

AN OFFICIAL PUBLICATION OF THE SOCIETY OF HOSPITAL MEDICINE

The Hospitalist

Volume 10 Number 8
August 2006

The Coming Windfall

CMS proposes double-digit increases for work RVUs for services performed by hospitalists

In June the Centers for Medicare and Medicaid Services (CMS) issued a notice proposing changes to the Medicare Physician Fee Schedule (MPFS) that, if enacted, would significantly increase Medicare payments to hospitalists for many services routinely performed. Because many private health plans use the Medicare-approved RVUs for their own fee schedules, it is anticipated that hospitalists will likely see payment increases for their non-Medicare services as well.

The changes, which will take effect in January 2007 if enacted, reflect the recommendations of the Relative Value Update Committee (RUC) of the American Medical Association, along with input from SHM. At this point, however, they are only proposed changes that CMS could modify based on input from affected groups and Congress. SHM will continue to urge CMS to implement the proposed changes and we encourage all hospitalists and other interested individuals to send a letter to CMS indicating support for the proposed changes. (See "How to Show Your Support," p. 15.) CMS is accepting comments on the rule until August 21, with the final ruling expected in November.

SHM encourages hospitalists and others to send a letter to CMS indicating support for the proposed changes.

COLOR DAY PRODUCTION/GETTY IMAGES



Tough Negotiations Avert B.C. Hospitalist Walkout

By Gretchen Henkel

Two weeks of intense talks between hospitalists and government officials resulted in an 11th-hour compromise on June 29th in British Columbia, one day before hospitalists' contracts were set to expire. Throughout the month of June, the B.C. hospitalists had threatened to move back to community practice if the Ministry of Health (MOH) did not offer a contract that recognized the value of their work. The hospitalists contended that low payment schedules and staffing levels were seriously undermining staff retention and recruiting—as well as patient safety. During the dispute, MOH officials had been equally adamant about their position. The province's Minister of Health, George Abbott, said that the salaries were fair, and that the government would not be "held for ransom on this issue."

Hospitalists believed that failure to reach agreement would have left many hospitals scrambling to provide coverage for hospitalized patients.

Wayne DeMott, MD, is a hospitalist at Royal Jubilee Hospital in Victoria, B.C., and chief negotiator for the British Columbia Medical Association's Section of Hospitalist Medicine.

CONTINUED ON PAGE 11

Features

PALLIATIVE CARE/END OF LIFE

Pantilat Receives Endowed Chair . . .14
A first for hospital medicine

Uncertain Prognosis32
Considerations for high-risk patients at end of life

Hospice Heart40
A hospitalist fulfills her dream: directing an inpatient hospice unit

CLINICAL

The Yuk Factor16
Maggot debridement therapy makes a comeback

To Tube or Not to Tube?24
Implications of PEG tube use in hospitalized older adults

OPERATIONAL

Team Rapid22
Up close with an L.A. hospital's rapid response team

While Residents Rest42
Hospitalists fill in as residents' duty hours are reduced

RESEARCH

Take Research Initiative28
Avenues to increase hospital medicine research

Columns & Departments

Letters 3

SHM Point of View 4

★ New Department!

CDC Situation Room 5

Society Pages: SHM News 6

Career Development 9

What's Your Diagnosis? 10

Flashback 21

Classified Connection 49

Progress Notes 74

Printed
U.S. postage
paid at
Eaton, PA 18042
Permit # 7

The Hospitalist
John Wiley & Sons
111 River Street
Hoboken, NJ 07030

sh
Society of Hospital Medicine

WILEY

THE YUK FACTOR

Maggot debridement therapy: the ancient treatment for chronic wounds makes a comeback

■ By Pascal Steenvoorde, MD, MSc, Louk van Doorn, MSc, Cathrien E. Jacobi, PhD, and Jacques Oskam, MD, PhD



MAGGOT DEBRIDEMENT THERAPY

Despite modern wound treatment and broad-spectrum antibiotic treatment, patients with chronic wounds still exist. The appearance of antibiotic resistant bacteria, such as methicillin-resistant *Staphylococcus aureus* (MRSA) in the 1980s and '90s, gave rise to a search for other remedies. One of the remedies that has been re-discovered and subsequently successfully reintroduced is maggot debridement therapy (MDT).¹ The fact that more than 100 articles were published on the subject in the past two decades indicates that the use of maggots is making a strong comeback in medicine.² In January 2004, the U.S. Food and Drug Administration (FDA) issued 510(k)#33391, allowing production and marketing of maggots as a medical device. In this article, we discuss the use of MDT in patients with a chronic wound.

