including double blind trials on the efficacy of implants of naltrexone. No studies have been done so far.

RECOMMENDATIONS

Physicians and the general public need to be educated that addiction is a chronic disease that waxes and wanes (eg. diabetes, hypertension and other health-related diseases) is influenced by patient's behavior, and can be helped by the following:

1. Avoid a cash system which can create a culture of greed where the main aim may be perceived as income for patients, physicians, pharmacies, for-profit clinics and the underworld of drugs. If cash is to be used it should be only for those patients who have no form of insurance with payment in line with other insurance companies (e.g. all insurance companies, including government plans should pay the same amount) and this should be the law of the land.
2. Mandate psychosocial management, such as counseling, for at least two hours per month, documented and done by trained personnel including known successfully rehabilitated drug addicts as role models.
3. A detailed log of the use of such medications including the use of the Pharmacy Profile on such patients is a must (required by various states including Ohio, Kentucky, West Virginia, New York and others). Unfortunately, in West Virginia the law requires the log to be checked yearly which we feel is rather low and should be done as in Kentucky (every three months).[1,18]
4. Pain clinics should be highly regulated. Only a trained pain physician with a fellowship in pain management should operate the clinic. Physicians should be present 100% of the time. Prescribing should not be delegated to a Physician's Assistant or to Nurse Practitioners. Ownership by non-physicians should be avoided (e.g. taking over by the underworld drug lords).
5. Buprenorphine should be given in most cases at 16 mg and tapered with a cutoff date of two years. Rarely patients need larger doses and in such cases dosing should be done by trained personnel (trained physicians and addiction specialists). Treatment should be combined with psychosocial behavioral management (e.g. NA-AA and documented). Involvement of the church or other such organizations, should the patient choose are advocated. Vocational rehabilitation and jobs are helpful and should be mandated when needed, especially by the courts.
6. Restricting the physicians in both pain and methadone clinics to approximately 2000 unit/doses per month is more than adequate. Unit dosage means giving a dosage for a fixed time (e.g. Valium 10 mg b.i.d. x2 weeks is one/unit dose.) Monetary fines both for a physician and clinic are needed and to be monitored by their respective Boards.
7. Psychosocial and vocational rehabilitation including contingency management, especially in prisoners, should be looked into on a large scale as it has been found to be effective in research conducted in various parts of the country. This would decrease overcrowding in jails and prisons. The use of injectable naltrexone (affordable price/implantation) needs to be encouraged especially in recurrent habitual offenders and needs to be ordered by the court. Similar programs, treating physicians, and other licensed professionals have had an 80-85% success rate in comparison to 20% success rate in the general population.[4,17]
8. A methadone detox clinic run by a not-for-profit community mental health center is recommended. It should open only in places where there is a methadone clinic. Such a facility would compete with for-profit mental health clinics and be more aggressive in tapering patients off of methadone, with the eventual aim of stopping (not done by for-profit methadone clinics).
9. The DEA needs to review schedule II drugs more seriously, especially those of high addictive potential.[10] Periodic audits of pain clinics as well as high prescribers of narcotics should be performed by appropriate boards. Many people refer to these clinics as "legalized drug pushers." Giving more than 120 mg morphine daily or its equivalent is not needed. No studies have shown that higher doses are effective and can cause hyperalgesia.[19]
10. Restricting patients to one pharmacy and closely monitoring the prescriptions via pharmacy profile.
11. Decriminalization and legalization of drugs such as marijuana, under strict guidelines and oversight needs to be explored. Data and experience from countries like Portugal where drugs have been legalized for years needs to be obtained,

analyzed and implemented depending on our needs, morally, economically and politically.

Overall, prescription drug abuse has reached epidemic proportions and has the potential to spiral out of control. The implementation of more stringent guidelines and broad reaching education programs are imperative to stop this trend. The numerous patients visiting physician offices and emergency rooms for chronic pain have made the health care providers de facto hostages, however, the eventual victims are the patients themselves who are not receiving the treatment they need and deserve.

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Smartphone Medical Applications Useful for the Rural Practitioner

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Abstract

Like other similarly situated rural states, West Virginia's patients and practitioners often experience access barriers to current medical expertise for multiple disciplines. This article was generated to help bridge this gap and highlights the best-rated mobile medical applications (Apps) for smartphone use. From finding drug interactions and dosing schedules to discussing patients in HIPAA-compliant formats, Apps are becoming integral to the practice of 21st Century medicine. The increased use of these Apps by physicians-in-training and established practitioners highlights the shift from reliance upon the medical library to the easy to use mobile-based technology platforms. This article provides our practitioners, physician extenders, medical trainees, and office staff a guide to access and assess the utility of some of the best rated medical and HIPAA compliant Apps.

Introduction

One seminal characteristic of the healthcare industry is the continuous focus on efforts to improve patient care. While the advent of various procedures and instruments has altered the scope of healthcare enormously over the years, no development may prove to be as significant and profound as the invention of the smartphone device; one which can assist the practice of medicine. The use of the smartphone, "specifically a type of mobile phone which incorporates the functions of a palmtop computer, personal digital assistant, or similar device," has already begun to alter how healthcare workers, in particular physicians, interact with patients.[1] The real benefit of mobile telecommunication devices in the clinical setting is beyond the incremental advance from one way pagers to two-way communication. Smartphones have the capability of providing users with unlimited amounts of information through access to the internet, but more importantly, through mobile applications (Apps) -- self-contained software programs that can be downloaded and run on smartphones.[2] The most useful Apps are continually updated and provide a powerful tool for the practicing physician, physician extenders and medical trainees.

Because smartphones and their accompanying App software distribution platforms have existed for a relatively short period of time, there is minimal data which reflects the exploit of Apps as a tool within clinical practice. Nonetheless, a digital survey administered to all ACGME (*i.e.* Accreditation Council for Graduate Medical Education) training programs in 2011 found that of the residents, fellows, and attending physicians who responded, "over 85% use some type of smartphone and 56% use medical apps to aid with their practice. Of the three major operating systems (the iPhone's iOS, Android's Linux, and Blackberry's Blackberry OS), iOS was the most widely utilized".[2] This survey demonstrates that the vast majority of younger physicians do indeed possess smartphones, and slightly over half of all physicians currently utilize some type of App in their practice. Moreover, the implementation of this technology into everyday practice appears to be more prevalent among recent medical school graduates than experienced physicians, suggesting that the use of medical Apps will be increasingly employed as a new generation steps into the field of healthcare. Since App utilization rates are increasing, this article seeks to offer insight into some of the most useful medical Apps on the market today. This article reviews four of the most prevalent medical-service App categories (*i.e.* drug reference, disease reference, patient visual assistance, HIPAA compliant conversations) and provides ten top rated apps by industry reviewers. Of note, the Health Insurance Portability and Accountability Act (HIPAA) requires all "covered entities" (*e.g.* health care providers) to "have in place appropriate administrative, technical, and physical safeguards to protect the privacy of protected health information".[3] In this regard, HIPAA mandates that disclosure of electronic protected health information be made in compliance with the requirements of its "Security Rule".[4]

