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Welcome to the first issue of the Journal of Funeral Service Education.

Conceived as a vehicle for the publication of scholarly works germane to funeral service, the Journal welcomes authors with interests in any facet of funeral service : scientific, psychological, ethical, legal, or managerial.

Ideally, this publication will grow to serve the needs of funeral service education by facilitating the dissemination of original works of research as well as by serving as a forum for commentary, summation, debate, or other forms of academic exchange.

We encourage faculty of funeral service programs to promote contributions from students and colleagues.

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# ATTITUDES OF VOCATIONAL HOME ECONOMICS TEACHERS TOWARD DEATH WITH IMPLICATIONS FOR INSERVICE EDUCATION

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*This study assessed the attitudes of vocational home economics teachers in Oklahoma toward death and the extent to which they were incorporating death education in their curricula. The Templer/McMordie Scale, considered a reliable and valid measure of attitudes toward death, was used to measure attitudes. The attitudes were correlated with personal experiences with death, whether or not death education should be taught in the schools, death of a significant person in the last two years. Results showed a significant relationship between attitudes and attendance at a funeral within the last two years. In addition approximately two-thirds of the teachers did not teach a unit on death; and 87% agreed that death education should be taught.*

Death is a profound event not only for an individual but for society (Fulton, 1976). However, until recent years, most American families avoided talking about death and dying. Although a great number of deaths occur each year, Americans do not readily cope with death because they rarely see anyone die (Berg and Daugherty, 1972). Although a growing interest in death education has surfaced, a review of the literature produced few current studies.

Parents are reluctant to talk with their children about death (Gommert, 1980) and often experience frustration and helplessness when faced with questions about death from their children (Kavanaugh, 1972). The anxiety about and repression of death on the part of adults have resulted in misconceptions among young people, thus making the need for units of instruction on death in the curriculum apparent.

Because parents have been reluctant to discuss death and dying with their children, the school has taken on the responsibility of teaching students about death so that they

are equipped with skills needed for coping with death. Much of the teaching on death and dying has been left to the individual teacher; however, more formal planned instruction is needed. Death is a reality in the real life needs of most students.

The home economics classroom, traditionally student-centered, provides a suitable environment for teaching death education. However, the attitude of the classroom teacher toward death should be of prime concern. Taddeo (1977, p. 7) found that "the relationship between teacher attitude and student performance attests to the pervading assumption that teachers' attitudes have a definite impact on students' learning and development." Yap (1977) concurred when he stated that there is ample evidence of the significant influence of teachers' attitudes on students' behavior. Without regular classroom teacher support and attitudinal acceptance of death education, students have no opportunities for examining their thoughts, attitudes, beliefs, and fears about death.

The identification of teachers' attitudes toward death can enable educational personnel in curriculum development to more successfully implement death education units of instruction. "One of the major justifications for studying attitudes toward any topic or subject matter is to begin to bring about changes in attitude" (Harth, 1973, p. 159). Consequently, there is a need to examine the attitudes of vocational home economics teachers toward death, particularly if they are to be given responsibility for teaching young people to cope with death and dying.

### Purpose

The overall purpose of this study was to identify the attitudes of Oklahoma vocational home economics teachers toward death and ascertain the extent to which they were incorporating death education in their curricula.

### Hypothesis

Four null hypotheses were developed for this study. In brief, the hypotheses were as follows:

1. There will be no significant relationship between teachers' attitudes toward death and their opinion as to whether it should be taught in the school.
2. There will be no significant relationship between the teachers' attitudes toward death and whether they teach a unit on death education.
3. There will be no significant relationship between the teachers' attitudes toward death and the loss of a significant person within the last two years by these teachers.
4. There will be no significant relationship between the teachers' attitudes toward death and their attendance at a funeral within the last two years.

### Instrumentation

The instrument was developed in several stages. First, a review of the literature resulted in the discovery that no other similar studies have been conducted and that

Oklahoma vocational consumer and homemaking teachers have not been systematically surveyed to gather information regarding their perceptions and attitudes toward death.

Secondly, to accomplish the objectives of this study a scale was located which could be used to measure teacher attitudes toward death. The Templer/McMordie Scale was chosen because it is a widely used, reliable, and valid measure of attitude toward death (Brown, 1975; Klug, 1976; Lucas, 1974; McMordie, 1978). It has been used with high school and college students in previous studies (Templer, 1970).

The Templer/McMordie Scale consists of 15 statements in a Likert format which was developed from Templer's original scale. The internal consistency of the Templer Scale was significantly improved through development of the Templer/McMordie Scale. Additionally, the Likert version was more sensitive in discriminating between high and low scores and capable of making a greater number of discriminations between individuals (McMordie, 1979).

Although no actual norms have been established for this scale, a considerable amount of relevant data have been collected both during and subsequent to its construction and validation (Templer, 1970). According to Remmer (1972), the Templer/McMordie Scale is the most reliable and valid measure of attitudes toward death. In fact, of the instruments which have been reported in the literature to assess death attitudes, only the Templer/McMordie Scale has had its reliability and validity determined (Lonetto, 1972).

The completed questionnaire included the attitude scale; a section to gather information about respondents' personal experiences with death, perceptions regarding the teaching of a unit on death education, interest in training sessions and instructional materials on death education; and a section to identify respondents' preferences for resources for a unit on death education. Space was provided to allow respondents to include other information about each item as well as comments or recommendations.

### Data Collection and Analysis

The research instrument was mailed to all 450 vocational consumer and homemaking teachers of grades 9 through 12 in the state of Oklahoma for the 1983-84 school year as identified by the Home Economics Division of the State Department of Vocational and Technical Education. Of the 324 questionnaires returned, 320 responses (71%) were usable for the purpose of this study. No effort was made to obtain a higher response rate since the school term was over for the year.

A majority (65%) of the respondents had ten or fewer years of experience teaching vocational home economics. Over 64 percent of the teachers were under forty years of age, 83 percent were married, and a majority (62%) of the educators were in communities with less than 6,000 population. Because this study dealt with death and dying, it was of special interest to note that only four teachers (1.3%) were widowed. All of the home economics teachers were females and they were predominately white.

The demographic data, personal experiences with death, and information relative to teaching death education were analyzed by means of frequency distributions. These

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distributions were obtained in terms of numbers and percentages for each category of a variable.

Items from the research instrument which respectively pertained to or represented each of the variables under study were tested for significant correlation to the Templer/McMordie score through point-biserial correlation procedures. The .05 significance level was accepted as the confidence level in the statistical analysis.

## Results and Discussion

The results of this research are discussed in terms of (1) teacher attitudes toward death, (2) personal experiences with death, (3) whether or not death education should be taught in the schools, (4) respondents' interest in inservice education on death and dying, and (5) teachers' preferences for resource material on death education. Discussion of these five areas follows.

### Attitudes Toward Death

Information for the analysis of the hypotheses was obtained from responses to the Templer/McMordie Scale and selected variables.