A LONG HISTORY OF MAGGOT THERAPY

MDT has been used in many cultures and has been known for centuries.³ Ambroise Parè is credited as the father of modern MDT. Unfortunately, no evidence can be found of Parè using maggots as a means to clean or heal wounds. The only reference is the often-cited case that occurred in 1557 at the battle of St. Quentin, when Parè observed soldiers whose wounds were covered by maggots. He mainly described the negative effects of the maggots, and, above all, believed they were spontaneously produced by the wound itself, not by the eggs of fly.⁴

Baron Larey (1766-1842) a famous surgeon in the army of Napoleon Bonaparte, wrote about soldiers who had larvae-infested wounds, but was frustrated that it was difficult to persuade his patients to leave the maggots in place, believing that "they promoted healing without leaving any damage."⁵

The first surgeon to use MDT in patients in the hospital was the orthopedic surgeon William Baer. In the 1920s he was faced with a group of untreatable patients with severe osteomyelitis (antibiotics had not yet been discovered). He successfully treated many patients with maggots, and because of his success the therapy became regularly used in the United States.⁶

By 1934 more than 1,000 surgeons were using maggot therapy. Surgical Maggots were available commercially from Lederle Corporation.⁷ But with the introduction of antibiotics in the 1940s, the use of maggots dropped off. In the following years, case reports were published only occasionally.

THE NEGATIVE IMAGE OF MAGGOTS

A large problem of MDT is the difficulty of this type of therapy to gain acceptance in the medical community. Maggots are as-



Figure 1: This patient had a malignant tumor of the leg removed and underwent post-operative radiotherapy. The wound contains necrosis and slough. An earlier sharp debridement and split skin graft produced no effect.



Figure 2: The full-grown maggots are removed after three days of treatment. There is no necrosis left. The wound was treated with four applications with a total of 145 maggots. The wound was subsequently treated with vacuum-assisted closure therapy and secondarily closed.



Figure 3: A patient with a necrotizing fasciitis of the left upper leg is treated with the contained technique. There is no normal proximal skin border, which would be needed for the free-range technique.

sociated with rotting and decay. The image is of filthy, low-life creatures that are ugly and disgusting. Although a nice recent example for the general public is the scene in the movie *Gladiator*. The main character (played by Russell Crow) is advised to leave the maggots that spontaneously infested a wound on his shoulder in place so that the wound would heal. He leaves them in place and the wound heals without any problem, enabling Crow's character to fight many battles.

In contrast, in an oral presentation we held recently at a Dutch scientific surgical meeting, a surgical professor in the audience said, "I will never allow those creatures in my ward."⁸ This remark shows that widespread use and acceptance of MDT has not yet been reached. It seems there is still much work to do before MDT is generally accepted as a therapeutic method.

Fortunately, the negative image that seems to exist among nurses and physicians does not seem to bother patients.⁹ We have treated more than 100 patients in our clinic with MDT. All patients to whom we proposed MDT agreed to the therapy. All were allowed to discontinue the therapy whenever they wanted; none did. In a survey of the first 38 MDT-treated patients, 89% agreed to another session of MDT if the surgeon believed it would be beneficial, and 94% of the patients said that they would recommend it to others. This is despite the fact that the therapy was not successful in all patients (there was a below-knee or above the knee amputation-rate of 19% among patients who underwent MDT).¹⁰

INDICATIONS AND EVIDENCE

Indications and contra-indications for maggot therapy are not well defined. Some state that all kind of wounds that contain necrosis or slough can be good candidates for MDT. In our own study of 101 patients with 116 wounds treated with maggots, we had an overall success rate of 67%. (Seventy-eight out of 116 wounds had a beneficial outcome.) However, in 13 patients with septic arthritis, all wounds failed. Success rates were significantly reduced in cases of chronic limb ischemia, visible tendon or bone, and in cases of duration longer than three months before the start of MDT.¹¹

Most physicians who start MDT use it mainly for worst-case scenarios. From our previous studies, it is clear that success rates in those patients are low. After witnessing a few failures, the physician is naturally reluctant to use it again.