In summation, an increasing number of Apps are being developed to allow a physician's smartphone usage to be in compliance with the mandates set forth by HIPAA. These Apps are designed to provide safeguards

not available via standard text messaging (*i.e.* secure data centers, encryption, recipient authentication, audit controls, etc.).[5] Although Apps such as TigerText Pro and Doximity are profiled within this article, numerous other Apps offering HIPAA-compliant text messaging capabilities are also currently available in the marketplace.[6] In addition, cell phone companies themselves are now beginning to actively offer HIPAA-compliant text messaging services as a premium add-on to standard cellular phone service.[7] Given the industry's heightened focus on this area of App development, it appears the HIPAA-compliant text messaging sector is poised to grow exponentially over the next few years. Such growth should provide physicians with a multitude of options to confirm that all mobile-based communications containing protected health information are transferred in a HIPAA-compliant manner.[8]

Downloading Mobile Apps

For new smartphone users, navigating within the various App software distribution platforms (*e.g.* the iPhone App Store, the Google Play Store, etc.) can be a daunting task. In order to facilitate this process, we've provided a short tutorial for those unfamiliar with downloading Apps onto a smartphone. The first step in this process requires accessing the platform utilized to download Apps. For the two most widely utilized smartphones, the iPhone and Android, these platforms are referred to as the App Store and the Play Store. These platforms are inherent on their respective smartphones and appear as such:

Having accessed the appropriate platform, one can then proceed to search for Apps directly or choose from pre-determined lists of Apps. Videos with more detailed instructions of how to access and download an App from these two platforms can be found at the following two web addresses:

For the iPhone App Store [9]: http://www.youtube.com/watch?v=q-w5vBdisw8

For the Google Play Store [10]: http://www.youtube.com/watch?v=0ET2E9tjm2k

Nevertheless, even for experienced smartphone users, these platforms offer an ever-changing landscape making it difficult to select an appropriate App. Unfortunately, there is not an easy manner for a user to test an App; at best, one can gather brief information and a few sample photos from the App's information page before committing to a full download. However, due to time constraints, few physicians have the ability to download multiple Apps and sift through their various features before determining if one is satisfactory for use within their practice. With the goal of circumventing this cumbersome trial and error process, the following is a direct comparison of some of the most widely used and best rated medical Apps available in the marketplace today.

Show me the Apps!

The following ten Apps are categorized in terms of their use, cost, publisher and individual functions to provide a quick overview of their relevant details and features.

1. **Medscape**[11-14] by WebMD
Use: Drug and Disease Reference, Medical News and Education
Cost: Free
Pros: Medscape has many useful features, including clinical disease, procedure and news and education sections. The App's interface is very streamlined and the search function is more user-friendly than many of its competitors. Furthermore, the drug section includes drug interaction, pill identification and formulary features.[12]

Cons: Medscape requires users to complete a one-time registration.[12]

Summary: Medscape is a very quick App that is excellent for referencing drugs and disease. The multitude of useful features possessed by this App make it very user-friendly and its free price tag renders it an attractive choice for all physicians. For the practitioner who is looking for an encompassing single app, Medscape would provide the best utility. It is compatible with iPhone, Android, and Blackberry devices.

2. MedPage Today Mobile[15]
by MedPage Today
Use: Drug and Disease Reference, Medical News and Education and CME
Cost: Free
Pros: MedPage Today Mobile is a comprehensive App that contains sections for drug and disease reference, as well as medical news and education. This App also possesses a user-friendly interface. The ability to obtain CME credit within this App is a unique and convenient feature not supplied by the majority of competing Apps.[15]

Cons: MedPage Today Mobile requires users to complete a one-time registration.[15]

Summary: MedPage Today Mobile is an excellent App that rivals MedScape as a practitioner's primary App. It is compatible with iPhone and Android devices, but not Blackberry devices.

3. Micromedex[11, 14, 16-17] by Truven Health Analytics
Use: Drug Reference (additional Apps from Micromedex Include Drug Interactions, IV compatibility)
Cost: Free
Pros: Micromedex allows users to search for drugs using inquiries independent from a drug's name. Accordingly, unlike many of its competitors, searches relying upon drug class, black box warnings, contraindications, pediatric dosing and drug interactions will all yield fruitful results.[17]
Cons: Micromedex does not provide pill identification, a dosing calculator or formulary functions. Furthermore, this App does not possess a disease reference section.
Summary: Micromedex is a very streamlined App with an intuitive user interface that provides up-to-date drug information. However, it unfortunately lacks some of the functions that other Apps provide. Notwithstanding the foregoing limitations, Micromedex provides concise drug information more efficiently than most of its competitors.[17] It is compatible with iPhone, Android, and Blackberry devices.

4. Skyscape Medical Resources[11, 14, 18-19] by Skyscape
Use: Drug and Disease Reference, Decision Making, Medical News
Cost: Free
Pros: In addition to possessing a limited drug reference section, Skyscape provides free access to disease reference (Clinical Medicine), a decision making section (Archimedes) and a medical education section (MedAlert).[19]
Cons: The Skyscape user interface is cumbersome and searching can often be difficult. Similar to many of its competitors, Skyscape possesses a registration requirement.
Summary: Skyscape provides a plethora of general information and possesses a first-rate drug dosing calculator and is an excellent overall clinical resource. While its drug reference capabilities are limited, it is a useful tool for obtaining up-to-date information on various drug, disease and general medical issues. It is compatible with iPhone, Android, and Blackberry devices.

5. Epocrates Rx[11, 14, 20-22] by AetnaHealth
Use: Drug Reference (Disease Reference with full version)
Cost: Free (Full Version $159.99)
Pros: Epocrates Rx possesses a robust drug reference section and provides users with an intuitive and quick interface.[22] In addition; this App contains one of the best pill ID features of any drug App.[14]
Cons: Epocrates Rx's disease reference feature is only available after the purchase of its full version.
Summary: Epocrates Rx is Epocrates' basic drug reference App that provides information about 8,000 referenced drugs. It also supplies users with a drug interaction, pill identification, dosing calculator and formulary list features. As noted above, the purchase of the full version is required to garner access to the App's impressive disease reference section, but carries a price tag of $159.99, utilization of the free Medscape or Medpage Today Apps left to the discretion of the user. It is compatible with iPhone, Android, and Blackberry devices.