Attendance at a funeral within the last two years by teachers was significantly related to the attitude score at the .009 level. A correlation of .13 indicated a low positive association (Davis, 1971). Therefore, hypothesis four was rejected for the variable concerning funeral attendance by respondents. Hypotheses one, two, and three were not rejected because teacher opinion concerning whether death education should be taught in the school, whether or not they teach a unit on death education, and the loss of a significant person within the last two years were not significantly related to teacher scores on the attitude scale.

Complete correlation information between the combined teacher attitude score on the Templer/McMordie instrument and the variables under study is given in Table 1.

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**Table 1**  
**Correlation Between Study Variables and**  
**Templer/McMordie Scale**

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Variable	Correlation Coefficient	Level of Significance
Should death education be taught in school	.023	.342
Do respondents teach a unit on death education	.039	.246
Death of a significant person in last 2 years	.024	.338
Attendance at a funeral by respondents within last 2 years	.134	.009

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## Personal Experience with Death

In response to items constructed to gather information about respondents' personal experiences with death, almost half (43.4%) of the teachers indicated the loss of a significant individual during the past two years. The relationship most often identified of the deceased to the teacher was that of a grandmother followed by that of an uncle and a father.

The majority (85%) of the teachers had been to one or more funerals within the last two years. The relationship most often identified of the deceased to the respondent was that of a friend followed by that of an uncle and then grandmother. Interestingly, the category of 'student' ranked fifth in this list comprising attendance at a funeral by respondents within the last two years. Teachers experienced the death of students more often than that of a father, mother, close friend, or grandfather.

## Death Education in the School

The majority (87%) of teachers thought death education should be taught in the school. However, most educators (64%) reported that they did not teach a unit on death education. In fact, less than half of the respondents who indicated that they thought death education should be taught in the school actually taught a unit on death. Death, unfortunately, still remains a taboo topic. Thus, the need for formal and informal education enabling persons of all ages to learn to cope with death is evident.

Although they are not presently including information about death and dying in the curriculum, they intend to do so in the future. It was further learned that most teachers who have taught about death and dying have done so for only the past three years.

Most respondents named home economics when asked to specify which discipline generally approached the subject of death in their school. Because of the focus of home economics on the individual and family life, the consumer and homemaking teacher functions in a unique role in equipping students with attitudes toward life, which includes an acceptance of death as well as an examination of fears and feelings toward death.

A majority of the teachers (81%) did not think parents would object to the study of death in the school. Reasons suggested by the educators for possible objection by parents included religion, death still a taboo subject, and cultural differences.

## Inservice Training Program Preferences

Concerning teacher training in death education, 81 percent of the respondents agreed that teachers need this training. No other item on the research instrument received a stronger response than did this question. Although most educators (61%) have never attended a training session on death and dying, they indicated a willingness to attend a death and dying workshop, conference, or seminar in the future (78%).

## Death Education Resource Preferences

Educators endorsed the development of materials on death education, especially

those designed to incorporate laws and customs in their locales. To supplement a unit on death education, teachers favored certain types of resources with films, guest speakers, and student activity exercises ranking the highest.

Comments from the teachers identified the main reason resources, such as field trips, television/movies, and videocassettes, scored no higher than they did. Reasons given centered around the financial ability of school systems and a basic lack of equipment as in the case of videocassettes.

### Implications

The findings of this study have implications for both teachers and institutions that prepare teachers. The number of times that secondary students are involved in death and dying experiences, as evidenced by teachers' attendance at funerals of students during the past two years, indicated a definite need. The impact of death on the school population justified the need to incorporate death education in the curriculum. Since students are experiencing death among peers and family, it is desirable for them to be helped to cope with death in a relevant manner.

Although the teachers surveyed (87%) agreed that death education should be taught, approximately two-thirds (64%) of them do not teach units in death education. The implications are clear--more teachers need to put into practice what they believe is needed.

In addition, teachers need professional training if they are to handle such a delicate concept successfully. Teacher education training institutions should incorporate some aspects of death and dying in their curricula so that teachers are prepared to cope with the subject matter of death and dying in the secondary classroom.

Teaching about death can be a rewarding and satisfying experience for teacher and student alike. As a subject for exploration within the classroom, it meets the criteria of being intrinsically interesting, intellectually challenging, and personally and socially relevant. Death education, therefore, provides an opportunity for students to begin to face death in a supportive environment. A unit on death education can help improve a student's attitude toward self and his/her environment. Curriculum planning to include a unit on death education could result in better teaching and better learning experiences and is a desirable way of responding to a need.

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**INFECTIOUS DISEASE:  
VISUAL DIAGNOSIS FOR FUNERAL  
DIRECTORS AND EMBALMERS**

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**RUNNING HEAD: INFECTIOUS DISEASE AND EMBALMERS**

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## ABSTRACT

Infectious disease remains a leading cause of morbidity and mortality throughout our community. The resurgence of tuberculosis and antibiotic resistant strains of bacteria are commonplace in the medical community. Embalmers are exposed to a plethora of infectious disease, ranging from an elderly patient on chemotherapy to a young IV-drug abuser with HIV+ seroconversion. Therefore, embalmer/funeral director must be aware of visual diagnostic clues when performing a case analysis of human remains. An overview of empirical visual clues to the presence of infectious disease may be beneficial to the funeral service community.

## INTRODUCTION

The prevalence of infectious disease in our community is no surprise. For example, according to the Health Insurance Association of America, 339,000,000 productive work days were lost in 1980 as a result of acute health conditions.<sup>1</sup> In addition, a National Health Interview Survey found in the United States there were 49,310,000 cases of acute infectious and parasitic disease (25 per 100 population). As a result, there were 199,701,000 days of restricted activity, 99,713,000 days of bed disability, and 21,164,00 days lost from work.<sup>2</sup> Funeral directors are exposed to human remains harboring these diseases and must be knowledgeable of modality of death and the growing incidence of acquired immune deficiency syndrome and other infectious processes. Many of these problems will not be known to the embalmers/funeral directors until removal and/or embalming is completed.

The embalmer/funeral director is charged with proper care and embalming of the human remains; therefore, the funeral director should be aware of all aspects of the disposition of human remains. Among many reportable infectious diseases few, if any, are actually reported to the receiving funeral director (Table 1). Legal constraints on the part of the releasing institution designed to avoid lawsuits related to invasion of privacy of the patient and/or family members may cause consternation to the embalmer. Visual cutaneous clues may help the embalmer/funeral director to detect an infectious process in progress. These cutaneous signs of the infective process are relatively easy to recognize and lead to diagnosis without benefit of the death certificate.

