
Chapter 3: Modern Restorative Arts and Embalming Techniques

3 CE Hours

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Objectives

- ♦ Define the green funeral trend and explain how it impacts embalming and the restorative arts.
- ♦ List the OSHA guidelines for the use of formaldehyde in embalming.
- ♦ Identify the possible effects of formaldehyde on mortuary professionals and the environment.
- ♦ List four problem cases where embalming pre-injection is required.
- ♦ Select and describe three techniques to manage edema.
- ♦ Describe two alternative chemicals for embalming.
- ♦ Select and explain four techniques for bariatric embalming.
- ♦ Identify four components of pre-embalming analysis.
- ♦ Define the career of desairology and its function in mortuary practice.
- ♦ List the four areas of the desairology course of study for certification.
- ♦ Describe the importance of restorative art in the funeral process for families.
- ♦ Identify four examples of restorative art techniques for minor and major cases.
- ♦ Discuss the ethical principles and professional codes of conduct that apply to the practice of embalming and restorative arts.
- ♦ Describe three new trends that impact embalming and restorative arts today.
- ♦ Identify four objectives of ecobalming.

Course overview

New customs and practices surrounding embalming and the restorative arts are emerging in the United States. After remaining unchanged for more than 100 years, there are new trends in the funeral industry that meet consumers' demands for funeral practices that are environmentally safe and reflect the unique persona of the deceased individual.

Today, procedures of embalming and restorative art reflect these demands within the traditional goals of preservation and restoration. The funeral industry must be responsive to the family's requests or plans left by the deceased, while implementing procedures to insure the safety of staff and the general public. New embalming and restorative practices that allow the industry to meet both objectives to honor the wishes of the deceased while meeting all Occupational Safety and Health Administration (OSHA) standards will be explored in this course.

Funeral homes or mortuaries may vary in size, number of employees, services offered, organization of job duties, and community customs. In some cases, the funeral director may do embalming and restorative

work. The embalmer may also be the restorative artist and provide all of the cosmetic, hair, and nail services. Other businesses may call in a cosmetologist certified in desairology to provide makeup, hair, and nail care. Today, many people plan all services in advance, including every detail related to their final appearance. Emerging trends and demands of the public concerning final instructions will be covered as they impact the embalmer and restorative artist.

The skills and responsibilities may also be impacted by county and state statutes that govern the industry as well as licensing and certification guidelines that vary by state.

Specific techniques to address challenges faced by professional embalmers, restorative artists, and desairologists will be explored as well as laws, regulations, ethics, and standards that govern these professions.

This course was written for professionals working in the field as a way to update and enhance proficiency. It is not meant to teach fundamental skills at the entry level.

Introduction

There are dissenting opinions concerning the use of embalming and restorative arts that center on religious or environmental objections. Though no federal or state law requires embalming and restoration, there are health standards that must be met to insure the general public is not exposed to infectious disease or toxic chemicals. Environmental concerns drive the growing trend of ecobalming for a "green burial." The goal is to return the deceased back to the earth in a natural state without any non-biodegradable materials or toxins found in traditional embalming fluids and metal caskets (Green Burial Council, 2011). In addition, there are minimal restorative measures taken because the physical state of the body is no longer the focus and is secondary to the celebration of the spirit.

Proponents of embalming and restorative art emphasize the positive effects of seeing their loved ones, for the last time, looking peaceful and as life-like as possible. Throughout the industry, the objective

for the last experience with the deceased is referred to as providing a "positive memory picture." Embalming and restorative art are critical to achieving this objective in cases where disease or trauma have drastically altered the appearance of the deceased. A skilled embalmer, restorative artist, or funeral cosmetologist (i.e., desairologist), can restore the individual's appearance and provide a positive, final, experience for loved ones. This last visual memory experience can facilitate the grieving process for the family (Seiple, 2016).

Regardless of preference for or against embalming and restorative art, there are many new options available for individuals and families faced with decisions concerning funeral services. Some new techniques and practices may be controversial, but funeral decisions should be made according to the last wishes of the deceased with a secondary goal to assist family members through this difficult time.

Industry trends

The personalization of presentation

Today, individuals are seeking funeral services that reflect their values, interests, passions and hobbies. They are planning for unique embalming, restorative arts, and presentation services that are personalized, unlike traditional open-casket viewings. Viewings often have themes suggested by the family, if not preplanned, using creative ways to show the deceased person in a setting that expresses his or her personality. The service may be a celebration of the deceased and the activities he or she valued. For instance, the deceased may be displayed in a way that reflects a preferred activity enjoyed in life.

The National Funeral Directors Association (NFDA), “encourages all funeral service consumers to discuss their ideas with the funeral director to ensure an individualized ceremony fitting of the person who died (NFDA, 2016 b).”

Changes in profession demographics

Funeral service professionals are no longer predominately male. In the past, the profession was usually a family business that was passed down through generations. Today, many mortuary school graduates have chosen the profession independent of any family connections and often began embalming or the restorative arts as a second career after working as medical personnel, chemists, cosmetologists, nurses, or artists, for example. According to NFDA 2016 statistics, “57% of mortuary science students in the United States are women. Many

of these women have discovered and are attracted to the skills and traits needed as a funeral director, including communication skills, compassion, a desire to comfort those coping with a death, as well as organizational and event-planning skills (Ibid).”

New environmentally safe chemicals

One of the major changes in embalming is the variety of chemicals available to meet any embalming or restorative challenges for the client. The hazards of formaldehyde and potential for damaging effects on staff in funeral service are well documented. Safer embalming chemicals are available, as well as a variety of chemicals to achieve specialized effects, but they have not replaced formaldehyde as the primary chemical. These chemicals also address environmental concerns for toxic contamination of the environment and support the commitment to “green funeral” procedures. These chemicals will be discussed in later sections.

Green funerals and ecobalming

This trend against embalming with toxic chemicals is gaining popularity in the United States. The NFDA has recognized this trend and provides training and resources for members to simplify the embalming and funeral process in a way that is free of all toxic chemicals, naturally occurring, less intrusive on the body, and cost effective. Details on these trends will be covered.

Licensing and certification changes

National, state, and law exams for embalmers and restorative artists

The International Conference of Funeral Service Examination Board (Conference) administers these three exams. The information below gives basic information on these exams as provided by the Conference. As of January 1, 2016, eligible candidates may sit for these exams up to three times in one calendar year. Candidates must wait 30 days between exam attempts.

National Board Examination

The purpose of the National Board Examination (NBE) is to provide official licensing agencies with a national competency evaluation of an applicant for licensure in all areas of funeral service. The International Conference of Funeral Service Examining Board develops, administers, and provides score reporting services to state licensure boards.

The NBE is used in all 50 states and the District of Columbia as an assessment of content knowledge needed to practice as a licensed funeral director or embalmer. The exam contains two separate sections, a 170-item Arts section and a 170-item Sciences section, which assess embalming and the restorative arts. These examination sections cover the following topics (Conference, 2016 b):

NBE science section

Embalming 60 Items, Restorative Art 38 Items, Preparation for Disposition 22 Items, Funeral Service Sciences 30 Items, Pretest Questions 20 Items.

Law, Rules, and Regulations exam

The purpose of the Law, Rules, and Regulations (LRR) exam is to provide official licensing boards with an evaluation of an applicant for licensure in areas of states laws, rules, and regulations governing and relating to the field of funeral service. Each LRR exam is carefully developed by the state licensing board and administered through the Conference. A Candidate Handbook is available for LRR examination details for each state. The LRR is a timed, multiple choice examination. The Conference website outlines the licensing requirements of each state (Conference, 2016 a).

State Board Examination

The purpose of the State Board Examination (SBE) is provided for various state official licensing agencies as an assessment of content knowledge needed to practice as a licensed funeral director or embalmer in a particular state. The International Conference of Funeral Service Examining Boards develops, administers, and provides score reporting services to the state licensing boards. Availability of exams may vary due to state-specific licensing requirements. Depending on the state, a State Board Arts Exam or a State Board Science Exam may be offered.