6. Calculate[23-24] by QxMD
Use: Clinical Assessment and Decision Maker
Cost: Free
Pros: Relying upon user-provided clinical data, Calculate provides physicians with common clinical predictors, including CHADS2 scores, RANSON's criteria, total body burn percentage, ab=nd cardiovascular risk, among many others. Subsequent to procuring the aforementioned clinical predictors, this App also provides the user with treatment recommendations. Furthermore, the App interface is extremely user-friendly and is easy to navigate.[24]
Cons: While Calculate provides sufficient references for much of its clinical information, some of the links to the source data are difficult to access.[24]
Summary: Calculate is considered one of the best clinical calculator Apps on the market and it has the capability to provide considerable assistance with clinical decision making.[24] It is compatible with iPhone, Android, and Blackberry devices.

7. TigerText PRO[25-26] by X Sigma Partners LLC
Use: Secure text-messaging
Cost: Monthly subscription fee required
Pros: TigerText Pro offers its users the ability to send text messaging and images, including CTs and EKGs, in a HIPAA-compliant manner. To accomplish this goal, TigerText Pro possesses a multitude of security features, including, but not limited to, delivery and read notifications, sender-controlled message lifespans and an integrated practice directory.[26]
Cons: Per its sales representatives, the free version of TigerText is not HIPAA-compliant. Consequently, users are directed to upgrade to the HIPAA-compliant TigerText Pro version, which requires a monthly subscription fee.

Summary: TigerText Pro offers a user-friendly interface and allows users to send mobile text messages and images to their colleagues in a HIPAA-compliant manner. Said text messages and images can be automatically deleted after the expiration of a sender-defined period of time, which, along with other similar features, provides a significant safeguard to ensure such information is kept secure. It is compatible with iPhone and Android devices, but not Blackberry devices.

8. MobilePDR[11, 27-28] by Skyscape and MedHand
Use: Drug Reference
Cost: Free (requires a DEA number for providers)
Pros: MobilePDR provides a multitude of FDA-regulated drug reference information.[28]

Cons: MobilePDR contains a smaller drug database than many of its competitors and requires user registration. Also, this App lacks a dosing calculator and formulatory functions. Finally, use of this App is limited to DEA-sanctioned providers, thereby preventing utilization by a physician's support staff.

Summary: Unfortunately, MobilePDR's database contains fewer drugs than many of its competitors and it lacks functions possessed by many competing Apps. However, it is a user-friendly App that provides verified FDA-regulated data.[28] It is compatible with iPhone, Android, and Blackberry devices.

9. Human Anatomy Atlas[29-31] by Visible Body
Use: Patient Education
Cost: Full Version $34.99
Pros: Via the utilization of the Human Anatomy Atlas App, users are able to annotate images and additionally print or email said images to their patients.[29] A 3D display allows the user to rotate, zoom and move images in order to look at them from different viewing angles.

Cons: The free version of Human Anatomy Atlas is no longer available. In addition, the labeling of anatomic structures within this App is occasionally deficient.[31]

Summary: Human Anatomy Atlas provides excellent image resolution and visually striking images in 3D. Such features make this App a very attractive tool for both physician and patient education. However, utilization requires the purchase of the full App.[31] It is compatible with iPhone and Android devices, but not Blackberry devices.

10. Doximity[32-34] by Visible Health
Use: Physician Contact Management, HIPAA-compliant fax/email/text-messaging
Cost: Free

Pros: Doximity possesses a physician contact directory, which allows users to search for physicians by both specialty and location. Similar to its competitors, Doximity possesses a multitude of features designed to ensure HIPAA-compliance (*e.g.* previously sent and stored messages are deleted after a fixed amount of time).[33] Consequently, Doximity allows users to fax, email and text message information, including high-resolution images, such as CTs or EKGs, in a secure, HIPAA-compliant manner.

Cons: Communication is limited to physicians who also subscribe to Doximity, which inherently excludes usage by non-physician staff.[34]

Summary: For communication between physicians, Doximity is an effective App which streamlines communication and ensures said communication is sent in a secure, HIPAA-compliant manner. However, for larger practices necessitating HIPAA-compliant communication between physicians and non-physician staff, Doximity lacks the attractiveness of some of its competitors.[33] It is compatible with iPhone and Android devices, but not Blackberry devices.

Conclusions

At the time of this paper generation there are over 900,000 Apps in the iPhone App Store. The number of available Apps to answer a medical question is overwhelming. This article therefore provides a solid foundation to begin exploration of some of the best rated and most useful medical and HIPAA Apps available. Collectively, the requirements of HIPAA and its Security Rule are meticulous and outside of the purview of this article; to ensure compliance in their unique practice, physicians are encouraged to regularly discuss such issues with their compliance officer and/or attorney. Nonetheless, since West Virginia's patients and practitioners often experience access barriers to current medical expertise, use of the mobile smartphone Apps presented here will provide physicians, physician extenders and medical trainee's continually updated information that they can incorporate into daily clinical practice.

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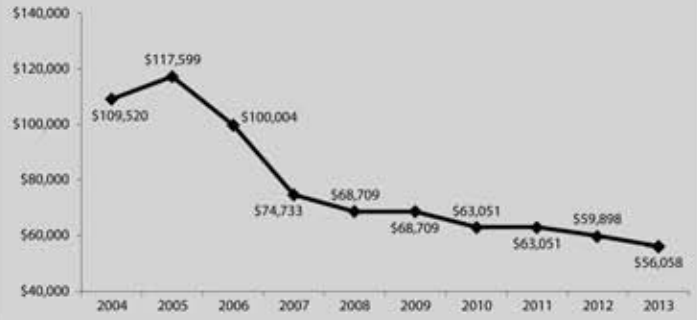

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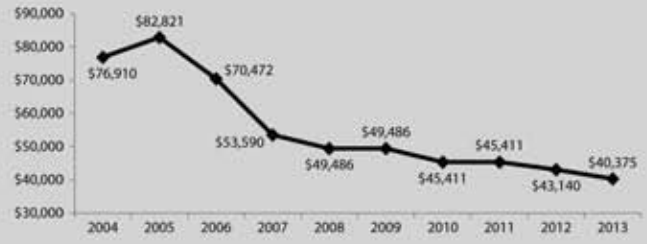

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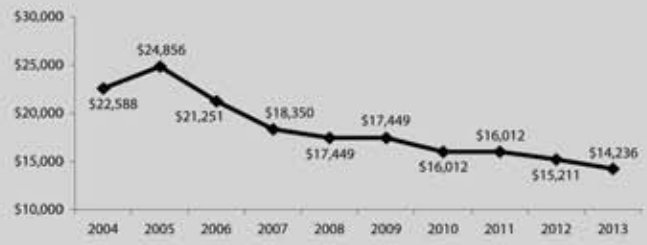

Disseminated Blastomycosis Presenting as Mastoiditis and Epidural Abscess

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Abstract

Blastomycosis is a systemic fungal infection that affects primarily the lungs. Head and neck involvement has been reported most commonly in the larynx as well as oral and nasal mucosa. Temporal bone involvement is extremely rare. We report a case of disseminated blastomycosis presenting as mastoiditis and epidural abscess. We discuss the importance of early diagnosis and prompt initiation of treatment for optimal outcome.