### DEFINITIONS

Morphological appearances summarized in Table 2 can be beneficial indicators of the presence of an infectious process in human remains. The macule is a circumscribed area of change in normal skin color without elevation or depression relative to the surrounding skin; a plaque is a elevated lesion that occupies a relatively large surface area (greater than 1 cm in diameter) and is frequently formed by a confluence of papules. A papule is a solid lesion, generally considered to be less than 1 cm in diameter, which is elevated above the plane of the surrounding skin. A nodule is a palpable, solid round or ellipsoidal lesion which lies deeper in the skin than a papule. A vesicle is a circumscribed, elevated lesion less than 0.5 cm in diameter that contains liquid; ulcers are lesions in which there has been destruction of the epidermis and upper papillary dermis.<sup>5</sup>

## CUTANEOUS MANIFESTATIONS OF BACTERIAL DISEASES

An extensive array of infectious disease will be caused by an invasion of bacteria. Most of the cutaneous lesions that occur in bacterial infections are characterized by small red pinpoint, raised lesions called petechiae. Petechiae are seen in meningococcal and streptococcal infections and may occur on the extremities and trunk of affected individuals. (Illustration 1). In cases of other infective processes such as subacute bacterial endocarditis (SBE) the embalmer may note petechial eruptions, minute ecchymosis, and damage to small blood vessels of the skin. Clubbing of the fingertips may indicate the infective process of SBE or may serve as a sign of the decreasing peripheral circulatory function commonly seen in patients with chronic obstructive lung disease.

Other bacterial infections form bullae, large fluid-filled hemorrhagic lesions, secondary to clogging of the capillary system. The fluid in bullae may be clear or translucent. The lesions are easily recognized and appreciated on lightly pigmented skin, but on darker skinned patients, these lesions may be innocuous and difficult to recognize. Careful consideration must be paid to the palms, soles and other extremities for cutaneous clues.

Cellulitis, an inflammation of the skin layers, often seen secondary to streptococcal septicemia is usually manifest on the extremities. This type of inflammatory manifestation is well localized showing erythema around the site of injury or inoculation site. A special form of streptococcal infection, erysipelas, can be appreciated in some individuals. These forms of streptococci may spread invasively due to tissue destructive enzymes. These lesions have well demarcated borders. Impetigo, seen commonly in children, may show similar characteristics. Lymphadenopathy in the neck, axilla and groin area may indicate presence of infection or an inflammatory process.

In general, bacterial lesions may erupt in many forms from small pinpoint petechial hemorrhages to massive necrotic bullae with cellulitis. Anaerobic bacteria may produce a concave abscess and produce crepitus (tissue gas).

### CUTANEOUS MANIFESTATIONS OF VIRAL INFECTIONS

Viral infections present the most challenging problems for the embalmer. They are diverse, difficult to elucidate and have many forms and vary in their pathogenicity in the dead human remains. Few studies have proven the ability of many viruses to be viable outside of live tissue. Viral organisms are sometimes classified by their mode of transmission.

1. Arthropod-borne viruses (transmitted via insects; e.g. yellow-fever, dengue viruses)
2. Respiratory viruses (transmitted via air; e.g. influenzae, rhinovirus)
3. fecal-oral (transmitted via body fluid; e.g. poliovirus, hepatitis A)
4. Penetrating wound viruses (e.g. rabies, hepatitis B)



Viral lesions may appear as rashes on the extremities and trunk: Maculopapular rashes, large papules > 1mm diameter will appear with Epstein-Barr, measles (rubeola), rubella, and echo viruses. Vesicular or bullous lesions occur with herpes simplex, varicella (shingles), and variola (Smallpox). One species of virus, molluscum contagiosum may present with nodules on the fingers.

Human immunodeficiency virus disease may present in many forms. Most patients with AIDS will have synergistic and concomitant infections which may give a varying picture. Every funeral service professional must also be observant of the macular reddish-purple lesions of Kaposi's sarcoma.

. Note that while few studies have proven the ability of viruses to remain viable outside of live tissue, Nyberg et al. recovered HIV in culture from at least one specimen from eight autopsy specimens, one of which was six days post-mortem.<sup>3</sup> In addition, HIV was recovered from the blood and tissue of five patients, including three with negative blood cultures.

### CUTANEOUS MANIFESTATIONS OF FUNGI, PARASITES, AND RICKETTSIAS

Superficial fungal cutaneous lesions may have maculopapular rashes. Vesicular or bullous lesions are never seen in fungal disease. In general fungal diseases exhibit cotton-like (flocculent), spreading raised or flat lesions in their appearances.

## CONCLUSION

The embalmer often does not have the benefit of a death certificate for diagnosis of infectious disease. Therefore, the cutaneous manifestation of the infective processes can be a helpful clue to the funeral service professional. The unique lesions can be easily recognized and the remains may be examined with pre-embalming analysis during washing and positioning of the features. A note of caution for all embalmers: **USE UNIVERSAL PRECAUTIONS IN ALL CASES.** The relative small cost of protective gear is minute when compared to the costs associated with transmission of infectious disease or the legal defense of a worker's compensation claim.

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## TABLE I (continued)

## COMMON HOSPITAL

## REPORTABLE INFECTIOUS DISEASES

LEAD POISONING

STAPHYLOCOCCAL

LEGIONELLA

TETANUS

LEPTOSPIROSIS

TOXIC SHOCK SYNDROME

LEPROSY

TRACHOMAMALARIA

MENINGITIS

TULAREMIA

Aseptic

TYPHOID FEVER

Meningoccal

TYPHUS

Tuberculosis

VENERAL DISEASE

MUMPS

VIRAL HEMORRHAGIC FEVER

DIARRHEA, NEWBORN

YELLOW FEVER

TABLE 2  
CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
MACULOPAPULAR RASHES			
<b>VIRUSES</b>			
EB (Epstein-Barr)	Infectious mononucleosis	Trunk	Evanescent macules, especially on trunk, may resemble measles
Measles	Infectious mononucleosis Rubeola, "hard measles"	Upper lateral neck, hair-line; then upper body, and distal extremities. Frontal and retroauricular, then spreading over body and limbs.	Maculopapules, tending to blotchy confluence, palatine enanthema and Koplik's spots Evanescent pink macules, sometimes pinpoint, sometimes confluent
Rubella	German measles		
<b>CHLAMYDIAS</b>			
Chlamydia psittaci	Psittacosis	Trunk	Paint macules, occasionally erythema nodosum or erythema multiforme
<b>RICKETTSIAS</b>			
R. akari	Rickettsialpox	Initial papule at site of mite bite (often unnoticed); generalized.	Initial papulovesicle becomes an eschar; later, generalized papules surmounted by small vesicles which heal in a few days
<b>BACTERIA</b>			
Erysipelothrix insidiosa	Erysipeloid	Fingers or hands	Reddish purple nodules at site of trauma, slowly extending in arciform configuration
Listeria monocytogenes	Listeriosis	Trunk and legs	Red macules that undergo necrosis with formation of pustules
Salmonella spp.	Typhoid fever; salmonellosis	Abdomen, chest	Evanescent erythematous macules (rose spots); may yield Salmonella spp.