SBE sciences (embalmer)

Embalming 60 Items, Restorative Art 38 Items, Preparation for Disposition 22 Items, Funeral Service Sciences 30 Items (Conference, 2016 c).

The NFDA Code of Professional Conduct

Every professional organization has ethical standards and rules for professional conduct that set the goals and ideals that guide the profession. The NFDA Code of Professional Conduct includes five sections that address the professional obligations of funeral personnel. Each section begins with the ethical principle and is followed by information concerning professional conduct to meet the principle. The ethics sections should be reviewed in its entirety by visiting the NFDA 2016 website and downloading the code.

The NFDA Code of Professional Conduct for the funeral professional in five key areas (NFDA, 2008):

1. Obligations to the family.
2. Obligations for the care of the decedent.
3. Obligations to the public.
4. Obligations to the government.
5. Obligations to NFDA.

Three of these areas, Sections 1, 2, and 4 apply directly to embalmers, restorative artists, and desairologists and they are important to review periodically.

1. Obligation to the family

Ethical principle: Members have an ethical obligation to serve each family in a professional and caring manner, being respectful of their wishes and confidences, being honest and fair in all dealings with them, and being considerate of those of lesser means.

Code of professional conduct

1. Members shall provide funeral services to families without regard to religion, race, color, national origin, sex, sexual orientation, or disability.
2. Members shall comply with all applicable federal or state laws or regulations relating to the prearrangement, prepayment, or pre-financing of funeral services or merchandise.
3. Members shall release deceased persons to the custody of the person or entity who has the legal right to affect a release without requiring payment prior to the release.
4. Members shall not use any funeral merchandise previously used and sold without prior permission of the person selecting or paying for the use of the merchandise.
5. Members shall comply with the Federal Trade Commission's Funeral Industry Practices Regulation.
6. Members shall protect confidential information pertaining to the deceased or the family of the deceased from disclosure.
7. Members shall carry out all aspects of the funeral service in a competent and respectful manner.
8. Members shall properly account for and remit any monies, documents, or personal property that belongs to others that comes into the member's possession.
9. Members shall not engage in any unprofessional conduct of a character likely to deceive, defraud, or harm the families they serve in the course of providing professional services.

2. Care of the decedent

Ethical principle: Members have an ethical obligation to care for each deceased person with the highest respect and dignity, and to transport, prepare, and shelter the remains in a professional, caring, and conscientious manner.

Code of professional conduct

1. All deceased persons shall be treated with proper care and dignity during transfer from the place of death and subsequent transportation of the remains.
2. Only authorized personnel of the funeral home or those persons authorized by the family shall be in attendance during the preparation of the remains.

Desairologist certification

There is no licensing exam—only certification through a course of study. Desairologists must first be licensed cosmetologists before they can enter a program to become certified in mortuary cosmetology, or desairology. In 1996, Noella C. Charest-Papagno wrote, *The Handbook of Desairology for Cosmetologists Servicing Funeral Homes* (Charest-Papagno, 1996). She created the term desairology by combining the words deceased and hair. Many restorative artists

3. Members shall only allow embalmers, apprentices, and interns, who are licensed to the extent required by state law, to embalm human remains.
4. All deceased persons in the preparation room shall be treated with proper care and dignity and shall be properly covered at all times.
5. Members shall not transport, hold, or carry out the disposition of human remains without all permits and authorizations required by law.
6. Members shall not violate any statute, ordinance, or regulation affecting the handling, custody, care, or transportation of human remains.
7. Members shall not knowingly dispose of parts of human remains that are received with the body by the funeral home in a manner different from that used for the final disposition of the body, unless the person authorizing the method of final disposition gives permission that the body part may be disposed of in a manner different from the disposition of the body.

4. Obligations to the government

Ethical principle: Members have an ethical obligation to maintain strict compliance with the letter and spirit of all governmental laws and regulations that impact the funeral consumer, the funeral profession, and the public health.

Code of professional conduct

1. Members engaging in the profession of funeral directing or embalming shall hold all necessary licenses to engage in such businesses.
2. Members shall require any person in their employ or under their control who serves as a funeral director or embalmer, or as an apprentice, or intern, to have all appropriate licenses.
3. Members shall not knowingly make a false statement on a death certificate.
4. Members shall not knowingly make or file false records or reports in the practice of funeral service.
5. Members shall comply with all federal, state, or local laws, rules, or regulations governing or impacting the practice of funeral service.
6. Members shall comply with all federal, state, or local laws, rules, or regulations that were enacted to protect consumers.
7. Members shall comply with all federal, state, or local laws, rules, or regulations that were enacted to protect the environment.

prefer the term because it requires a separate certification beyond cosmetology.

Desairologists must observe the laws governing their state cosmetology licenses, licensing regulations governing funeral home services in the county and state, as well as OSHA regulations including personal protective equipment (PPE) when required. A detailed review of the course of study for certification is included in this course.

Glossary of embalming and restorative arts terminology

1. **Amino acids:** First products of decomposition.
2. **Antemortem or postmortem:** Occurring after death.
3. **Aqueous humor:** A clear, thin, alkaline fluid, which fills the anterior chamber of the eyeball.
4. **Basket weave suture:** Cross-stitch, a network of stitches, which cross the borders of a cavity or excision to anchor fillers and to hold tissues in proper position.
5. **Biohazard:** Biological agents or condition that constitutes a hazard to humans.
6. **Bridge stitch:** Interrupted suture, a temporary suture consisting of individually cut and tied stitches to maintain the proper position of tissues.
7. **Buffers:** Embalming chemicals that work to help stabilize acid-base balance within embalming solutions and in tissues.

8. **Cancer:** Any malignant neoplasm, marked by uncontrolled growth of abnormal cells.
9. **Carcinogen:** Cancer-causing material or chemical.
10. **Cauterizing agent:** A chemical capable of drying tissues by searing.
11. **Cavity:** A hollow place or area.
12. **Coagulation:** The action of formaldehyde (HCHO) on protein.
13. **Decomposition:** Separation of body compounds into simpler substances.
14. **Deep filler:** A material used to fill cavities or excisions that serves as a foundation for the repair and restoration.
15. **Dehydration:** Loss of moisture from the body tissue that may occur after death.
16. **Distention:** State of stretching out or becoming inflated.
17. **Edema:** Abnormal accumulation of fluids in tissues or body cavities.
18. **Embalming:** Process of chemically treating the dead human body to reduce the presence and growth of microorganisms, for preservation and restoration.
19. **Excision:** Area from which tissue has been removed.
20. **Excise:** To remove as by cutting out.
21. **Eye cap:** Thin, dome-like cover made of hardened cloth, metal, or plastic placed beneath the eyelids to restore natural curvature and keep lids in place.
22. **Facial proportions:** Mathematical relationships of the facial features to one another or to the head and face.
23. **Filler:** Material used to fill a large cavity such as plaster of paris, cotton, liquid sealer, and other materials used in restoration.
24. **Firmness:** Degree of rigidity or stability: a condition of the tissues necessary for the fixation and surface repair of features or application of wax or cosmetics.
25. **Firm wax:** Wound filler, the most viscous type of wax: a putty-like material used to fill in large cavities or model features.
26. **Fixation:** Act of making tissue rigid, solidification of a compound.
27. **Gas gangrene:** Necrosis in a wound from *Clostridium Perfringens*.
28. **Gravity method:** 0.5 lb of pressure per ft of elevation.
29. **Hand pump, gravity percolator, or pressure machine:** Method of obtaining pressure for the injection of arterial fluid.
30. **Head tilt during embalming:** Approximately 15 degrees to the right.
31. **Hemolytic:** Swelling and bursting of red blood cells.
32. **HCHO:** Chemical name for formaldehyde.
33. **HCHO danger level:** 100 ppm.
34. **Hydrolysis:** Reaction between water and broken-down compounds.
35. **Hypodermic tissue-building:** Injection of creams, liquids, or other materials into the tissues through the use of a syringe and needle to restore natural contour or depth.
36. **Hypostasis:** Settling of blood or other fluids to dependant areas of the body.
37. **Humectant:** Chemical that increases ability to retain moisture.
38. **Incision:** Exact, surgical cut into tissue or skin.
39. **Index:** Strength of an embalming fluid, indicated by the number of grams of pure HCHO gas dissolved in 100 mL of water.
40. **Injection:** Forcing fluids into the vascular system or tissues.
41. **Inner canthus:** Starting at the inner corner of the closed eyelids.
42. **Integumentary lips:** Skin portion of the upper lip and the skin of the lower lip, mucous membrane.
43. **Intercellular fluid:** Outside or between body cells.
44. **Intradermal suture:** Hidden suture used to close incisions so that the ligature remains under the skin.
45. **Inversion:** Tissues turned in an opposite direction or folded inward.
46. **Jaundice fluid:** Low HCHO embalming fluid, contains special bleaching agents.
47. **Left common carotid:** Begins at the level of the second costal cartilage.
48. **Legate:** Tying or closing with cord, wire, or thread.
49. **Major restoration:** Requiring more time, extensive, requiring advanced technical skill, and written consent to perform.
50. **Massage cream:** Preparation used as a protective coating for external tissues, base for cream cosmetics, and an emollient and wax softener.
51. **Minor restoration:** Requiring minimum effort, skill, or time to finish.
52. **Necrosis:** Death of most or all of the cells in an organ or tissue due to disease, injury, or failure of the blood supply.
53. **Restorative art:** The care of the deceased to recreate natural form and color, to restore accurate appearance or resemblance in life.
54. **Sternoclavicular articulation:** Level at which the right common carotid artery begins.
55. **Sternocleidomastoideus muscle:** Muscle of the neck that is attached to the mastoid process of the temporal bone and to the sternum and clavicle.
56. **TWA:** Total weight average permissible 0.75ppm/8 hours.
57. **Vitreous humor:** Semi-fluid, transparent substance that lies between the retina and the lens of the eyeball (Quizlet,2016).