Introduction

Blastomycosis is a systemic pyogranulomatous fungal infection that primarily involves the lungs and is caused by the conidia of Blastomyces dermatitdis.[1] Lymphohematogenous dissemination frequently occurs and extrapulmonary disease involving the skin, bones, and genitourinary system is common.[1] Temporal bone and middle ear involvement is extremely rare and presents a diagnostic challenge. We present a case of disseminated blastomycosis presenting as mastoiditis with epidural abscess. An approval to describe this case has been obtained from the institutional review board of West Virginia University.

Case report

A 75 year-old female was referred with a 1 month-history of worsening right post-auricular swelling associated with aural fullness, temporal headache, and pulsatile tinnitus. She denied ear infections, dizziness, or systemic symptoms. Her medical history was noteworthy for chronic lymphocytic leukemia (CLL) and well-controlled diabetes mellitus. An outside general surgeon had attempted excision of the mass but encountered a pulsatile lesion and was concerned about a possible cerebrospinal fluid leak. Physical examination showed a tender and bulging scalp incision located 2cm posterior to the superior portion of the right pinna. Right ear exam showed a dull tympanic membrane. The rest of her examination was unremarkable.

CT scans of the brain and temporal bones showed right mastoid and middle ear effusions with erosion of the tegmen mastoideum posteriorly, and an epidural abscess with transcalvarial extension into the posterior auricular subcutaneous region (Figure 1). Of interest, the scan also showed dehiscence of the superior semicircular canal with moth-eaten appearance of the adjacent tegmen. Brain MRI showed no intraparenchymal or sigmoid/transverse sinus involvement.

Incision and debridement of the wound, and tympanostomy with PE tube insertion were performed. A 1.5cm defect in the skull was noted just posterior and superior to the mastoid area. Cerebrospinal fluid was not encountered. Cultures were taken from the epidural drainage and ear fluid. Histopathological evaluation of epidural tissue showed predominantly chronic and granulomatous inflammation with numerous large broad based budding organisms seen in black on GMS stain (Figure 2). Both epidural and ear fluid grew Blastomyces dermatitidis.

Blood cultures and serum Blastomyces antibody test were negative. CT chest without IV contrast confirmed a systemic infection in the lungs and mediastinal and axillary lymph nodes. On the recommendations of the infectious diseases team, the patient completed 5 days of intravenous Amphotericin B (total of 1 gm) and then was switched to oral voriconazole 200 mg twice per day, and was discharged home 7 days after her surgery on oral voriconazole therapy. Her audiogram, performed post-operatively, showed mild to severe mixed hearing loss on the right and normal to severe sensorineural hearing loss on the left, with large volume type B tympanogram on the right side. She completed a total of 6 months of oral voriconazole. Twelve months follow up showed no recurrence of the infection.

Discussion

Both acute and chronic infections with blastomycosis may mimic other diseases due to the rarity and variability of the presentation.[1] Bone involvement, for instance, may be thought to be malignant metastatic lesions. Therefore a high index of suspicion is needed, and aggressive collection of samples for pathologic and microbiologic examination is essential for accurate diagnosis. Also, the infection tends to present

Figure 1: *Non-contrast axial computed tomography (CT) scan of the right temporal bone, with soft tissue window (A) showing the epidural abscess (arrows), and bone-window (B) showing erosion of the tegmen mastoideum (arrow) with transcalvarial extension (asterix).*

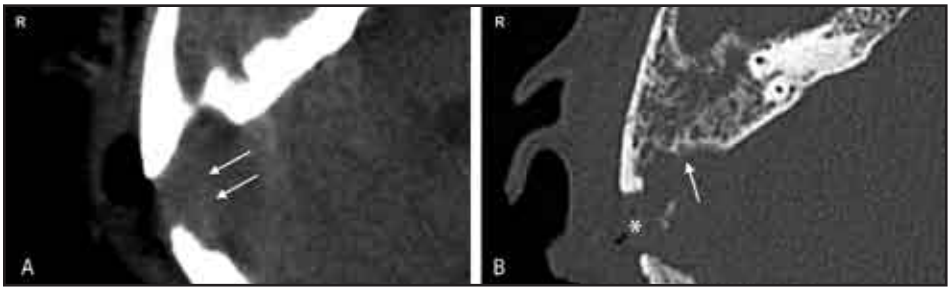
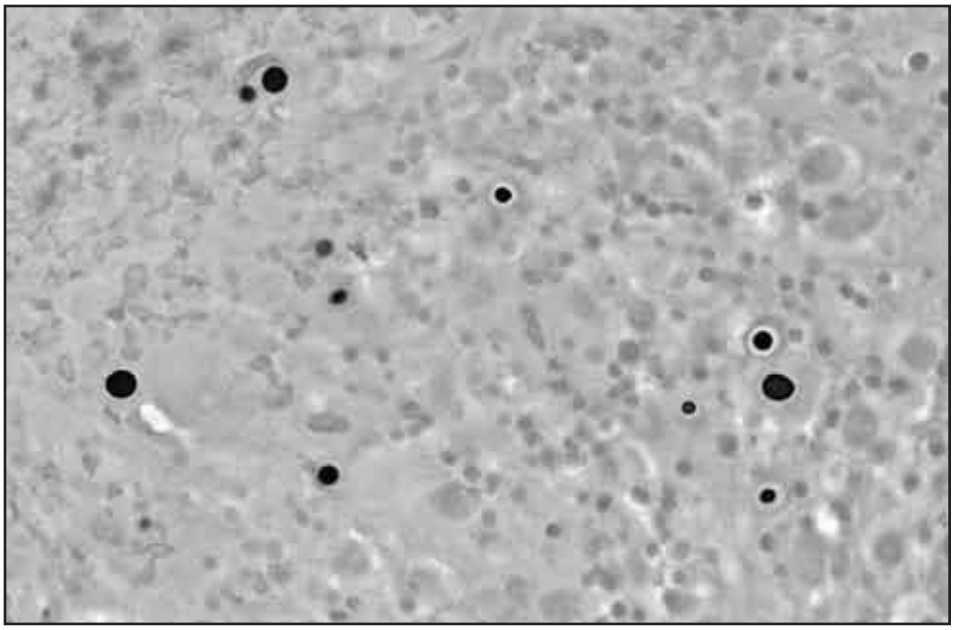