TABLE 2  
CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
BACTERIA (cont.)			
Streptococcus pyogenes (Group A)	Scarlet fever	Erythematous skin with accentuation in flexor creases	Pinhead sized red papules, imparting sandpaperlike texture to skin; circumoral pallor, also palatine petechiae (abacterial). Rapidly spreading, ringed eruption, sometimes with raised margins that coalesce into annular patterns.
	Erythema marginatum (with acute rheumatic fever)	Trunk and extremities; occasionally proximal hands and face	Bright red, edematous (peau d'orange) tender plaque; extensions may have vesicles or bullae; portal of entry may not be evident
	Erysipelas	Face, extremities	Shiny, ill-defined symmetric macules; diffuse infiltration; plaques and nodules; erythema nodosum
Mycobacterium leprae	Lepromatous leprosy	Widespread, symmetric; face, extremities, buttocks, but spares warmer parts of body	Hypopigmented, scaling macules with raised border; well-defined margins; anesthetic
	Tuberculoid leprosy	Buttocks, posterolateral aspect of extremities, back, face	
Streptobacillus moniliformis	Rat-bite fever (streptobacillary)	Palms, soles, lower extremities	Discrete morbilliform maculopapules, petechiae, or purpuric eruption
Spirillum minus	Rat-bite fever (spirillary)	Trunk and extremities; frequently on palms and soles	Reddish purple macules
Treponema pallidum	Syphilis (secondary)	Generalized, including palms and soles	Scaly maculopapules, papules in anogenital area; painless mucosal erosions
Treponema carateum	Pinta	Exposed areas	Primary papule, secondary erythematous macules that become depigmented and hyperkeratotic

TABLE 2  
 CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
FUNGI			
Pityrosporum orbiculare, Malassezia furfur	Tinea versicolor	Upper trunk (unusual below waist), neck, proximal upper extremities	Whitish or brown, "branny" scaling maculopapules
Dermatophytic fungi Trichophyton spp; Microsporum spp.; Epidermophyton floccosum	Tinea circinata, tinea capitis, tinea cruris, tinea pedis	Trunk, scalp, groin, feet	Erythematous macule becoming papular, annular, or con- fluent, scaling or vesiculated; pruritic; hair loss from scalp
Protozoa Plasmodium spp.	Malaria	Generalized	Urticarial rash in chronic malaria; conjunctival ecchymoses; generalized Addisonian hyper- pigmentation Erythematous macules, purpura, and ecchymoses
Toxoplasma gondii	Acquired toxoplasmosis	Generalized, but sparing palms and soles	
Metazoa Trichinella spiralis	Trichinosis	Face, especially lids and conjunctiva, hands and feet	Urticaria most commonly; generalized maculopapular or petechial rash later
Necator americanus	Hookworm disease	Toes, toe clefts, and soles	Papules, papulovesicles, or bullae; ankles frequently swollen with an accompanying urticaria
Ancylostoma braziliensis and other hookworms; also Strongyloides stercoralis Strongyloides stercoralis	Creeping eruption or cutaneous larva migrans	Exposed skin	Transient red papule, becoming erythematous zig-zag serpiginous lesion; may be one or many; very pruritic
	Strongyloides stercoralis	Area of contact with ground	Evanescant blotchy red papules or urticaria; also a creeping eruption (larva currens)

TABLE 2  
CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
FUNGI (cont.)			
Schistosoma spp.	Swimmer's itch	Parts of body exposed to infected water	Transient erythema followed by discrete pruritic papules, then vesiculation
Wuchereria bancrofti, Brugia malayi	Filariasis	Legs, scrotum; upper extremities, breasts	Erythema and edema over involved lymphatic vessels; early, late urticaria, swellings similar to erythema nodosum
Pediculus humanus	Body lice	Opposite seams in clothing, belt line, axillae	Red maculopapules
Phthirus pubis	Crabs	Pubic hair; rarely eyebrows or lashes	Pruritic, minute, red macules; bugs or nits on hair; red spots in underwear
Pulex irritans	Flea bites	Feet; exposed skin	Pruritic papules and urticaria; frequently central pustule (sterile)
Sarcoptes scabiei	Scabies	Sides of fingers, finger webs, wrists, elbows; genitalia in men, nipples in women	Threadlike burrows, erythematous papules, becoming vesiculated in folds; pruritic at night; folliculitis anterior thighs and buttocks (abacterial)
Trombicula irritans	Chigger bites; trombiculiasis	Lower extremities upward; concentration where clothing restricts	Pruritic papules which appear 18 hours after exposure



TABLE 2  
CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
VESICULAR OR BULLOUS VIRUSES			
Viruses			
Herpes simplex	Cold sores, gingivostomatitis, vulvovaginitis, balanitis, keratoconjunctivitis	Anywhere(!); sensory nerve involvement may occur, producing deep pain, e.g. along sciatic nerve	Grouped vesicles on an erythematous plaque
Coxsackie A16; other group A coxsackie viruses	Hand-foot-and-mouth disease	Margins of palms and soles; dorsa of hands and feet; buttocks; lips and buccal mucosa.	Vesicular lesions surrounded by red areola
Varicella-zoster	Herpes zoster, shingles	Dermatomal distribution; unilateral	Macules, papules, vesicles, pustules,
	Varicella, chickenpox	Trunk, proximal, extremities; mucous membranes of mouth and vulva	Pruritic maculopauules, vesicles, pustules; discrete eruption in crops
Variola group	Smallpox, variola	Begins distal extremities, face; extends centripetally	Macules, pauules, vesicles, pustules, crusts in sequence, single crop; umbilicated; all lesions in same stage of development.
Vaccinia	Alastrim Vaccinia, cowpox	Distal extremities; spreads centripetally Inoculation site	Similar to smallpox, but milder Local papule, vesicle, pustule, crust; may spread, resembling smallpox or chickenpox
Bacteria			
Streptococcus pyogenes (group A) and/or	Impetigo	Extremities, face	Vesicles that become pustular, crusted; pruritic; bullous variety caused by
Staphylococcus aureus			Staphylococcus aureus, phage type 71

TABLE 2  
CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
PETECHIAL OR HEMORRHAGIC			
Viruses Arboviruses (group B and tataribe-lymphocytic choriomeningitis)	Dengue; epidemic Argentinian and Bolivian hemorrhagic fever	Inner arms, upper chest, shoulders, neck and palate	Morbilloform becoming petechial; purpura may occur on extremities late
Rickettsiae Rickettsia prowazekii	Epidemic typhus	Sides of trunk, spreads centrifugally but spares palms, soles, face	Macules becoming hemorrhagic during second week
Bacteria Bacillus anthracis	Anthrax, malignant pustule	Exposed skin; face, neck, hands, or arms	Papule, becoming bullous and then forming a central hemorrhagic, crusted ulcer, surrounded by edema and vesicles; relatively slight regional node involvement
Neisseria meningitidis	Meningococemia	Extremities, frequently over tender joints; fingers	Relatively few hemorrhagic pustules
Yersinia pestis	Plague	Generalized	Macular erythema, petechiae, or ecchymoses; may contain Y. pestis
Streptococcus spp., other bacteria, fungi, rickettsiae	Infective endocarditis	Oropharynx, conjunctive retina	Petechiae, splinter hemorrhages (abacterial); erythematous macules of (Janeway spots); painful papules of of fingers and toes (Osler nodes; may contain infectious agent)