Modern embalming procedures

Embalmers today are professionals with expertise in mortuary science that includes anatomy, pathology, microbiology, chemistry, cosmetology, restorative art, psychology in grief management, and OSHA safety guidelines.

The Indiana Funeral Directors Association (IFDA) installed funeral director Wallace P. Hooker as its president for 2015-2016. The NFDA Conference in 2014 included a presentation by Hooker entitled, Common Sense Embalming Tips and Techniques (Hooker, 2014). Hooker lists a number of product recommendations in his presentations on embalming techniques and he includes the following disclaimer:

“I have mentioned by name and company, many products. I am neither, compensated nor employed by those companies, nor am I endorsing their products. I am simply sharing information and discussing these products that work for me.”

The course author does not endorse any products or receive any compensation from any product or company.

Hooker's tips and techniques are summarized below:

1. There are no short cuts to excellent quality embalming results. Begin with the following pre-embalming analysis.
 - Know what problems exist.
 - Anticipate problems based on the body condition.
 - Be prepared for all situations that may arise.
 - Keep a well-stocked prep room.
2. Humectant – Prepare equal parts Dodge Restorative and Dodge Rectifant:
 - Spray or brush it on the face and hands, before, during, and following embalming.
3. Upgrade the embalming machine. High-pressure embalming machines will achieve better results.
4. Keep embalming room floors clean.
5. Limb manipulation aids circulation.
6. Use warm water for embalming.
7. NEVER inject water when dealing with edematous body. This term refers to excess water in cells, tissues, or body cavities.

8. Learn about chemical options:
 - Do not use the same fluid and mixture each time because chemicals today have been formulated and refined to address specific issues rather than the traditional “one size fits all” approach.
9. Do not mistake subcutaneous emphysema for tissue gas. Subcutaneous emphysema refers to gas or air under the skin layer.
10. Determine if there is tissue gas from *Clostridium Perfringens* bacteria that enters the bloodstream and spreads rapidly.
 - Common conditions leading to tissue gas include recent abdominal surgery, gangrene at the time of death, intestinal tears, skin punctures, or wounds from accidental deaths.
11. Extraordinary measures are required to treat tissue gas:
 - With your normal arterial solution, add 16 ounces of Dodge Dis-Spray per gallon of arterial solution. The solution will turn blue but note this is a chemical reaction not dye.
12. Keep scissors and other equipment sharp.
13. Tips for locating the jugular vein:
 - Locate the jugular by dissecting through the sternocleidomastoid muscle (SCM).
 - Locate a small vertical muscle called the omohyoid muscle and the jugular vein is directly below it.
14. Blood removal and other difficult stains:
 - Use original formula Windex® or Dunn E-Z™ which attacks the proteins in blood quickly.
15. When using cotton to moderately build the features of the mouth and cheeks, treat the cotton with humectant—this keeps the cotton from dehydrating the delicate tissues and causing parting problems of the lips.
16. Prepare eye caps:
 - Coat both sides with a product that will produce surface tension to keep the eyelid in proper position. Examples: Stay Cream, Kalip, or massage cream.
17. Treat sunken eyes:
 - Use Webril® towel under eyelid coated with Kalip or similar product.
18. Additional measures to position eyelids:
 - Fold several layers of Webril® cotton into a triangular shape, saturate with humectant, and place over upper eyelid.
 - For lower lid, use the same technique to push it up to lower 1/3 position.
19. Dodge Restorative is a great product for emaciated cases. It is formulated to carry moisture and humectant conditioners into the emaciated cellular complex to restore cellular hydration and physically rebuild and plump tissues.
20. When you are beginning your embalming procedure, inject fluids in a closed circulatory system.
21. The closer to the heart, for injection and draining, the better the results especially when using chemicals with dyes for the cosmetic affect.
 - One exception is the jaundiced body, where using the femoral artery helps maintain control over color distribution when using dye combined with a chemical to reduce jaundice color.
22. Intermediate or restricted drainage is a good technique to aid in clearing problem areas and to force fluids deep into tissues.
23. For a more natural, life-like appearance, use dyes to inject color and do not hide freckles, moles, furrows, or other flaws with cosmetics.
24. Always use a pre-injection with problem cases.
 - Pre-injection helps flush contaminants from the body and prepares tissues for a thorough arterial embalming.
 - Problem cases include:
 - a. Jaundice.
 - b. Extended hospital stays with multiple drug lines.
 - c. People with diabetes.
 - d. Edema.
 - e. Asphyxiation.
 - f. Massive cardiac events with the usual purple facial discoloration.
 - g. Delayed embalming.
 - h. Overdoses.
25. Disinfecting instruments is critical.
26. Keep the trocar tip sharp to adequately penetrate hollow organs for thorough cavity treatment.
27. Delayed cavity aspiration allows embalming fluids to continue working long after embalming.
28. For a normal size adult, two bottles of cavity fluids should suffice.
29. Inadequate aspiration and cutting corners with cavity fluids can lead to undesirable results, such as purge, gas, odors, and possible tissue gas.
30. Do not comb hair straight back.
31. For a more even color appearance, use facial tints as a base before any cosmetic work and allow it to dry in place for several minutes.

Special embalming cases

Embalming bariatric cases

The United States leads the world in morbidly obese citizens per capita and that can present problems for the funeral director, embalmer, restorative artist, and desairologist in transport, preparation, funeral supplies, and services. National Institutes of Health (NIH) statistics state that 97 million Americans are obese, which contributes to 300,000 premature deaths. Obesity is the second leading cause of death in the United States (NIH, 2014).

Paul Sobczyk is a leader in bariatric embalming and has personally completed hundreds of these cases and presented seminars to teach techniques for providing funeral services for this population. Below is a summary of his tips and techniques for bariatric embalming (Sobczyk, 2014):

- If elbow-to-elbow or hip measurements of a deceased are 42 inches or greater, and the weight is over 500 pounds or more, problems occur that require special consideration.
- The flaccidity of the excess adipose tissue easily conforms to the contours of the table blocking drainage routes. Use head blocks and body positioners to re-establish drainage on the table or purchase a specially built table that measures at least 42 inches wide with a maximum capacity of one ton.