What about evidence? Large randomized studies are lacking, although one containing 600 venous ulcer patients was initiated in 2004.¹² There have been three randomized studies performed. Wayman, et al., have shown the cost-effectiveness of lar-

CONTINUED ON PAGE 20

Although maggots are suitable agents for chronic wound treatment, it is likely that some wounds are more eligible than others for this type of treatment.

val therapy in venous ulcers compared with hydrogel dressing.¹³ Contreras, et al., could not find a difference between MDT and curettage and topical silver sulfadiazine in patients with venous leg ulcers.¹⁴ At the 36th annual meeting of the European Association for the Study of Diabetes, Markevich, et al., reported on a randomized, multicenter, double-blind controlled clinical trial (n=140) for neuropathic diabetic foot lesions compared to conventional treatment. They found a significant higher percentage of granulation tissue after 10 days, compared with the hydrogel group.¹⁵ Results from large case-series indicate that MDT works and could even save limbs.^{2,16-18} The mechanism of action has not been unraveled yet.

FACTORS INFLUENCING EFFECTIVENESS OF MDT

Unfortunately, the statement made by Thomas, who said that maggot therapy works by “secreting proteolytic enzymes that break down dead tissue, turning it into a soup, which they then ingest,”

still holds.¹⁹ It is known that there are mechanical effects, tissue growth effects, that direct killing of bacteria in the alimentary tract of the maggot takes place, and that maggots produce antibacterial factors.^{2,17,20-31}

Although maggots are suitable agents for chronic wound treatment, it is likely that some wounds are more eligible than others for this type of treatment. In our opinion, all wounds that contain gangrenous or necrotic tissue with infection seem to be suited for MDT.³² Success rates of MDT reported in literature vary, but seem to be around 80% to 90%.^{16,17,33} In our own series, success rate is about 70%.

Patient-selection (case-mix) and method of outcome measurement play essential roles in these percentages. In our opinion, all wounds that contain necrotic tissue can be debrided effectively with MDT. However, if for example wound ischemia is the major etiologic factor, this should also be addressed. In our experience, diabetic foot, venous ulcers, traumatic ulcers, and infections after surgical procedures are all good candidates for MDT.

Absolute contraindications in our opinion are wounds close to large, uncovered blood vessels and wounds that need immediate surgical debridement (e.g., in the case of a septic patient). A relative contraindication is patients with natural of medically induced coagulopathies, but also patient preference could play a role.³⁴

We have had very bad results with infected small joints of the foot; all wounds (n=13) eventually needed a small or large amputation.

Even the technique of application has an effect on outcome. There are two different application techniques: the free-range and the contained technique. The free-range technique is more effective in vitro and in-vivo and has become our standard application technique—not only in the outpatient department, but also in the intra-mural setting.^{35,36} (Figure 1, p. 16, shows a patient with a necrotic wound on the leg after radiation therapy and a surgical excision for a malignant tumor was performed.) Earlier surgical debridement combined with split skin graft failed. After four applications of maggots, the wound was free of necrosis and could be subsequently closed. (See Figure 2, p. 16.)