TABLE 2  
CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
		PUSTULAR	
Metazoa			
Cimex lectularius et hemipterus	Bedbug bite	Face, neck, hands, or arms	Bites often two or three in a line
Lactrodectus mactans	Black widow spider bite	Buttocks, scrotum, hands, arms	Painful, swollen, and purpuric at site of bite; two red puncta may be seen
Viruses - see smallpox and chickenpox	Acne	Face, upper back, chest	
Bacteria			
Staphylococcus aureus	Furunculosis, boils	Face, neck, arms, wrists, fingers, buttocks, and anogenital area	Follicular inflammatory module, becoming pustular and then necrotic; tenderness is invariable
Propionibacterium acnes and Staphylococcus epidermidis	Acne	Face, upper back, chest	Inflammatory papules, pustules, and cysts
		ULCERATIVE	
Chlamydiae			
Lymphogranuloma venereum	Lymphogranuloma venereum	Penis, labia	Small, usually single ulceration; accompanying adenopathy
Bacteria			
Corynebacterium diphtheriae	Cutaneous or wound diphtheria	Extremities, face	Nonspecific, often impetigo or ecthymalike; in tropics, a shallow ulcer with firm border, with or without eschar
			Nodule which breaks down to form a painless ulcer with sharply defined overhanging edge
Calymmatobacterium	Granuloma inguinale	External genitalia, pubis	Ulcerated nodule with prominent regional adenopathy
Francisella tularensis	Tularemia	Site of inoculation	

TABLE 2  
 CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
Haemophilus ducreyi	Chancroid	Genitalia; preputial orifice, frenulum; fourchette, inner labia minora	Sharply circumscribed, painful, shallow ragged ulcer; removal of pus reveals vascular granulation tissue which bleeds easily
Treponema pallidum	Syphilis (primary chancre)	Genitalia, rectum, extragenital sites	Ulcer with indurated border and regional adenopathy
Treponema pertenue	Yaws	Site of inoculation anywhere on body	Papule which ulcerates, giving rise to large ulcer with round papillomatous or vegetative surface
Mycobacterium kansasii		Site of inoculation; usually extremities	Granulomatous ulcer with lymphangitic or "sporotrichoid" proximal adenopathy
Mycobacterium marinum	Swimming-pool grabykina	Knees, elbows	Papule which ulcerates; becomes granulomatous; rarely "sporotrichoid"
Mycobacterium tuberculosis	Primary tuberculosis of skin	Site of inoculation	Papule or nodule that may ulcerate; accompanying regional adenopathy primary complex
Mycobacterium ulcerans	Buruli ulcer	Site of inoculation; usually arms or legs	Deep, destructive ulceration
Fungi Sporothrix schenckii	Sporotrichosis	Hands, arms, legs	Nodules at site of inoculation and along lymphatic vessels that may ulcerate
Candida albicans	Cutaneous candidosis monilliasis, thrush, vaginitis, paronychia	Intertriginous areas, mouth	Erythematous, exudative lesions of mucosa and skin; "satellite" pustules
Protozoa Leishmania braziliensis, Leishmania mexicana	American leishmaniasis, Chiclero ulcer, espundia	Exposed skin	Red papule, ulcerates sometimes after vesiculation; on ears (chiclero ulcer), or advancing destructive mucocutaneous lesion of mouth and nose (espundia)

TABLE 2

## CUTANEOUS MANIFESTATIONS OF INFECTIONS

CAUSATIVE AGENT	DISEASE	SITE	SPECIFIC CHARACTERISTICS
Metazoa Loxosceles spp.	Necrotic arachnidism, brown spider bite	Hands, arms, lower extremities	Painful; site of bite is white with red halo; vesiculates and becomes necrotic, leaving gaping ulcer (resembles "levarterenol slough")
Viruses Milker's nodule Molluscum contagiosum	Milker's nodules Molluscum contagiosum	Fingers, hands Exposed areas on children; pubic area and genitalia of adults	Papules becoming nodules Flesh colored to pink, umbilicated papules
Bacteria Streptococcus pyogenes (rheumatic fever) Mycobacterium tuberculosis Francisella tularensis Fungi Coccidioides immitis Histoplasma capsulatum Bacteria Mycobacterium leprae	Erythema nodosum Erythema nodosum leprosum	Shins, other extensor extremities Widely distributed, but pre- dominant on extremities and face Head and neck; extremities; uncommon on trunk Face; other exposed parts	Tender, erythematous nodules Erythematous nodules or plaques 1-5 cm in diameter; occurs in patients with lepromatous leprosy; rarely in borderline Reddish brown, flat, soft plaque; some scaling may be present; enlarges slowly Furuncle-like module which ulcerates; red raised area around the ulcer enlarges for 2-3 months; heals, leaving a scar
Mycobacterium tuberculosis Protozoa Leishmania tropica	Luprus vulgaris Oriental sore		

## LICENSING REQUIREMENTS: WHEN IS ENOUGH REALLY ENOUGH?

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There has been an ongoing debate over the wide range of entry level requirements that prospective licensees must meet in order to enter funeral service. Dr. Dan Flory resurrected the long standing question of whether funeral service is a trade or a profession. He argued that if funeral service is indeed a profession, entry level educational requirements should reflect the scope of curriculum content and depth of study that other recognized professions require.<sup>1</sup> Dr. Flory compared the typical entry level education of "high school and, at best, one or two years of college plus mortuary college" to professions, such as law or allied health, where the standard calls for a "bachelor's or master's degree as the minimum entry-level credential."<sup>2</sup> He also made a very interesting statement regarding the capacity of the average funeral service licensee to comprehend the complexities of the changes that funeral directors are facing. Dr. Flory wrote:

Imagine the plight of the young funeral service licensee who has only a high school diploma plus mortuary college, as he or she tries to deal with the Federal Trade Commission, OSHA requirements, the hazard communication program, sophisticated insurance and pre-need programs, computer software for funeral service operations, the Americans with Disabilities Act, aftercare programs, the Bloodborne Pathogen Rule and organ and tissue donation agencies.<sup>3</sup>

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<sup>1</sup>Dan L. Flory, "Missing the Boat? Continuing Education in Funeral Service," The Southern Funeral Director, June 1992, p. 8, 17-18, 20.

<sup>2</sup>Ibid. p. 8.

<sup>3</sup>Ibid. p. 8.

Or, consider the plight of the mature funeral director whose entry level requirements were met at a time when a license to practice could be gained with a high school diploma and a brief training program.

This line of reasoning would tend to cause one to believe that funeral directors are undereducated. But, questions exist in the educational literature as to whether Americans as a people are undereducated or overeducated.