- Inject fluids using the carotid artery, which is the easiest and most efficient route to the circulatory system, though additional or alternative points of injection may be needed.
- Because of the added depth needed to gain access, raising the artery is accomplished by touch rather than sight because these arteries are often narrower in diameter and tauter.
- When working in the confined area of the incision, a tissue spreader is helpful. Use smaller, one-inch arterial tubes or cannulas because they are the most maneuverable inside the incision.
- These cases have high volumes of edema with circulation problems so anticoagulants and edema corrective solutions are often used. A fluid index of 35 and a more penetrating arterial fluid work the best. Secondary dilution is increased because of the excess fluid in the adipose tissue.
- Delay drainage until after the third or fourth gallon of fluid. By delaying drainage, the pressure of the fluid counteracts the external pressure of the body weight and helps open the arteries for equal distribution of embalming fluid. It is important to watch for swelling in the neck or face and correct if needed.
- Aspirate the thoracic, abdominal, and nasal cavity using 32 to 64 ounces of a 50 index cavity to ensure proper treatment of the visceral organs.

- One of the common problems is purging because of the external pressure and weight caused by the tissue on the abdominal and thoracic cavity. Cutting and plugging the trachea helps gain access through the carotid incision and bisect the esophagus and trachea.
- Make two plugs of 3 inch by 6 inch sheets of Webril® cotton and incision sealer. Place some incision sealer in the middle of the cotton and roll the cotton into a small tube or plug. Use the index finger to place one plug in the bottom portion of the trachea and one above. These same plugs can be made smaller and packed into the nasal cavity for added protection.
- Decubitus ulcers, or bedsores, must be treated.
- Lack of circulation, combined with the inability of embalming fluid to reach the outer layers of the adipose tissue, increases the chances of forming water blisters and skin slip on the lower extremities. Use embalming gel and wrap the legs in plastic wrap for preservation.
- Oversized caskets will be needed. Never casket the deceased alone, use a good lift with a high enough weight capacity and long straps to ensure the safety of personnel and respect for the deceased.
- Ensure the weight capacity of the casket bier is rated high enough to handle the weight of the deceased and casket.
- All routes of entry and exit must be wide enough for the casket to fit.
- When working on all cases it is the responsibility of funeral professionals to ensure needs are met in a dignified and respectful manner.

Safety consideration for embalming

OSHA and formaldehyde safety

As previously mentioned, the current trend is to move away from the use of toxins in the embalming process. To date, formaldehyde is still the embalming fluid of choice because other nontoxic preservation fluids have not been developed that ensure the same result. OSHA and the NFDA continue to research and develop training and guidelines that warn of the hazards of formaldehyde and the precautions that must be taken to mitigate the harmful effects of the toxin on funeral personnel and the environment.

OSHA has produced a fact sheet, which is summarized below, to explain the effects of formaldehyde exposure as well as precautions that must be in place to protect funeral staff at high risk for exposure to the dangerous chemical. The OSHA information is as follows (OSHA, 2015):

Formaldehyde is a colorless, strong-smelling gas often found in aqueous (water-based) solutions. It is commonly used as a preservative in medical laboratories and mortuaries.

What funeral service professionals should know

The OSHA formaldehyde standard (29 CFR 1910.1048) and equivalent regulations in states with OSHA-approved state plans protects workers exposed to formaldehyde and apply to all occupational exposures to formaldehyde from formaldehyde gas, its solutions, and materials that release formaldehyde.

- The permissible exposure limit (PEL) for formaldehyde in the workplace is 0.75 parts formaldehyde per million parts of air (0.75 ppm) measured as an 8-hour time-weighted average (TWA).
- The standard includes a second PEL in the form of a short-term exposure limit (STEL) of 2 ppm, which is the maximum exposure allowed during a 15-minute period.
- The action level, which is the standard's trigger for increased industrial hygiene monitoring and initiation of worker medical surveillance, is 0.5 ppm when calculated as an 8-hour TWA.

Harmful effects on workers

The OSHA fact sheet identifies formaldehyde as a sensitizing agent that can cause an immune system response upon initial exposure and is also a cancer hazard. Acute exposure is highly irritating to the eyes, nose, and throat and can make anyone exposed cough and wheeze.

Embalming cases with edema

Cases with extreme edema present challenges for even the most experienced embalmer. Jeff Seiple (2014) provides the following suggestions to handle these cases that can predispose the body to early decomposition.

- These cases require a hypertonic or strong primary dilution with edema, eliminating chemicals added to the primary dilution. This primary dilution additive has the ability to crenate or leave, through osmosis, in tissues saturated with water. The dehydrating ability of these chemicals can be very effective in reducing swollen areas due to edema.
- Gravity and the correct elevation, along with proper primary dilution strength, are very effective to remove fluids.
- An embalmer should not assume that a general primary dilution injection from the right common carotid would correctly treat an edematous limb, so inject a stronger primary dilution in close proximity to the edematous extremity. Injecting edematous legs through the femoral arteries is one of the best techniques and involves not only injecting the edematous limb(s) but requires the embalmer to slightly elevate the legs.
- After the injection, place cotton wicks or thin rolls of cotton within the femoral incisions and allow to drain.
- Once drained, tie off the femoral arteries and properly close the incision(s).
- It is wise to place the lower limb(s) in plastics such as stockings or capri pants to prevent leakage from the legs. Plastics must be used as a final barrier before dressing and casketing the deceased.

Subsequent exposure may cause severe allergic reactions of the skin, eyes, and respiratory tract. Ingestion of formaldehyde can be fatal, and long-term exposure to low levels in the air or on the skin can cause asthma-like respiratory problems and skin irritation such as dermatitis and itching. Concentrations of 100 ppm are immediately dangerous to life and health (IDLH).

Note: The National Institute for Occupational Safety and Health (NIOSH) considers 20 ppm of formaldehyde to be IDLH.

Routes of exposure

OSHA clarifies that workers can inhale formaldehyde as a gas or vapor or absorb it through the skin as a liquid. Groups at potentially high risk include mortuary workers as well as instructors and students who handle biological specimens preserved with formaldehyde.

How employers can protect workers

Airborne concentrations of formaldehyde above 0.1 ppm can cause irritation of the respiratory tract. The severity of irritation intensifies as concentrations increase.

OSHA requires employers to do the following:

- Identify all workers who may be exposed to formaldehyde at or above the action level or STEL through initial monitoring and determine their exposure.
- Reassign workers who suffer significant adverse effects from formaldehyde exposure to jobs with significantly less or no exposure until their condition improves. Reassignment may continue for up to 6 months until the worker is determined to be able to return to the original job or to be unable to return to work, whichever comes first.
- Implement feasible engineering and work practice controls to reduce and maintain worker exposure to formaldehyde at or below the 8-hour TWA and the STEL. If these controls cannot reduce exposure to or below the PELs, employers must provide workers with respirators.
- Label all mixtures or solutions composed of greater than 0.1% formaldehyde and materials capable of releasing formaldehyde into the air at concentrations reaching or exceeding 0.1 ppm. For

all materials capable of releasing formaldehyde at levels above 0.5 ppm during normal use, the label must contain the words “potential cancer hazard.”

- Train all workers exposed to formaldehyde concentrations of 0.1 ppm or greater at the time of initial job assignment and whenever a new exposure to formaldehyde is introduced into the work area. Repeat training annually.
- Select, provide, and maintain appropriate PPE. Ensure that workers use PPE, such as impervious clothing, gloves, aprons,

and chemical splash goggles, to prevent skin and eye contact with formaldehyde.

- Provide showers and eyewash stations if splashing is likely.
- Provide medical surveillance for all workers exposed to formaldehyde at concentrations at or above the action level or exceeding the STEL, for those who develop signs and symptoms of overexposure, and for all workers exposed to formaldehyde in emergencies.