The contained technique is used in patients with bleeding tendencies and wounds that do not have enough healthy skin surrounding the wound; in other words, where the covering “cage” needed in case of the free-range technique can’t be applied. (This problem is shown in Figure 3, p. 16: A patient with necrotizing fasciitis of the left upper leg was treated with the contained technique—BiologiQ, Apeldoorn, Netherlands—as there is no proximal skin border. Of course, patient preference plays a role as well in the choice of application technique.³⁷

WOUND CLINIC

In the Netherlands maggots can be ordered easily and are delivered within 24 hours. We started a wound clinic in 2002. First it was for MDT alone, but now the scope is broader, and we treat chronic wounds with different kind of wound therapies. We have two nurses, one nurse practitioner, one resident-surgeon, and one vascular surgeon who apply the maggots.

Patients do not need to be admitted for MDT. Fifty-nine percent of our patients are treated in the outpatient department. We are able to treat as many as 10 or 15 patients in one session, but MDT-treated patients make up only two or three patients at a time.

We found that after fast, successful biological debridement with MDT we were left with a lot of patients with red, granulating wounds that needed our attention in order to prevent relapses. In our

In our clinic, we have treated more than a hundred patients with MDT, and all patients to whom we proposed MDT to agreed to the therapy.

opinion, there are many different treatment methods after MDT. Plaster casting in case of diabetic feet, secondary closure, and split skin grafting are different methods. However, other therapies like VAC-therapy and recently OASIS are promising.

At this time, all patients are prospectively followed after MDT. We are especially interested in patient selection and are now also aiming to find the ideal wound therapy after MDT. **TH**

Dr. Steenvoorde is a resident surgeon at Rijnland Hospital Leiderdorp, the Netherlands. van Doorn is a nurse-practitioner at Rijnland Hospital Leiderdorp. Jacobi is a senior researcher in the Medical Decision Department at Leiden University Medical Center, in the Netherlands. Dr. Oskam is a vascular surgeon at Rijnland Hospital Leiderdorp.