In 1984, Rumberger stated that:

. . . considerable evidence suggests that the American workforce has already attained an educational level that exceeds the educational requirements of many jobs in the economy.<sup>4</sup>

More recently, David R. Pearson, President of the Illinois Funeral Directors Association stated:

Today, more than ever, a college degree is needed for keeping pace with other professions. The time has come for the state of Illinois to have a bachelor's degree program."<sup>5</sup>

The assumption of some educators tends to be that the theoretical standards for practice exist on some higher plane than the reality of practice. That may not be the case in funeral service. What if the standards for obtaining a license do not measure up to the realities of the job? Is it time to determine whether the complexities of the funeral business have caused the demands of practice to outgrow the entry level requirements? Should licensing agencies be examining license requirements against the realities of the workplace in order

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<sup>4</sup>Russell Rumberger, "The Growing Imbalance Between Education and Work," Phi Delta Kappan, January 1984, p. 342.

<sup>5</sup>David R. Pearson, "Facing the Future," Newsletter, Illinois Funeral Directors Association, July 1993, p. 1.

to determine if they are granting privileges to licensees who are grossly under-prepared for the demands that will be placed on them in practice? Or, is it possible that some licensing agencies are requiring far more education than is really necessary to do the job?

David Kneib<sup>6</sup> argued that funeral service has become and the preparatory curriculum taught in mortuary colleges cannot respond rapidly enough to prepare practitioners for the changing demands of practice. . .

An examination of the entry level educational requirements, apprenticeship requirements and continuing education requirements throughout the country provided some interesting insights. To accomplish this examination, the educational and apprenticeship requirements listed in The Director January '93 Special Issue<sup>7</sup> were combined with lists of continuing education states and non-continuing education states. There was need for some interpretation in order to categorize the educational and apprenticeship requirements into levels because there are a number of license combinations available throughout the country. There are states where a person can be licensed as a funeral director without being licensed as an embalmer. There are states that allow licensing as an embalmer without licensing as a funeral director. There are states where the entry level license is the embalmer's license, but where the expectation is that the licensee will qualify to become a funeral director after apprenticeship and successful completion of the funeral director's examination. Educational requirements were used to determine which license or combination of licenses offered the most professional privilege. In order to accomplish the

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<sup>6</sup>David Kneib, "The Continuum of Professional Education," The Director, December 1992, p. 32.

<sup>7</sup>NFDA, The Director January '93 Special Issue, p. 31-35.



categorization, the lowest educational requirements needed for the highest license status was used. Six categories were created for educational requirements. Each category was assigned a number value from zero to five. Level zero included states which had no educational requirements and no license. Level one included states which have educational requirements for licensure that call for a high school education plus mortuary school (12 months); or a high school education plus practical experience. Level two included states which have educational requirements for licensure that call for one year of college plus mortuary college (leading to a certificate or diploma, but not necessarily leading to a degree). Level three included states which have educational requirements for licensure that call for an Associate Degree that includes an accredited mortuary science curriculum. Level four included states which have educational requirements for licensure that call for two years of college plus mortuary school (not necessarily leading to a degree, but including prescribed courses). Level five included states which have educational requirements for licensure that call for a Bachelors Degree with a major in mortuary science, or a Bachelors Degree plus mortuary school.

Apprenticeship requirements were also categorized into levels using the information from The Director January '93 Special Issue.<sup>8</sup> Four levels were established. Level zero included those states which have no apprenticeship requirements. Level one included those states which have license requirements that call for one year of apprenticeship either before or after mortuary school. Level two included those states which have license requirements that call for eighteen months of apprenticeship either before or after mortuary school. Level three included those states which have license requirements that call for two

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<sup>8</sup>Ibid.

years or more of apprenticeship either before or after mortuary school - including those states with three year apprenticeship requirements that grant one year apprenticeship credit for attendance in mortuary school. Level four was created for the state of Hawaii where several years of apprenticeship may be done as an alternative to attending mortuary school.

Two levels were established for continuing education. Level zero was used to designate those states which did not have a continuing education requirement. Level one was used to categorize those states which did have continuing education. There was no attempt to classify the continuing education requirements beyond determining whether a state required continuing education for licensure.

It is interesting to note that a cursory glance at the chart of requirements might give the impression that an inverse relationship exists between educational level and apprenticeship level. Close examination of the chart, however, revealed more telling information. There are fifty-one (51) entries on the chart (fifty (50) states and Washington D.C.). They were divided into four categories, which included: (1) states with high (level 3,4,5) educational requirements, but which have low (level 0,1,2) apprenticeship requirements; (2) states with low (level 0,1,2) educational requirements, but which have high (level 3,4,5) apprenticeship requirements; (3) states with low (level 0,1,2) educational requirements and low (level 0,1,2) apprenticeship requirements; and, (4) states with high (level 3,4,5) educational requirements and high (level 3,4,5) apprenticeship requirements. There were eighteen states which fell into the high education/low apprenticeship category; ten states which fell into the low education/high apprenticeship category; twenty-two states which fell into the low education/low apprenticeship category; and, one state which

fell into the high education/high apprenticeship category.

When continuing education requirements were figured into the analysis, the following information was gathered: eight states have high education requirements, low apprenticeship requirement, and continuing education requirements; eight states have high education requirements, low apprenticeship requirements and no continuing education requirements; three states have low education requirements, high apprenticeship requirements and continuing education requirements; seven states have low education requirements, high apprenticeship requirements and no continuing education requirements; eight states have low education requirements, low apprenticeship requirements, but do have a continuing education requirement; thirteen states have low education requirements, low apprenticeship requirements, and no continuing education requirements; one state has high education requirements, high apprenticeship requirements and continuing education requirements; one state has no educational requirements, no apprenticeship requirements and no continuing education requirements.

A "Total" column is also included on the chart. It should be remembered that the total column is meant to illustrate the range of licensing requirements. The total column DOES NOT represent a systematic attempt to rate or compare the difficulty level found in any licensing jurisdiction. The extent to which the interpretation of licensing requirements is accurate is the extent to which degree of difficulty in any licensing jurisdiction might be accurate.