Recordkeeping requirements

Employers are required to do the following regarding worker exposure records:

- Retain exposure records for 30 years.
- Retain medical records for 30 years after employment ends.

- Allow access to medical and exposure records to current and former workers or their designated representatives upon request.

Additional information: For more information on this, and other health-related issues affecting workers, visit OSHA’s website at www.osha.gov.

NFDA on formaldehyde safety

The NFDA provides the following information to members based on their research (NFDA, 2012 a):

NFDA urges its members, if they have not already done so, to complete the required sampling for formaldehyde to confirm that the formaldehyde levels in the preparation room are within the allowable OSHA limits of 0.75 parts per million for an 8-hour time-weighted average and 2 ppm for a short-term exposure limit. Relatively inexpensive test kits for formaldehyde sampling are available through preparation chemical suppliers. To further reduce exposure levels to formaldehyde in the preparation room, NFDA members are also urged to follow the NFDA Formaldehyde Best Management Practices and review the NFDA Prep Room Ventilation Study that follow.

Measures to reduce formaldehyde levels, in the preparation room atmosphere, include improvement in ventilation by measures such as lowering the preparation room’s exhaust vent to below the breathing zone, insuring that all exhaust vents are unblocked, the use of formaldehyde-containing products strictly by the manufacturer’s instructions, the substitution of formaldehyde-containing preparation products with reduced or formaldehyde-free products wherever possible, and simple measures such as keeping the lid on the embalming machine, immediately cleaning up any spills, the use of drain tubes, and covering the flush sinks.

NFDA Formaldehyde Best Management Practices 2012

The following information is from the NFDA report on Formaldehyde Best Management Practices (2012 a).

History

More than 15 years ago, the NFDA issued Environmental Best Practices, which were designed to assist members to meet the high standards of the funeral profession by providing guidelines for protecting the health and safety of the public, the environment in the community in which funeral directors live and work; themselves, their employees, and families.

NFDA issues these Formaldehyde Best Management Practices (BMPs) at a time when there are continuing appraisals about the health hazards associated with formaldehyde. In 2009, after reviewing additional scientific studies, the IARC found sufficient evidence to conclude that formaldehyde exposure may cause leukemia, a disease of the blood and bone marrow (IARC, 2009). In 2009, following a 20-year study of embalmers, the National Cancer Institute (NCI) published a report, which observed an association between embalming and death from myeloid leukemia, with the greatest risk among those who practiced embalming for more than 20 years and who experienced greater formaldehyde exposure in the preparation room (NCI, 2009).

The Formaldehyde Best Management Practices is a working document. It may be updated or modified as important new information about formaldehyde becomes available. The following information is a summary of the best practices guidelines and subsections. It is important to review this document in its entirety on the NFDA website (NFDA, 2012 a).

Preparation room ventilation is the single most important factor in reducing health risks associated with formaldehyde exposure. Make sure that the ventilation system in your funeral home’s preparation room is properly designed and operating effectively. An effective ventilation system assures that as much formaldehyde as possible is drawn away from the embalmer’s breathing zone. Consult a heating, ventilation and air conditioning (HVAC) professional to assess and maintain the ventilation system and the heating and cooling needs of the work area. NFDA provides the following guidelines:

1. Ensure adequate and effective ventilation in the preparation room.
2. Select and use the proper embalming product in considering the environmental, health and safety characteristics of the product, and the condition of the remains.
3. Take precautions in the preparation room to limit formaldehyde exposure and emissions during routine embalming.
4. Observe special precautions to limit formaldehyde exposure and emissions when embalming organ procurement cases and autopsied remains, as such embalming may increase the embalmer’s formaldehyde exposure risk.
5. Be familiar with and follow federal, state, and local environmental, OSHA, and health requirements that apply when embalming is performed.

Various environmental, OSHA and health requirements apply when embalming is performed. Often product selection will govern the application of these requirements. Periodically review and re-evaluate the products used in the preparation of the remains. Know the constituents of the products and the requirements that these constituents make applicable. Determine whether your locality has mechanical code or other requirements that apply to ventilation systems.

Formaldehyde Vapor Reduction in the Funeral Home Preparation Room: NFDA Recommendations for Effective Preparation Room Ventilation 2010

This study reached a number of conclusions of critical importance to funeral directors. Several of the key findings are summarized below (NFDA, 2010).

The report concludes that an effective ventilation system, designed, operated, and maintained to meet the criteria in the study, can be effective in removing formaldehyde vapors from the breathing zone of the embalmer in the preparation room and lowering overall levels of formaldehyde. The NFDA criteria follow:

Criterion 1. The ventilation system should be a dedicated, non-recirculating system.

Criterion 2. As a general proposition, the minimum air change rate for the preparation room should be no less than 15 air changes per hour.

Criterion 3. The ventilation system should exhaust more air from the space than it supplies to the space to create a slightly negative pressure within the preparation room relative to adjacent spaces in the funeral home.

Criterion 4. The number and location of supply diffusers and exhaust grilles should be adequate to direct a sufficient amount of air across the preparation table(s) so that formaldehyde vapors are transported away from and out of the embalmer's breathing zone.

Criterion 5. Installation of an LEV device, designed to serve the preparation table(s), will control formaldehyde at its source and enhance the effective operation of a general ventilation system.

The design, installation, maintenance, and alteration of the preparation room ventilation system should always be in consultation with an HVAC professional to ensure the system is functioning effectively to reduce formaldehyde exposure to the greatest extent possible.

NFDA 5-Step Guide for Effective Preparation Room Ventilation

An essential preliminary step for the funeral home is to assemble all information about the current preparation room ventilation system (NFDA, 2010).

STEP 1. Complete the formaldehyde ventilation assessment.

NFDA members may download the Funeral Home Preparation Room Formaldehyde Ventilation Assessment from the NFDA website.

STEP 2. Complete expert HVAC consultation.

NFDA strongly recommends the periodic re-evaluation of the preparation room ventilation system by an expert HVAC consultant.

STEP 3. Evaluate recommendations.

Evaluate the expert's recommendations to determine the actions to take that will provide the greatest short- and long-term benefits.

STEP 4. Make simple changes in ventilation system.

Simple changes in the ventilation system can often result in major improvements in ventilation, such as:

- Resizing the exhaust fan.
- Relocating and resizing the exhaust grille so that it is adjacent to the embalming table(s) near the floor.

STEP 5. Scheduling implementation and maintenance.

Establish a schedule to implement the expert's recommendations for improving ventilation system effectiveness and maintaining the funeral home's ventilation system. Additional studies concerning formaldehyde hazards and precaution guidelines are ongoing and will be published on the NFDA website.

Other chemicals for embalming and the restorative arts

Today there are chemicals for all stages of the embalming and restorative art used for disinfecting, pre-injection, arterial and cavity embalming, and tissue repair. The colors of the fluids can provide the ability to control skin tones and colors to achieve the most natural and life-like effects for all ethnicities.

Cavity embalming chemicals can preserve the contents of the body and counteract the effects of medical conditions on the body that occurred over a period of years or after death. For example, products are available to build tissue that had been lost during the wasting effects of cancer.

Some products aid in circulation needed to deliver embalming and restorative chemicals throughout the body to help disinfect, preserve, and restore. Chemicals have been developed to meet restorative arts challenges to fill, repair, rebuild, conceal, stabilize, and set features for the most natural and accurate resemblance.

Other new chemicals are designed for the ventilation system in the mortuary to purify the air and counteract the toxic effects of formaldehyde vapors. Examples of the use of these new chemicals can be found in the descriptions of specific techniques throughout the course but none of these products are endorsed by the authors.

Green funerals

According to the NFDA, "green funeral incorporates environmentally friendly options in order to meet the needs of a family requesting a green service." A green funeral may include any or all of the following: a small gathering in a natural setting, use of only recycled paper products, locally grown organic flowers, carpooling, organic food, no embalming or embalming with formaldehyde-free products, the use of sustainable biodegradable clothing, shroud or casket, and natural or green burial (NFDA, 2016 a).