Figure 2: *Grocott's methenamine silver (GMS) stain of the epidural tissue showing broad based budding organisms in black consistent with Blastomyces dermatitidis.*



more commonly as disseminated and aggressive infection in immunocompromised patients with a higher mortality rate.[2] Abnormalities of T-lymphocyte function, such as hematologic abnormalities (including CLL) predispose to a more aggressive and serious infection.[2]

While the lungs are the usual portal of entry and the most common site of infection in Blastomycosis, extrapulmonary involvement has been reported to involve almost every organ. Head and neck involvement with blastomycosis has been reported most commonly in the larynx and involving oral and nasal mucosa.[3] Temporal bone involvement is extremely rare, and the first case was reported by Louis III in 1972.[4] Since then, several reports of temporal bone involvement have appeared. Istorico et al[5] in 1991 reported 2 cases of blastomycotic otitis media, with facial nerve paresis in one of the two patients. Three additional cases of otitis media with petrous apex and cranial base involvement were subsequently reported by Farr et al[6] in 1992, Weingarten et al[7] in 1993, and Blackledge et al[8] in 2001. Our case is unique in its presentation. It represents a case of disseminated blastomycosis with mastoiditis, and epidural and posterior auricular subcutaneous abscess as the presenting sign. It is also noteworthy for the superior semicircular canal dehiscence which most likely is an incidental finding.

Prompt initiation of systemic treatment in disseminated blastomycosis is essential for optimal prognosis. All patients with disseminated disease require initial treatment with intravenous Amphotericin B.[9] A cumulative dose of 1g or greater is recommended. Blastomyces dermatitidis is generally susceptible to voriconazole which has been successfully used in treating CNS infections due to its ability to achieve therapeutic concentration in the brain and CSF.[10] A 6-month treatment course is recommended.

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WVU Cystic Fibrosis Center ranked in nation's top 10

Thanks to a multi-disciplinary team approach to patient care, the WVU Mountain State Cystic Fibrosis Center is among the top 10 centers of its kind in the country.

The Cystic Fibrosis Foundation's Care Center Network includes 165 centers throughout the United States. Information from the network's most recent report shows the Mountain State Cystic Fibrosis Center ranks among the nation's top 10, based on 2012 pediatric pulmonary and nutrition data.

"This is the result of dedication by the entire cystic fibrosis (CF) team, through team management, over nine years of quality improvement work, and attention to excellence in patient care," Kathryn Moffett, M.D., director of the Mountain State Cystic Fibrosis Center and professor in the WVU Department of Pediatrics, said. "I am proud of the continued dedication and support of the Department of Pediatrics, West Virginia University, and WVU Healthcare to make this possible."

Dr. Moffett added that two of the most important factors are lung function for 6- to 17-year-olds as well as the nutritional status in children, which is measured by median body mass index for 2- to 19-year-olds and median weight for children less than 24 months of age.

"Looking at the trends over the last 10 years, our data in these areas have steadily improved," Moffett said. "We focus on lung function, nutrition, and overall health. The healthier the babies and children are, the better they grow and the better their lungs function."

The WVU Mountain State Cystic Fibrosis Center has more than 25 years of experience caring for children with this disease, combining research with a team approach that results in the highest lung function for West Virginia children with CF.

"Because cystic fibrosis often affects many of the body's organs and functions, and related complications can vary by age, our cystic fibrosis experts, other medical specialists, program nurse coordinator, dietitians, respiratory therapists, and families work together as a team," Moffett explained. "This multi-specialty team approach ensures each patient receives the most comprehensive care."

Paperless progress: WVU Healthcare awarded for e-records transition, use, management

Rooms crowded with shelves of bulging orange file folders of patient records on Ruby Memorial Hospital's first floor are now a distant memory, and the use of electronic medical records is a proven, effective way to streamline patient care while protecting personal health information. Now, WVU Healthcare's flagship hospital and associated outpatient clinics have been recognized as national leaders at the forefront of successfully putting new records technology to work, earning HIMSS Analytics' highest benchmark, their Electronic Medical Records Adoption Model (EMRAM) Stage 7 Award.

Just over two percent of health care organizations nationwide have achieved this designation, with separate award categories for hospitals and outpatient clinics. WVU Healthcare is only the fifth organization in the country to receive Stage 7 recognition for both, and is the lone health provider in West Virginia to reach this status.

HIMSS Analytics is a not-for-profit subsidiary of the Healthcare Information and Management Systems Society (HIMSS). The company developed EMRAM in 2005 as a methodology for evaluating the progress and impact of electronic medical record systems for hospitals in the HIMSS Analytics™ Database. There are eight stages (0-7) that measure a hospital's implementation and utilization of information technology applications. The final stage, Stage 7, represents a paperless, advanced patient record environment.

"This transition was a $91 million decision," Bruce McClymonds, WVU Healthcare president and CEO, explained. "The decision to make this significant investment was predicated on the presumption that we could affect significant improvements in patient care, clinical quality and outcomes through the more effective use of clinical information."

WVU Healthcare has had an electronic medical record and computerized physician order entry system for 20 years. Several years ago, the decision was made to explore the implementation of a significant upgrade to what is considered the most advanced, state of the art integrated electronic medical records system in the healthcare industry. Clinicians instantly access accurate, real-time patient records in any WVU Healthcare facility, helping our providers more effectively diagnose patients, reduce preventable medical errors and provide safer care.

The system has already proven itself by having a direct and positive effect on patient care, clinical quality and outcomes, even convenience. In addition, tens of thousands of patients each year view their scheduled appointments, test results and other information through myWVUchart, WVU Healthcare's patient portal, which debuted in 2010.

School of Medicine dean part of international team investigating renal-artery stenting


Dr. Joseph I. Shapiro

Dr. Joseph I. Shapiro, dean of the Joan C. Edwards School of Medicine, and a team of researchers around the world had their findings published in the New England Journal of Medicine in November.

The multi-center study included 947 patients with renal-artery stenosis and either high blood pressure or chronic kidney disease, who were then randomized to receive either medical therapy and stenting or medical therapy alone. The study outcomes indicated there was no significant benefit to the population that received the stenting procedure.