## Entry Level Education, Apprenticeship, and CE Requirements

State	Educational Level	Apprenticeship Level	CE	TOTAL
Alabama	1	3	0	4
Alaska	2	1	0	3
Arizona	1	3	1	5
Arkansas	1	1	0	2
California	1	3	0	4
Colorado	0	0	0	0
Connecticut	3	1	0	4
Delaware	4	1	1	6
D.C.	1	1	0	2
Florida	3	1	1	5
Georgia	1	3	0	4
Hawaii	1	4	0	5
Idaho	4	1	0	5
Illinois	2	1	1	4
Indiana	2	1	1	4
Iowa	2	1	1	4
Kansas	3	1	1	5
Kentucky	1	3	1	5
Louisiana	1	1	0	2
Maine	2	1	1	4
Maryland	3	1	0	4
Massachusetts	1	4	0	5
Michigan	4	1	0	5
Minnesota	4	1	0	5
Mississippi	1	1	0	2
Missouri	1	1	0	2
Montana	4	1	1	6
Nebraska	4	1	1	6
Nevada	4	1	0	5
New Hampshire	2	1	1	4
New Jersey	4	1	0	5
New Mexico	4	1	1	6
New York	2	1	0	3
North Carolina	1	1	1	3
North Dakota	4	1	0	5
Ohio	5	1	1	7
Oklahoma	2	1	1	4
Oregon	1	1	0	2
Pennsylvania	4	1	0	5
Rhode Island	1	3	0	4
South Carolina	1	3	1	5
South Dakota	4	1	0	5
Tennessee	1	1	0	2
Texas	1	1	0	2
Utah	2	1	1	4
Vermont	2	1	1	4
Virginia	1	2	0	3
Washington	4	3	1	8
West Virginia	3	1	1	5
Wisconsin	2	1	1	4
Wyoming	2	1	0	3

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INFANT EMBALMING TECHNIQUES

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The intent of this series of articles is to introduce the funeral service professional to the psychological aspects of viewing the embalmed infant and the seven documented infant embalming techniques available to him/her to achieve these results. First, we must examine the psychological aspects of viewing the embalmed infant from the perspective of the parents.

Many parents know there is no greater pain than the loss of a child at birth. In fact, since the beginning of time, newborn deaths have brought much more grief and long-term suffering than many of us are aware of or would like to admit. Babies are not supposed to die but they do. Approximately thirty-five thousand newborn infants die annually in this country within the first twenty-eight days of life. Stated another way, one neonatal death occurs every fifteen minutes somewhere in the United States. These statistics translate into an enormous collection of human suffering and potential maladaptation for surviving parents and siblings. Our rapidly increasing technology has made life possible for thousands of babies who, just a few short years ago would have had no chance for living.

As important as modern technology has been in saving lives it should not be under valued. It still seems near total emphasis has been placed on attacking only the tip of an enormous iceberg

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of human suffering. We are saving more babies than in the past, but for the bereaved parents we continue to loose the battle against death's compassion--grief.

Much research has been done in recent years on infant deaths and the affect on parents and close family members. The findings of almost every study in recent times refutes such misguided theories as: The baby did not live long enough for the parents to have formed any meaningful attachment; spare the mother and get the funeral over with while she is still in the hospital.

The film, Death of the Wished-For Child, produced by Bill Goveia for the Order of the Golden Rule, dramatically points out the fact that these parents have very special needs. The mother and father may need to hold the infant for a few moments to say I love you and goodbye. Close friends may need the funeral ceremony to tell the grieving parents we are sad too at your loss.

The embalming of infant cases, especially premature and stillborn infants, is still probably one of the most neglected of all the techniques used in embalming practices today. In the past, embalmers have treated the infant remains in a lackadaisical manner because most of them believed that the surviving parents, siblings, and close friends did not want to view the infant. Bereaved relatives who must view the little body of the infant in a discolored, unembalmed condition will certainly be justified in their resentment of the embalmer's thoughtlessness (Frederick & Strub, 1967). For these and many other reasons, research studies

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in the area of grief therapy have formulated conclusions that, if the family members are provided the chance to view the properly embalmed infant, they are given one of the many opportunities available to work out their grief. There is a great deal of attachment between the mother and the unborn child. There may be serious consequences if the final disposition of the "significant part" of the mother is made without her being allowed to work through her grief with the body of the infant present (Doty, 1981).

In Glen W. Davidson's five year case study entitled, "Death of the Wished-For Child," fifteen mothers who gave birth to a stillborn or who lost their baby in the first twenty-four hours of life were carefully monitored. This was a preliminary report of the ways women and the significant people involved in their lives were able to cope with the loss of their "wished-for" child (Davidson, 1977). When a stillborn or neonatal infant dies, the mother and father become vulnerable and disoriented. The mother will often wish to see or hold her baby and in many cases her wishes are inadmissible by relatives, friends, and funeral service professionals. The mother is attempting to adapt to the loss of her infant by wanting to visualize ideas and perceptions that are vague in her mind. The mother knows her baby is dead, but she is not allowed by relatives, friends, or funeral service professionals to confront her loss, the infant itself.

Research has shown that parents that were able to see and/or



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hold their baby were able to orient themselves much more quickly than those parents that did not get to see and/or hold their baby. Parents find it difficult to find emotional support from people close to them when an infant death occurs. Most of these people, including funeral service professionals have their own problems or anxieties about accepting the death of an infant. This usually warrants their emotional support towards the parents. This group of people often feels that the parents should not view the infant because they are not able to give proper emotional support which is needed most by those affected by the death, the parents. Finally, the mother tries to discover what has happened to her and she desperately wants to confirm her suspicions by the reactions of others. These "others" do not want the mother to make any decisions, consequently shielding her from working out her grief over the death of her infant. Therefore, these "others" make it more difficult for the mother to get herself reoriented.

The above paragraphs just scratch the surface of the problems faced by parents who are trying to adjust to the loss of their baby. Research indicates that viewing the infant remains can be psychologically advantageous to the resolution of the parents grief.

Even as research continues, it is clear now that the work of sensitive and skilled embalmers is vital in meeting these very special needs (Sawyer, 1982). The next articles will examine the seven documented infant embalming techniques that can be utilized

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by the embalmer which will allow for the viewing of the infant's body.

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## INFANT EMBALMING TECHNIQUES

### PART 2

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Author's Note: The original research for this series of articles was completed several years ago. The author's intent is to educate the practitioner on techniques that are available for the embalming of an infant. The author realizes that other techniques are available and these articles are just a sampling of those techniques.

The seven documented infant embalming techniques selected by the author can be utilized on infants up to the age of one year, and is compatible for the embalming of the premature and stillborn cases. The format for this section is as follows: Embalming Techniques, Pre-Embalming Procedures, and Post-Embalming Procedures.

Each of the seven documented infant embalming techniques can be utilized on unautopsied and autopsied cases and the chart below shows where each selected technique is applicable:

#### Unautopsied Cases

Fluid Pack Applications

Heart Method

Thoracic Aorta

Umbilical Vein

Abdominal Aorta

Normal Embalming Procedure

Angiocath/Syringe

#### Autopsied Cases

Fluid Pack Applications

Normal Embalming Procedure

Angiocath/Syringe

The pre- and post-embalming procedures are general and may not be compatible for the technique selected by the embalmer.