Another trend is a natural burial, which includes no embalming at all. All parts of the funeral, including the clothing and casket must be made of materials that are nontoxic and biodegradable. Grave markers are also naturally occurring and environmentally conscious, so rocks, trees, or flowers may be used as markers rather than mining granite or quartz to make a traditional headstone.

Ecobalming

The mission of ecobalming is to develop environmentally safe embalming practices that preserve the body, as part of the green burial process. The objective is to have:

- No toxins in the embalming or burial process.
- No secret or undisclosed ingredients.
- Full disclosure of all chemicals and processes.
- Documented environmental impact of all chemical components.
- Little to no impact on the environment.
- Full disclosure and clean sheet material safety data sheets (MSDS).

- Only biodegradable items will be used in all aspects of the embalming burial process.

The process of ecobalming, which in the true form would complement a natural burial, exemplifies the new ways of thinking about death, funerals, and the celebration of the person and rejects traditional methods that have been used in the funeral industry for hundreds of years. The goal is to provide a funeral and burial that is more natural, affordable, practical, and personal to provide a more meaningful celebration as the end of life.

Alternative embalming chemicals for green funerals and ecobalming

New embalming chemicals have been developed that are safe, effective, nontoxic, and made from nonhazardous plant-based oils that can deliver temporary cosmetic/restorative, sanitation, and preservation results. The first of these chemicals, Aardbalm®, was produced in the United Kingdom. It was iodine-based and purported to be nontoxic and environmentally safe. It did not provide the firmness of traditional embalming fluids, so critics questioned if it really preserved the body or simply delayed decomposition for a short period of time.

The Dodge Company followed with a product called Freedom Art that was alcohol-based, though the exact formula was not open for review. The company claims it is effective for disinfecting, deodorizing, and preserving the body and admits that the product will not produce the tissue firmness of traditional embalming fluids.

Next, the Champion Company created Enigma, with the active ingredient propylene glycol. This chemical is water-soluble, synthetic, nontoxic, and petroleum-based. The company claims it slows decomposition for 3 to 5 days, up to a week, or longer (Champion, 2016). These products do not produce long-term embalming results, just temporary preservation. To date, Champion products are the only ones certified by the Green Burial Council (GBC), which works to “inspire and advocate for environmentally sustainable, natural death care through education and product certification (GBC, 2015).”

These products include:

- Enigma Arterial Ecobalming: Chemicals can sanitize and deodorize while reducing water retention and moisture problems. These chemicals can also deliver natural skin tone coloration.
- Enigma Cavity Ecobalming: Chemicals use a plant-based oil formula delivered with almost no water. It provides sanitation

and deodorizing effects and can enhance the arterial action in compromised bodies.

- Other Enigma topical formulas are available for sanitizing and deodorizing the surface of the body and can be combined with plant-based Enigma compound materials to prevent leakage.

Another chemical, glutaraldehyde, may be a possible alternative to formaldehyde because it produces less irritating vapors and is very effective for preservation. However, it is still classified as a hazardous, toxic chemical regulated by OSHA and has similar harmful effects as formaldehyde. It has not replaced the use of formaldehyde because it does not produce the same level of firmness. Firmness is one measure embalmers use to determine the amount of penetration by chemicals for use in arterial and cavity embalming. The degree of tissue firmness relates to the degree of tissue preservation, so this is an important factor.

All of the major embalming fluid producers are working to develop a green product that can match the preservation properties of traditional fluids. They may be able to disinfect and preserve to some degree, but are not able to fix and produce tissue firmness. This is a major setback because it translates into difficulties in the area of restoration and setting of soft tissues that can result in drooping lips and cheeks. Facial features are the most important and viewable aspects of restorative art and critical to the positive memory experience for loved ones.

The new embalming fluids on the market today produce a shorter preservation window and cannot produce the effects that mainstream embalmers demand, but they may appeal to the green or natural funeral market if they meet the standards of ecobalming. They will also appeal to those who protest the toxic fluids that pollute the environment.

New legal form: Formaldehyde-free embalming authorization

In keeping with the trend of moving the funeral industry toward environmentally safe embalming for a green funeral, the NFDA developed a form in 2012 that authorizes formaldehyde-free embalming. According to the NFDA, this new form not only serves as an embalming authorization form, but also includes a clause

indicating the family wants the funeral home to use a formaldehyde-free embalming solution and understands that results may differ from those of a solution containing formaldehyde. Members can download this and all sample legal forms and documents from the NFDA website at www.nfda.org/legalforms at no cost (NFDA, 2012 b).

RESTORATIVE ARTS

Many people suffer from diseases that have devastating effects on their physical appearance. Others are victims of physical trauma from car accidents, falls, violent encounters, drowning, dehydration, malnutrition, decomposition, or drug overdoses that leave them with an appearance in death far different than life. They are not able to make their wishes known, but one can imagine that they would not want their loved ones to see them in that state.

The restorative arts play a critical role in the grieving and healing process for loved ones left behind and dignity to the deceased. Research shows restorative arts can be traced back as far as 1200 BC (Gillies, 2011). The ancient Egyptians were practicing a range of restorative techniques on the emaciated features of the dead, from filling the inside of the mouths with sawdust to improve hollowed cheeks to stuffing linen under the eyelids or replacing eyes with stones. They would continue this procedure, tending to any disability, injury, or disfigurement until the face and body were contoured to approximate the original features and shape of the person they were preparing for their death ceremony.

The next milestone in restoration arts occurred in 1912, when embalmer Joel E. Crandall introduced demisurgery, a practice he described as “the art of building or creating parts of the body which have been destroyed by accident, disease, decomposition or discoloration, and making the body perfectly natural and lifelike” (Ibid). Demisurgery was added to the practice of embalming

as a way to make the appearance of the deceased more presentable especially in trauma cases. Many people of that era felt that the practice of demisurgery in principle was unacceptable and should not be practiced after death.

Crandall continued to make a case for the practice of demisurgery as an important service for bodies that had suffered severe trauma or mutilation. He provided photographic evidence to document the dramatic results of his work using before and after pictures. His photographs changed the attitudes of many in the funeral industry at that time and demisurgery for the deceased became an accepted practice.

By the 1930s, demisurgery was referred to as restorative art and had become an important part of embalming in part because it was used to repair and cover the impact of injury or disease that resulted from World War I. Professionals in the field began to realize the positive healing effects that restorative art could have on loved ones because the body could be restored to resemble its original appearance.

The next major milestone occurred with the publications of the textbook, *Restorative Art*, in 1943 by Sheridan Mayer followed by the *Workbook on Color and Mortuary Cosmetology*, and the textbook *Color and Cosmetics*. Gillis (2011) explains Mayer’s important work:

While trained as an artist and sculptor, and employed as a theatrical cosmetician and makeup expert, his greatest contribution to restorative

art was his encouragement of adopting a uniform curriculum and standards for instructional and testing purposes, in which he prepared sample syllabi and curricula, as well as examination questions that became standards in the field of study.

However, it wasn't until 1945 that restorative art became a formally adopted discipline when it was the subject of the NFDA Convention in Chicago, where it was addressed as being a value and necessity of the procedures of embalming.

Beyond restoring the physical appearance of the deceased to provide loved ones with the last positive memory experience, the restorative arts can do much more to facilitate comfort and healing for loved ones as they move through the healing process. When loved ones are notified of a sudden, tragic, and unexpected death, they are in a state of disbelief and shock. They often do not know immediately what really happened and they begin to imagine a number of scenarios and wonder what pain and fear their loved one suffered during their last moments of life. Many family members refuse to believe their loved one has died and insist it must be mistaken identity, hopeful

that all will be resolved as soon as they can contact them. Slowly, as the evidence mounts, they realize they will never see them again and devastation and sadness take over. They still may not know the details surrounding the death and continue to suffer the pain of not knowing what their loved one experienced. Not knowing the truth can be very destructive mentally and emotionally and their imagination may lead them to very dark and sad conclusions.