REFERENCES

1. Beasley WD, Hirst G. Making a meal of MRSA—the role of biosurgery in hospital-acquired infection. *J Hosp Infect.* 2004;56(1):6-9.
2. Jukema GN, Menon AG, Bernards AT, et al. Amputation-sparing treatment by nature: "surgical" maggots revisited. *Clin Infect Dis.* 2002 Dec 15;35(12):1566-1571.
3. Church JC. The traditional use of maggots in wound healing, and the development of larva therapy (biosurgery) in modern medicine. *J Altern Complement Med.* 1996 Winter;2(4):525-527.
4. Coppi C. I dressed your wounds, God healed you—a wounded person's psychology according to Ambroise Paré. *Ostomy Wound Manage.* 2005;51:62-64.
5. Goldstein HI. Maggots in the treatment of wound and bone infections. *J Bone Joint Surg.* 1931;13:476-478.
6. Baer WS. The treatment of chronic osteomyelitis with the maggot (larva of the blow fly). *J Bone Joint Surg.* 1931;13:438-475.
7. Puckner WA. New and nonofficial remedies, surgical maggots—Lederle. *J Am Med Assoc.* 1932;98(5):401.
8. Steenvoorde P, Doorn LV, Jacobi CE, et al. Maggot therapy: retrospective study comparing two different application-techniques. (Dutch). *Nederlands Tijdschrift voor Heelkunde.* 2006;15:86.
9. Contreras RJ, Fuentes SA, Karam-Orantes M, et al. Larval debridement therapy in Mexico. *Wound Care Canada.* 2005;3:42-46.
10. Steenvoorde P, Budding TJ, Engeland Av, et al. Maggot therapy and the "yuk factor": an issue for the patient? *Wound Repair Regen.* 2005 May-Jun;13(3):350-352.
11. Steenvoorde P, Jacobi CA, Doorn LV, et al. Maggot debridement therapy of infected ulcers: patient and wound factors influencing outcome. *Ann Royal Coll Surg Eng.* 2006.
12. Raynor P, Dumville J, Cullum N. A new clinical trial of the effect of larval therapy. *J Tissue Viability.* 2004 Jul;14(3):104-105.
13. Wayman J, Nirojogi V, Walker A, et al. The cost effectiveness of larval therapy in venous ulcers. *J Tissue Viability.* 2001 Jan;11(1):51.
14. Contreras RJ, Fuentes SA, Arroyo ES, et al. Larval debridement therapy and infection control in venous ulcers: a comparative study. Presented at: the Second World Union of Wound Healing Societies Meeting; July 8-13, 2004.
15. Markevich YO, McLeod-Roberts J, Mousley M, et al. Maggot therapy for diabetic neuropathic foot wounds: a randomized study. Presented at: the 36th Annual Meeting of the EASD; September 17-21, 2000. Ref Type: Conference Proceeding.
16. Wolff H, Hansson C. Larval therapy—an effective method for ulcer debridement. *Clin Exp Dermatol.* 2003;28:137.
17. Mumcuoglu KY, Ingber A, Gilead L, et al. Maggot therapy for the treatment of intractable wounds. *Int J Dermatol.* 1999 Aug;38(8):623-627.
18. Courtenay M. The use of larval therapy in wound management in the UK. *J Wound Care.* 1999 Apr;8(4):177-179.
19. Bonn D. Maggot therapy: an alternative for wound infection. *Lancet.* 2000 Sep 30;356(9236):1174.
20. Robinson W. Stimulation of healing in non-healing wounds. *J Bone Joint Surgery.* 1935;17:267-271.
21. Robinson W. Ammonium bicarbonate secreted by surgical maggots stimulates healing in purulent wounds. *Am J Surg.* 1940;47:111-115.
22. Mumcuoglu KY, Ingber A, Gilead L, et al. Maggot therapy for the treatment of diabetic foot ulcers. *Diabetes Care.* 1998 Nov;21(11):2030-2031.
23. Simmons S. A bactericidal principle in excretions of surgical maggots which destroys important etiological agents of pyogenic infections. *J Bacteriol.* 1935;30:253-267.
24. Simmons S. The bactericidal properties of excretions of the maggot of *Lucilia sericata*. *Bull Entomol Res.* 1935;26:559-563.
25. Mumcuoglu KY. Clinical applications for maggots in wound care. *Am J Clin Dermatol.* 2001;2:219-227.
26. Armstrong DG, Short B, Martin BR, et al. Maggot therapy in lower extremity hospice wound care. *J Am Podiatr Med Assoc.* 2005;95(3):254-257.
27. Robinson W, Norwood VH. The role of surgical maggots in the disinfection of osteomyelitis and other infected wounds. *J Bone Joint Surgery.* 1933;15:409-412.
28. Robinson W, Norwood VH. Destruction of pyogenic bacteria in the alimentary tract of surgical maggots implanted in infected wounds. *J Lab Clin Med.* 1933;19:581-585.
29. Mumcuoglu KY, Miller J, Mumcuoglu M, et al. Destruction of bacteria in the digestive tract of the maggot of *Lucilia sericata* (Diptera: Calliphoridae). *J Med Entomol.* 2001 Mar;38(2):161-166.
30. Sherman RA, Hall MJ, Thomas S. Medicinal maggots: an ancient remedy for some contemporary afflictions. *Annu Rev Entomol.* 2000;45:55-81.
31. Prete PE. Growth effects of *Phaenicia sericata* larval extracts on fibroblasts: mechanism for wound healing by maggot therapy. *Life Sci.* 1997;60(8):505-510.
32. Church JCT, Courtenay M. Maggot debridement therapy for chronic wounds. *Int J Low Extrem Wounds.* 2002 Jun;1(2):129-134.
33. Courtenay M, Church JC, Ryan TJ. Larva therapy in wound management. *J R Soc Med.* 2000 Feb;93:72-74.
34. Steenvoorde P, Oskam J. Bleeding complications in patients treated with maggot debridement therapy (MDT). Letter to the editor. *UJLEW.* 2005;4:57-58.
35. Thomas S, Wynn K, Fowler T, et al. The effect of containment on the properties of sterile maggots. *Br J Nurs.* 2002 Jun;11(12 Suppl):S21-S22, S24, S26 passim.
36. Steenvoorde P, Jacobi CE, Oskam J. Maggot debridement therapy: free-range or contained? An in-vivo study. *Adv Skin Wound Care.* 2005;18:430-435.
37. Steenvoorde P, Oskam J. Use of larval therapy to combat infection after breast-conserving surgery. *J Wound Care.* 2005 May;14(5):212-213.