Cardiovascular Outcomes in Renal Atherosclerotic Lesions (CORAL), was the largest study examining renal-artery stenting which became popular in the 1990s after some small studies suggested there were benefits to the procedure. Statistics show about 100 million Americans have hypertension and between 1 and 5 percent will develop atherosclerotic renal-artery stenosis.

"Hardening of the arteries to the kidneys is a significant public health issue," Shapiro, who is a longtime kidney disease researcher, said. "This study was designed to determine whether stenting, with its substantial cost and potential risk, is a viable treatment option for patients with atherosclerotic renal-artery stenosis. Our research indicated that it is not the best option for most patients, ergo, contemporary medical treatment should be our go-to treatment."

Approximately 40,000 patients per year undergo a renal-artery stent in the United States. If the results of the CORAL trial are embraced, there will be substantial financial savings in the care of these patients.

Shapiro served as the enrollment chairman for the study.

School of Medicine grads gather for 30th reunion at school's alumni weekend

Marshall University's Joan C. Edwards School of Medicine celebrated its annual alumni homecoming weekend in November.

Classes honored included the class of 1983, which marked its 30th reunion, and the class of 1988, which celebrated its 25th. In addition, the classes of 1993, 1998, 2003 and 2008 marked anniversaries.

Dr. R. Mark Hatfield, class of 1983, was named the 2013 Distinguished Alumnus by the School of Medicine Alumni Association and was recognized during the annual homecoming banquet.

School of Medicine professor serves as editor for medical school curriculum e-book

Dr. Aaron M. McGuffin, associate professor in the department of pediatrics at the Joan C. Edwards School of Medicine, and a team of 48 students from 11 medical schools have created a medical curriculum e-book that was released online.

"Universal Notes for Medical Students 2013" is available on the Inkling store.

"This first edition contains the majority of drugs, bugs and diseases that were determined to be important for medical students to know," McGuffin said. "There is still a great deal of pertinent basic science information to add, but we are steadily filling those gaps."

The book's initial concept was created by McGuffin and student editors Becca Hayes, Marshall University School of Medicine; John Corker, Wright State University Boonshoft School of Medicine; Jessica Deslauriers, University of South Florida; Laura Halpin, University of Toledo; and David Savage, University of Texas at Houston. The concept team, which included others from Marshall's School of Medicine, worked to establish a website, www.myuniversalnotes.com, to recruit medical students to write topics for the e-book.

The medical students submitted material on hundreds of topics to create the primary content of the e-book, which was then reviewed by the student editors and a physician panel to ensure accuracy and consistency of the material.

The e-book is the first in a series of projects by Universal Notes™ aimed at revolutionizing the way medical students are educated around the world.

WVSOM president, Healthy Children's Initiative receive award

West Virginia School of Osteopathic Medicine (WVSOM) President Michael Adelman, D.O., D.P.M., J.D., and the WVSOM Healthy Children's Initiative received the 2013 Governor's Award for Excellence in Rural Health presented Oct. 22 during the West Virginia Rural Health Conference Annual Awards and Recognition Luncheon held at the Stonewall Resort.

The Governor's Award for Excellence is presented to an individual or organization in recognition of exceptionally meritorious contributions to the improvement of health for the people in rural West Virginia. It honors creative work of particular effectiveness in applying knowledge or innovative organizational work to the betterment of community health. Individuals or organizations nominated for the award have made significant and well-recognized contributions to the improvement of rural health in West Virginia.

WVSOM's Healthy Children's Initiative currently provides four ways for children in the state to receive targeted content about health and nutrition:

1. **Television –** The Abracadabra television show, now recording its third season, airs on WV Public Broadcasting. The show features magic, ventriloquism, humor and original music to demonstrate important lessons about health, nutrition, exercise and science.
2. **Live events –** Cast member events in rural elementary schools and community centers entertain children and offer one-on-one engagement.
3. **Online –** The show's website, www.abracadabra.org, offers children aged 4-10 games and activities designed around health and nutrition. Additional content is available for parents and teachers.
4. **Publications –** Activity books and other materials introduce young children to the transformative power that comes from making healthy choices.

In acceptance remarks taped from the set of Abracadabra, Adelman credited an integrated educational strategy, which contributes to the success of the program's outreach.

"Everyone knows that saying some magic words will not make childhood obesity disappear," Adelman said. "But the components of the Healthy Children's Initiative combined together – the television show, our online content, publications for parents, teachers and young children, along with school outreach and live events – can empower young people to take an active role in making healthy choices."

Adelman believes children want to be healthy. "Young people want to have the energy and stamina to play and be strong," he said. "The WVSOM Healthy Children's Initiative puts the knowledge into their hands to make good decisions so they can start early and grow in fitness their entire lives."

2013 Interim American Medical Association Meeting

Gaylord National Resort & Convention Center
National Harbor, Maryland

November 16 - 19, 2013

This year's meeting as held at The Gaylord National Hotel in Maryland. The proximity of our meeting to Washington, DC, enabled delegates to meet with their respective state representatives.

The WVSMA delegation included Dr. Joseph Selby, MD, Jim Felsen, MD, 2013-2014 WVSMA President, Reginald McClung, MD and Evan Jenkins, Executive Director, West Virginia State Medical Association.

The Joan C. Edwards School of Medicine at Marshall University was represented by seven medical students: May Bronder, Lauren Burunder, Chad Crigger, John Davitt, Aaron Don, Warren Doyle and Joe Wilson. Jay Bronder was elected as the third official delegate to the AMA House of Delegates. West Virginia now has three seats in the AMA HOD.

Topics of discussion centered on the hot button issues being debated in the U.S. Congress, including the repeal of SGR, the deluge of changes and challenges facing physicians due to the passage of the Affordable Care Act, transition of ICD9 to ICD10 and physician employment.

Forum on Medical Affairs

A special seminar took place during this forum on the subject of: Accountable Care, Who's Accountable to Whom? Upholding Physician Ethics and Patient Trust. Two West Virginia natives participated as speakers, Dominic Gaziano, MD, originally from Charleston and who now runs a very successful ACO in Massachusetts, and Nancy Nielsen, MD past president of the AMA who hails from Elkins, WV.

SGR

The AMA leadership supports SGR repeal and encourages all physicians to call or write to their congressional representatives now! If the SGR is not repealed this year, the cost is forecasted at $18 billion dollars by the end of 2014. A decade of temporary patches has now exceeded the cost of a permanent fix—$54 billion dollars!