Restorative arts can play a pivotal role in assisting loved ones in healing, moving toward acceptance, and beginning the grieving process. At this point, the ability to see their loved one looking peaceful could help through the grieving process.

When funeral directors urge families to keep the casket closed, or when the family member in charge hastily decides to not allow viewing, it has the same effect as saying the situation is horrible and too shocking to view, which reinforces the cycle of fear, sadness, and haunting images of the unknown. A positive viewing experience may help family and friends acknowledge and accept the death.

Practice guidelines for restorative art

Edward J. Grey holds a master's degree in restorative art from the International College of Mortuary Science, Liege, Belgium. He provides the following information outlining the progression of restoration art techniques corresponding to the degree of restoration required, restorative guidelines, and practical advice to face challenging tasks:

In the best case scenario, a simple case of restorative art would involve the proper setting of facial features, which is one of the most important responsibilities of the artist. Setting facial features can never receive too much attention because it is the focal point of the viewing. The effect should be as natural as possible and resemble the person in life as compared to a recent photo. Make up application would be minimal at this level and should reflect the skin tone, coloring and style that the person preferred in life. A summary of Grey's guidelines follows (Grey, 2004):

Minor cases of restoration would include:

- Operations such as hypodermic tissue building because of a wasting disease or malnutrition prior to death, reduction of swelling usually caused by drugs administered prior to death, removal and restoration of small skin blemishes, subtissue surgery, bleaching and concealing discoloration, and rehydration of tissues.

More extensive restorations

These cases generally take a longer period of time and the embalmer/restorative artist should be consulted before deciding viewing times with relatives. These operations require extensive time, patience, and skill to complete and could include:

- Restoration or replacement of hair or major feature, reduction of large tumors or swelling, reconstruction of major fractures, removal and replacement of damaged areas, and deep wounds.

Restorative art and the Canon of Beauty

In the past, mortuary science students were taught to review and consider of the Canon of Beauty that was established in the 4th century by the Greek sculptor Polykleitos. The principles of the Canon of Beauty, or the aesthetic canon, were a set of mathematical calculations that represented the standard of human proportions that were considered the most pleasing to the eye. These were included in mortuary education as a way to teach human proportions and guide restoration. Some educational programs required the students to use these dimensions to totally design and create a face so these proportions served as the foundation for those exercises.

- Most restorative art or corrective procedures are carried out after arterial embalming; although some need to be attended to before arterial injection is started.
- Some procedures will involve surgical skill, others will require technical skill, but all require patience and time.
- Take short breaks to stop to look at the progress made. A little break away from the task at hand can shine a different light on the subject and make a big problem seem easier.
- Sometimes the sheer sight of the task to be undertaken can frighten even the most experienced restorative artist, but a little time, reflection, and careful planning can reveal that most things are possible.
- If the visually offensive area is removed and cleaned, the restorative artist can concentrate on the task at hand, and repair the damaged area.
- The restorative artist must adopt a positive attitude and not associate the condition with human pain.
- The restorative artist may not achieve perfect presentation and should consult with the family before procedures begin. In most cases at least one family member will have already viewed the deceased so they will understand the degree of restoration required.
- A professional, qualified embalmer/restorative artist will be able to evaluate the situation very quickly, explain the options available, and the time involved. Most families are willing to allow enough time if they are approached with professionalism and due respect. Consulting with families can be helpful for both parties and build rapport if approached correctly with the utmost respect shown towards the family.
- If reasonable lifelike appearance can be achieved, the family will be eternally grateful and the viewing will ease the grieving process, which should be every funeral director's goal.

Today they only serve as a baseline comparison and not considered to be a standard or norm of beauty. With the increased emphasis on individuality, and belief that there is no one standard of beauty that encompasses all racial and ethnic characteristics, this is especially true. The following concepts should be considered when implementing any aesthetic standard as a basis for the restorative art (Quizlet, 2016):

- No standard or proportion should be used in every case to ensure accurate resemblance or clients would look the same.
- No standard should be used to alter, improve, or enhance the natural physical appearance.

- No standard should be used other than the actual anatomical analysis.

Restorative arts tips and techniques

The following list includes a summary of the 2014 NFDA Conference presentation by Wallace P. Hooker (2014):

1. The first rule for a case involving any amount of restoration is find a known feature and work with it.
2. For drying and treating open sores and wounds use a cauterizing chemical before embalming such as Dodge Dryene, SynGel, or mix the two to a gel like consistency.
3. For facial suturing try dental floss with a hidden stitch.
 - Dodge has a great adhesive called Tech Bond that is faster and neater than suturing and will adhere to moist tissue.
4. For delicate areas of the face needing tissue building, subdural bleaching or if you are using a cauterant, try using diabetic syringes.
5. When using Inr Seel to recreate sunken cheeks, use the Inr Seel applicator and overfill the area between the jaw and cheek on each side.
6. For extremely emaciated bodies, remember to be careful not to overdo it. The families have watched the downward progression for maybe months or years so be careful not to turn back the clock too far.
7. To speed the softening of restorative waxes and make application simpler, use a hand held hair blow dryer.
8. For filling larger facial deficits, cover the missing area with mortuary putty, such as Dodge Inr Seal, and sculpt to shape.
9. For non-facial surface dicing, scrapes, cancers, skin slip, or other possible sources of leakage, first cauterize the area with a product such as Dryene.
 - Let it dry then cover with a product called DodgeSeal, which is a new product that works very well for sealing orifices, punctures, bullet holes, incisions, and deep wounds.
10. An electric tissue reducer or electric iron should be in every prep room. It works great in reducing swelling of the lips and eyelids.
11. Treating swollen eyes:
 - For severe cases, it may be necessary to remove the vitreous humor.

- Standards or measurements should be used only as a guideline for restoration practices.

- Channel the upper eyelid, following the curvature of the skull, to create channeling to relieve the swelling.
- Coat with massage cream and manipulate the fluid from the deep tissue.
- After physically manipulating as much fluid as possible from the tissue, use the electric tissue dryer and if time allows, insert Webril® toweling into channels to wick the moisture away.
12. For ease of suturing complete the following:
 - If you are right handed, suture from right to left, or if left handed suture from left to right.
13. If preparing for the final stages of substantial facial restoration, dress the remains and casket them to eliminate the chance of damaging extensive restorative efforts while handling the body.
14. Autopsy cases:
 - Use mortuary putty over the cranial separation before replacing the scalp, manipulate the putty through the scalp and fill or hide the deficit.
 - Use tissue gatherers to assist holding suture lines together while suturing.
15. Donor/harvested cases:
 - Embalm on the bottom of the body pouch.
 - Always open the harvest sites of the upper arm and leg bones and treat the tissue in these sites with a strong cauterizing material, cover with cotton and wrap with plastic while you embalm.
 - If skin was harvested, treat the area with cauterizing material and cover with plastic.
 - Try to ligate any severed arteries.
 - If time allows, let the body set for 12 hours, remove the cotton and plastic, retreat with more cauterizing material, then dry the tissue.
 - Use plastic garments before dressing the body. (See earlier product disclaimer.)

Desairology

Mortuary cosmetology, referred to as desairology, is a growing specialty in the funeral profession. Noella C. Charest-Papagno and other cosmetology and funeral professionals recognized that many people spend a great deal of time and effort devoted to their appearance in life. They argued that the same quality of services should be available to them after death.

Desairology law and legal definition

As defined by U.S. Legal:

The art of desairology involves caring for the hair, skin, and nails of the deceased in a funeral home preparation room. The specialty is performed by a desairologist licensed in cosmetology under state law. State regulations typically require the funeral home preparation room be of approved size, properly equipped, and must provide a well ventilated work environment for the personnel (U.S. Legal, 2016).

These professionals are state-licensed cosmetologists and barber stylists, with additional certification that qualifies them to perform specialized techniques for hair, nail, skin care, and makeup services in a funeral setting. They provide services upon request by the family or by prior arrangement with the deceased. Desairologists may work as full-time staff for one director, though most maintain a private practice and work as independent contractors on call to assist funeral directors or embalmers throughout the community.