Doctors of the American Frontier

By John Bois, BA

Discussions of the mid-19th century American physician often conjure up images of the surgeons of the Civil War who tirelessly plied their trade during battle: "During the rest of the night and early morning, he [amputated] arms below the elbow and legs below the knee in less than five minutes. The deep incision ... the sweeping cut ... pull back the soft parts to expose the bone ... saw swiftly."¹

However, in the same period but some thousand miles west, frontier physicians faced similar battle wounds sustained in campaigns against American Indians, as well as a myriad of other duties. Some frontier physicians met these challenges with remarkable ingenuity, while others resorted to treatments later deemed quackery. They often practiced alone in the wilderness without a hospital or colleagues for support.

The first and most obvious task of a military physician on the frontier was to attend to soldiers wounded during battle. The first hurdle was reaching the soldier. In 1874, Surgeon George Miller Sternberg faced daunting challenges in aiding seriously wounded soldiers of General Oliver Otis Howard's company after a melee with Chief Joseph's Nez Percé tribe. As dark settled across Clearwater River, Idaho, "Surgeon George Miller Sternberg and an aide crawled out onto the battlefield looking for the wounded. They crept so close to the enemy that they could hear the Indians talking."¹ Dr. Sternberg worked tirelessly throughout the night ligating pulsing arteries and soothing the suffering soldiers with whatever means he had, from opium balls to whiskey. During the course of the evening, an American Indian sentinel spotted Dr. Sternberg's lantern and shot it out, forcing Dr. Sternberg to continue his treatment in darkness.

In other conflicts, the frontier physician often found himself an active participant in a battle. In the Battle of the Lava Beds fought in Oregon in 1873, Dr. George Martin Kober received a gunshot wound in the arm during the course of the battle. Despite his wound he continued to "treat the wounded before he allowed Dr. Skinner to come to his relief."¹

In the Battle of Bates Creek, fought in the summer of 1874, Dr. Thomas Maghee "was the object of the direct fire of an Indian. Until, laying down his instruments for a moment, he took his carbine and killed the Indian and then returned quietly to his work."¹

When the battle concluded and the soldiers returned to camp, the physicians began to wage a fierce war with disease. Among the plagues that stalked the camps: cholera, scurvy, yellow fever, tuberculosis, and typhoid fever. On one occasion in 1874 cholera struck in the heat of the summer at Fort Riley in Kansas. The pestilence devastated the fort by swiftly taking the lives of dozens of soldiers and compelling a hundred more to desert the fort in fear. One ignorant physician attempted in vain to combat the disease by "burning barrels of pine tar beneath the open windows of the fort hospital."¹

Eventually, Dr. Sternberg conquered the outbreak by implementing a strict disinfection and isolation campaign. In the battle against scurvy, military physicians noted that the typical diet of "meat, white bread, soda biscuits, syrup, lard, and black coffee" was insufficient and often attempted to plant and harvest their own supply of vegetables to treat the vitamin C-deficient soldiers.¹

The frontier physician's duties often expanded outside of the realms of medicine because "by order of the Secretary of War they also studied weather, geography, plants, fauna, Indian customs, and antiquities."¹ In fulfilling these duties, physicians made remarkable contributions to the preservation of the history of the American West, such as Dr. James Kimball's purchase of the autobiography of Sitting Bull. Indeed, life as a military physician on the American frontier tested the courage, durability, and ingenuity of the early American doctor. **TH**

John Bois is a second-year medical student at the Mayo Clinic College of Medicine, Rochester, Minn.

REFERENCE

1. Dunlop R. *Doctors of the American Frontier*. Garden City, New York: Doubleday & Company; 1965: 73.



FLASHBACK



Surgeon George Miller Sternberg

Surgeon George Miller Sternberg and an aide crawled out onto the battlefield looking for the wounded. They crept so close to the enemy that they could hear the Indians talking.