ICD10

A bill to repeal the law requiring a transition of ICD-9 to ICD-10 coding is now in the U.S. House of Representatives. Significant administrative and financial burdens will befall physicians attempting to make this transition, and thus the presentation of this Bill. The transition, scheduled to start October, 2014 would result in a fivefold increase in diagnostic codes. The cost to physicians to comply with the mandate can be significant depending on the size of the practice; significant claims processing and payment delays also are anticipated. Coupled with requirements of ACA, physicians find compliance with the ICD-9 to ICD-10 untenable.

Legislative Priorities

Priorities included—

- Medicare Physicians Payment Reform
- Patient Empowerment Act
- Private Contracting
- Patient Access to Quality Healthcare Act
- Quality Health Professional Act
- Provider Non-Discrimination Act and
- Protect Senior's Access to Medicare Act.

Physician Employment

With increasing numbers of physicians seeking employment, the American Medical Association issued a memorandum to highlight the AMA's Principle for Physician Employment that included:

1. Addressing Conflict of Interest Issues.
2. Advocacy for Patients and the profession.
3. Contracting.
4. Hospital Medical Staff Relations.
5. Payment Agreement.

Additional details are available on the AMA website, **ama-assn.org/go/employment.**

Constantino Y. Amores, MD, FACS, Chair of the WVSMA Delegation

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3. **Definition of Total Disability** — We will consider you totally disabled if an injury or sickness prevents you from performing the main duties of your occupation, even if you are working in another occupation.
4. **Definition of Partial Disability** — We will consider you partially disabled if, due to injury or sickness, you are able to do one or more, but not all of the main duties of your occupation or you can perform all of the main duties of your occupation for only 50 percent or less of the time normally required. We will reimburse you up to 50 percent of the maximum monthly benefit for up to 12 months, for the amount of covered overhead expenses you actually incur during a partial disability.
5. **Covered Business Expenses** — Examples of covered business overhead expenses include utilities, employee wages, property taxes, rent or mortgage payments, depreciation and interest payments on business debts, and property and liability insurance.
6. **Extension of Benefits** — If your total disability continues beyond the maximum benefit period and the amount of benefit you received for this period of total disability was less than the maximum overhead expense benefit, we may continue to pay benefits for up to an additional 12 months.
7. **Accumulation Benefit** — For any month during total disability that your covered overhead expenses do not equal the maximum monthly benefit, the difference may be carried forward to the following months when actual expenses are less than the maximum monthly benefit, while total disability continues and you have not reached the end of the maximum benefit period.
8. We will consider **successive periods of disability** as one period if they are caused by the same or related conditions and they are separated by less than six months. Both the elimination period and total disability benefit period allow for a 180-day break without requiring a new period to begin.
9. **Benefit Continuation After Death** — Should you die after satisfying the elimination period and while total disability benefits are being paid under the policy, benefits will continue to be paid under the policy, benefits will continue to pay covered expenses, which would otherwise have been paid had you lived, for up to three months, unless the business is sold.
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Congratulations to the Morgantown Certified Medical Coder Class!

by Barbara Good, CMC, CMOM, CMCO
Physician Practice Advocate, WVSMA

The WVSMA recently sponsored a Certified Medical Coder Class at Monongalia General Hospital's Hazel Ruby McQuain Conference Center in Morgantown, West Virginia. The class was taught by Practice Management Institute instructor Maggie Teter and facilitated by Barbara Good.

The CMC is a national certification which is designed for physician-based coding professionals. With the upcoming conversion to ICD-10, it is predicted that there will be a shortage of certified coders for physician offices. Becoming certified and more knowledgeable enables coders to appropriately bill to the highest degree of specificity; thereby ensuring that medical practices receive the entitled reimbursement.

The WVSMA congratulates the coders who have taken the class and passed the national certification exam in order to become certified.

Brandy Batson	Mannington, WV
Michelle Bolyard	Bridgeport, WV
Deborah Carpenter	Fairview, WV
Cynthia Chaney	Oakland, MD
Nancy Hilsbos	Fairmont, WV
Karen Lavery	Morgantown, WV
Heather Moore	Morgantown, WV
Vicky O'Dell	Fayetteville, WV
Jodi Raley	Morgantown, WV
Susan Umble	Morgantown, WV

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The WVSMA would like to thank the following physicians, residents, medical students and Alliance members for their contributions to WESPAC. These contributions were received as of December 9, 2013:

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Obituaries

The WVSMA remembers our esteemed colleagues...

Ulysses D. Agas, MD

Ulysses Diaz Agas, MD, was born on April 27, 1941 and passed away on Monday, November 11, 2013. Dr. Agas resided in Logan, WV.

George W. Hogshead, MD

Dr. George William Hogshead, 92, of Nitro, died at home on Wednesday, November 27, 2013.

He was preceded in death by his wife, Eleanor "Bobbie" Hogshead; brother, Dr. Ralph Hogshead, Jr. and sister Dr. Ida Mae Hogshead Steele.

George was born June 24, 1921, in Carbondale, WV, and was the son of Dr. Ralph and Norma Hogshead. He grew up in Montgomery and graduated from Montgomery High School. He received an AB undergraduate degree from West Virginia University and then completed his BS at the WVU Two-Year School of Medicine program. He later received his medical degree from Temple University School of Medicine in Philadelphia, Pa. He married his beloved wife, Bobbie, on August 23, 1946 in Ames, Iowa.

During WWII, George served in both the Army (Pvt. First Class) and Navy (Lieutenant-Medical Officer). He also served in the Korean War while in the Navy as Medical Officer. George practiced medicine for 40 years before retiring, and then became the first Medical Director of Thomas Memorial Hospital. He served his city as a member of Nitro City Council, Board of Directors for the Bank of Nitro and as Director of National Bank of Commerce of Nitro.

George is survived by his son, George Hogshead, Jr. and wife, Jean of Raleigh, N.C; daughter, Susan Valleau of Nitro; daughter, Deb Hogshead and husband, Doug Page of Troy, Ohio; son, John Hogshead and wife, Susan of Atlanta, Ga.; grandchildren, Jerod Valleau and wife, Tara, Oliver Valleau, Aaron Hogshead, Aygul Page, Brian Page, Colin Page and wife, Melissa; great-grandchildren, Mackenzie and Ainsley Valleau, Michael Page, John Page and Aisling Page.

The family wishes to extend heart felt gratitude to George's caregivers; Shila, Rosie, Ronda, D.J., Laura and also to the Hospice House.

In lieu of flowers, contributions can be made to one of the following organizations: Thomas Memorial Hospital Nurses' Scholarship Fund, St. Paul's United Methodist Church, or the Hospice House, 1601 Kanawha Blvd, W, Charleston, WV 25387.