Desairologists must follow all OSHA, cosmetology, desairology, state, and local funeral laws and regulations, as well as adhere to the code of ethics for their licensing and certifying organizations.

The Desairology Code of Ethics

- I will practice cosmetology-desairology on the deceased under a licensed funeral director, funeral home, or mortuary.
- I will continue to explore the developmental education of desairology.
- I will uphold the confidentiality of the business of the funeral home and the working environments concerning preparation, embalming, and desairology services for the deceased.
- I will uphold the laws and the board of cosmetology in the state in which I am practicing cosmetology-desairology (Source: Developmental Desairology, 2016).

Usually the career of desairology begins with cosmetology school. Some programs teach only desairology though cosmetology schools are adding training and certification programs for licensed graduates. There are also home school and distance learning programs available for education and certification.

Desairology study includes the following areas:

- Shampooing of the deceased client's hair.
- Haircutting in ergonomically challenging conditions.
- Color restoration.
- Wig care and hair replacements.

- Identifying hairstyles and parting.
- Anatomy and physiology of the deceased.
- Chemical makeup of hair, skin, and nails after death and the embalming process.
- HIV/AIDS.
- Universal precautions.
- Bacteriology.
- Sanitation and disposal of biohazardous waste.
- Observation of electrical safety.
- OSHA standards for the funeral home industry including required PPE.

Assessing risk

Nellie Brown, western regional director of the Chemical Hazard Information Program at Cornell University, discussed the chemical and disease exposure risks involved in working as a desairologist and provides the following guidelines (Brown & Platner, 2008):

- Exposure to disease should not be a threat. Make sure immunizations are up to date, particularly tetanus. Disease and decay organisms are not uncommon, so besides being immunized for tetanus, having a hepatitis B series of vaccinations and a tuberculosis vaccination is a good preventative measure.
- Wearing gloves and an apron or lab coat while working in the prep room, the area of the mortuary where the body is prepared for the funeral service and interment, is recommended.
- Cover street clothes, preferably something that can be bleached, to prevent them from being contaminated. Place the clothes worn

during the service separately in a plastic bag until they are washed in a separate load.

- Be as cautious working on a corpse as you would a living body.

The desairology student will complete supervised, hands-on practicum exams to test practical knowledge. Mannequin heads may be used as practice and licensed cosmetologists, certified desairologists, or licensed funeral home staff will develop hypothetical cases for study and practice.

Any student interested in the field should take classes in mortuary science to be familiar with the basics of embalming and to help them deal with the unique challenges of working with deceased clients. Coping strategies are needed to support a career in desairology to avoid stress and manage emotional issues related to this challenging and important work.

In the past, the funeral directors or embalmers would provide these services and their studies in mortuary science provided basic training in makeup application, hair styling, and nail grooming. In most cases where no trauma had occurred, basic makeup application was sufficient and families would provide a picture to assist in hair styling and makeup.

Today the emphasis on individuality and appearance may require a desairologist skilled in advanced makeup, hair, and nail styling. The individual may have left detailed plans or the family may request special services to continue the same appearance and unique style the deceased enjoyed in life.

Changing presentations and personalization for viewing

The recent interest and demand for cosmetic surgery to improve appearance does not end with death. An NBC news documentary, entitled, *Final Touch: A Cosmetic Lift for Your Funeral*, interviewed a number of embalmers and restorative artists. The report found that many people are consulting funeral professionals to plan restorative procedures to enhance their appearance at their funeral. Some of the requests include smoothing lines, plumping lips, and even lifting sagging areas for the funeral (NBC, 2008). "People used to say, just throw me in a pine box and bury me in the back yard," says Mark Duffey, president and CEO of Everest Funeral, a national funeral planning and concierge service. "But that's all changing. Now people want to be remembered. A funeral is their last major event and they want to look good for it. I've even had people say, 'I want you to get rid of my wrinkles and make me look younger (Ibid).'"

Restorative artists and embalmers have always tried to restore a life-like appearance. The difference today is the number of people who are preplanning their final touches, which is a new phenomenon in the funeral industry. "I've had people mention that they want their breasts to look perky when they're dead," says David Temrowski, funeral director of Temrowski and Sons Funeral Home in Warren, Michigan. "Or they'll say, 'Can you get these wrinkles out?' It's all in humor, but I think people do think more about what they're going to look like when they're dead and lying in a casket (Ibid)."

A 2014 ABC News report, *Lifelike Embalming Positions a New Funeral Trend*, noted that funeral plans are becoming more extravagant (ABC, 2014). The trend calls for individuals to be embalmed and presented for viewing in ways that are personalized and accurately celebrate their life. Rather than the traditional casket-viewing and burial, some choose to have loved ones posed in ways that show their hobbies and personalities.

ABC News tells the story of an 83-year-old party girl who was embalmed to look as if she was sitting at a party with a glass of champagne. Her "set" included a bright feather boa, patterned outfit, decorative benches and décor (Ibid). Other stories included a man who was an avid boxer during life, posed standing like a boxer in the ring, complete with a hood and boxing gloves (Ibid). Other examples showed a jazz musician standing with instruments at his funeral and a young man dressed in leather and posed riding his motorcycle.

One embalmer told ABC that in doing these types of "extreme embalming," as ABC put it, they would have to use different mixtures of fluid so the body would stay stiff in a more upright position (Ibid). This type of personalization in funeral presentation rejects the traditional way of displaying the body, peacefully resting in the casket, dressed in their Sunday best. Further investigation shows that these highly customized funeral presentations have been practiced for years in some sections of the country but they are becoming more popular throughout the United States.

Conclusion

Funeral directors, embalmers, restorative artists, and desairologists must share a common goal to continue their education and training to provide the highest level of quality to meet the challenging and dynamic demands of clients. They need to keep an open mind, free of judgment, to collaborate as professionals to provide client-centered services.

Safety in the work place and environment requires strict adherence to all federal, state, and local laws and guideline. Professionals need to

continually assess their practice and collaborate on best practices that may require making changes in products and procedures to keep pace with safety changes and client demands.

All industry professionals are urged to consult their state licensing and certification boards, along with OSHA, NFDA, or their professional organizations, for the latest updates that regulate and protect their area of practice.

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MODERN RESTORATIVE ARTS AND EMBALMING TECHNIQUES

Final Examination Questions

Select the best answer for each question and mark your answers on the Final Examination Answer Sheet found on page 49, or for faster service complete your test online at **Funeral.EliteCME.com**.

1. Today, individuals are seeking funeral services that reflect their values, interests, passions, and hobbies.
☐ True ☐ False
2. The NBE is used in all 50 states and the District of Columbia as an assessment of content knowledge needed to practice as a licensed funeral director or embalmer.
☐ True ☐ False
3. Only authorized personnel of the funeral home or those persons authorized by the family shall be in attendance during the preparation of the remains.
☐ True ☐ False
4. Desairologists must first be licensed cosmetologists before they can become licensed in the mortuary science called desairology.
☐ True ☐ False
5. Pre-embalming analysis includes knowing what problems exist, anticipating problems based on the body condition, being prepared for all situations that may arise, and keeping a well-stocked prep room.
☐ True ☐ False
6. Problem cases including edema, asphyxiation, massive cardiac events, and delayed embalming do not need pre-injection.
☐ True ☐ False
7. Lack of circulation, combined with the inability of embalming fluid to reach the outer layers of the adipose tissue, increases the chances of forming water blisters and skin slip on the lower extremities.
☐ True ☐ False
8. The OSHA fact sheet identifies formaldehyde as a sensitizing agent that can cause an immune system response upon initial exposure but is not a cancer hazard.
☐ True ☐ False
9. OSHA requires workers to implement feasible engineering and work practice controls to reduce and maintain worker exposure to formaldehyde at or below the 8-hour TWA and STEL.
☐ True ☐ False
10. Many people are consulting funeral professionals to plan restorative procedures to enhance their appearances at their funerals.
☐ True ☐ False