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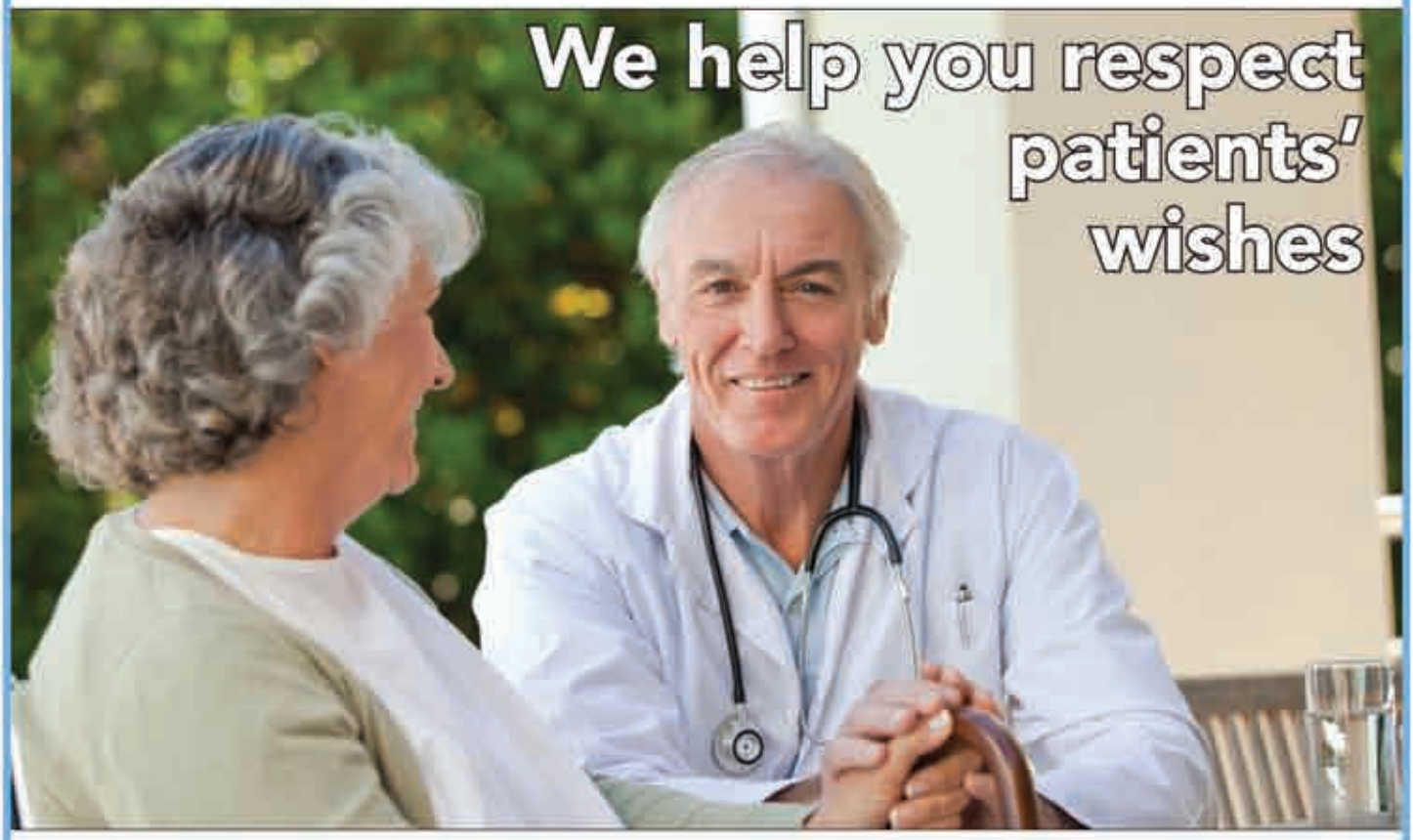

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Sign up to access the ***e-Directive Registry. Call 877-209-8086 today*** to find out how.

Physicians, please FAX the following

- POST (Physician Orders for Scope of Treatment)
- DNR (Do Not Resuscitate) card
- Medical Power of Attorney
- Living Will

and return forms to the patient.

West Virginia
e-Directive Registry

FAX forms to: 304-293-7442
www.wvendoflife.org

Agent-of-Choice

WEST VIRGINIA
MEDICAL INSURANCE AGENCY
"Meeting the insurance needs of physicians"

The West Virginia Medical Insurance Agency

- is a wholly owned subsidiary of the West Virginia State Medical Association
- is a full-service, one-stop insurance agency serving physicians throughout WV
- proudly represents and recommends the West Virginia Mutual Insurance Company

As a Full-Service, One-Stop Agency, We Offer:

- **Group Health, Life, Vision, Dental & Disability Insurance**
- **Disability Insurance 15% Premium Reduction for WVSMA Members**
- **NEW** **Disability Insurance 15% Premium Reduction for members of OMA of Health Care Providers, WVMGMA and WVAFP**
- **Medical Professional Liability Insurance**
- **Workers' Compensation Insurance**
- **Business-owners (BOP) Insurance for medical practices**
- **Individual Life Insurance**

WEST VIRGINIA State Medical Association

Call us for "valued assistance".

Telephone: 1-800-257-4747 or locally at 304-925-0342
Located at 4307 MacCorkle Ave., SE, Charleston, WV 25304

Steve Brown (ext. 22)
Robin Saddoris (ext. 17)

West Virginia Medical Journal
P.O. Box 4106
Charleston, WV 25364
www.wvsma.com

WEST VIRGINIA
RESPONDER EMERGENCY DEPLOYMENT INFORMATION SYSTEM
REDI

West Virginia Responder Emergency Deployment Information

What is WV REDI?

West Virginia Responder Emergency Deployment Information system

- WV REDI is a web-based registration system developed to facilitate health and medical response through identification of West Virginians willing to serve in public health emergency and non-emergency situations

Who can register?

- Registration is open to West Virginia's health and medical professionals, and others who live or work in West Virginia

How can I help?

- You can help by being willing to assist during a health related emergency or event and by registering in WV REDI

What if I can't go when called?

- Please remember that "volunteer" truly means volunteer. You can choose, at any time, to decline any request that you receive for deployment

How do I register?

- To register go to **www.wvredi.org** and click on "register now"

Where do I get more information?

- For more information, call **304-558-6900 ext. 2009**

Register today to be prepared for tomorrow!

Visit the www.wvredi.org homepage and click on "register now."

WEST VIRGINIA Department of Health & Human Resources

West Virginia Bureau for Public Health
Threat Preparedness
Department of Health and Human Resources