The general pre-embalming procedures are as follows (Sawyer, 1982):

1. Detailed case analysis.
2. Wash the infant and disinfect all orifices.
3. The infant should be placed on a "bed" of brown kapok, nonabsorbent cotton. This prevents flattening of the back, buttocks, and legs, which would feel unnatural if the significant others were to hold the infant. It will also prevent moisture from being drawn out of the tissues, nor will it absorb water or drainage material.
4. Remove the downy (lanugo) facial hair with a sharp razor. because this hair interferes with the application of cosmetics later.
5. Set the features:
  - A. Mouth closure can be done by making a stitch through the soft bone of the mandible and the maxilla. The lips should be puckered and glued into position.
  - B. Eye closure- Do not use eye caps! Use small pieces of cotton or cover the orbits with dental powder, which will provide the best medium for proper eye closure.
6. After setting the features, liberally coat the face, arms, hands, legs, and feet with massage cream. This keeps the tissue soft and pliable, plus this makes the tissues more receptive to cosmetics which will be applied later. The massage cream also prevents excessive dehydration of the tissue.
7. Readjust the cotton "bed" for proper position of the infant.
8. Select the specific embalming technique.

The general post-embalming procedures are as follows (Sawyer, 1982):

1. If a cranial autopsy has not been performed, cranial treatment is necessary since the infant's brain will decompose rapidly, causing purge and distention. Using a 20cc syringe, insert a #18 gauge hypodermic needle through the posterior fontanelle (soft spot) of the infant's head and inject two to three ounces of concentrated cavity fluid directly into the brain tissue.
2. Bathe and dry the infant, removing all massage cream from the body surfaces.
3. Smooth and conceal any sutures by using a flexible sealer or wax over these incisions, because the significant others may want to hold the infant.
4. Dress the infant. Place plastic sheeting around all openings to protect the clothing when the cosmetics are applied.
5. Cosmetize the face, hands, arms, and legs of the infant:
  - A. A mortuary preparation of a paraffin-based liquid or cream cosmetic is the most successful for infants.
  - B. The base tint should be kept light, and red cosmetics
  - C. A very small amount of blue eyeshadow is most effective when placed in the orbital areas. D. Use talcum powder on the entire body, and be sure to clean the talcum powder away from the eyebrows, eyelashes, and hair.
6. Finally, position the infant for the visitation in either a crib, bassinet, or basket.

The next articles will examine each of the seven documented infant embalming techniques in detail.

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## INFANT EMBALMING TECHNIQUES

### PART 3

General Service Administration  
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#### Fluid Pack Applications

This embalming method usually precludes the viewing of the infant. "Embalming by osmosis" is used for the temporary preservation and disinfection of the infant and certainly requires a great stretch of the imagination to be classified as embalming (Frederick & Strub, 1977).

Many embalmers wrap the infant's body with several layers of cotton and then saturate this cotton with concentrated arterial or cavity fluid. Some embalmers simply submerge or float the infant in a basin containing a concentrated arterial or cavity fluid. Finally, a few embalmers place the infant in a tightly closed box or container, together with a pound of some type of embalming powder (paraformaldehyde) for about ten to twelve hours.

On the unautopsied infant treated by these methods, cavity treatment is sometimes used in conjunction with the "osmosis" method. The results of these methods are devastating; excessive dehydration and wrinkling of the skin, with little or no modification of any blood discolorations (Doty, 1981). Fluid diffusion is at a minimum and consequently rapid decomposition will occur if the body is

held for an extended period of time.

The author confers with Frederick and Strub that this method requires a great stretch of the imagination to be classified as embalming and should only be used as a last resort to achieve temporary preservation and disinfection of the infant.

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INFANT EMBALMING TECHNIQUESPART 4

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Heart Method

This method of infant embalming consist of a thoracic incision and direct injection into the heart or the arch of the aorta (Frederick & Strub, 1977).

Arterial injection takes place directly into the left ventricle of the heart and drainage is received from the right atrium of the heart. A "Y" type of angular incision is made just inferior to the clavicle at the level of the fourth rib. The incision continues down the median line to the inferior border of the sternum. Next, dissect the tissue back from the sternum and the ribs. Cut the ribs on both sides of the sternum with scissors and be sure not to cut the superior end of the sternum loose from its articulation with the clavicles. Then grasping the inferior end of the sternum, lift it superiorly and bend it the direction of the face. Lift the exposed heart and split the pericardial sac, so that the heart may be freed from the majority of the pericardial sac. While the embalmer is holding the heart, insert a curved large arterial tube through the wall of the left ventricle in the direction towards the aorta, so that the end of the arterial tube lies within the chamber of the

left ventricle. No incision is made in the heart muscle to insert the arterial tube, because the muscular tissue will fit tight around the arterial tube and it will not be necessary to ligate the arterial tube into the heart.

Drainage is obtained from the right atrium of the heart. The insertion of a drain tube is not necessary, just merely make an incision in the right atrium with a scalpel and insert a pair of spring forceps to hold the incision open. Care should be exercised that the quantity of arterial fluid does not greatly exceed the quantity of drainage, if swelling is to be avoided (Champion, 1960).

One quart to three pints of a mild arterial solution strength should be injected. When two concentrated ounces of a five index cosmetic-based arterial fluid are used, it is advised to dilute this with enough water to make one quart. Injection pressure should not exceed one to one and one-half pounds and the rate of flow should be at a minimum (Doty, 1981).

It is not necessary to close the incision in the right atrium or the puncture hole in the left ventricle after arterial injection is completed. Following completion of the arterial injection, the heart is placed back into the thoracic cavity, the sternum is returned to its normal position, and the incision is sutured closed. Next, aspiration and cavity treatment with eight to twelve ounces

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of concentrated low-odor cavity fluid should be administered.

#### References

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## INFANT EMBALMING TECHNIQUES

### PART 5

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#### Thoracic Aorta

The use of the posterior incision and subsequent injection of the thoracic aorta provides large vessel operation as well as an incision that is not seen (Stewart, 1954).

Once the features have been set, the infant is placed in a prone position on a bed of cotton padding to prevent the nose and face from being distorted.

Beginning at the level of the fifth rib, a crescent shape incision is made on the left side laterally about one and one half inches and extends down to the ninth rib. The border of the skin flap is raised and dissected back to the vertebral column. The very soft, cartilage ribs are easily cut with scissors. The same crescent shape incision is made into the ribs and the flap is turned posteriorly towards the vertebrae.

In the infant, the thoracic aorta lies antero-lateral to the vertebrae bodies and the inferior vena cava will be found right antero-lateral to the vertebrae. The left lung can be compressed to allow ample room for excess to the thoracic aorta and inferior vena cava.

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The thoracic aorta is approached first and is freed to raise and opened for the insertion of a short, medium size arterial tube superiorly in the direction of the heart.

No drain tube is placed in the inferior vena cava, an incision is made into the inferior vena cava and is allowed to drain freely.

Before beginning the actual injection, the infant's body is turned to a supine position with the body resting on the tubing connected to the embalming machine. With the infant being of such small size, there is little chance of the tubing being occluded by the infant's body weight. The hands are placed in position and the arterial injection process can continue.

A very mild arterial solution strength is recommended, perhaps one-half or less the concentration used for adults. The average case can be completely embalmed with less than one-half gallon of arterial fluid. The pressure and rate of flow should be kept as low as possible (Stewart, 1954).

When the desired firmness is reached in the superior trunk and extremities, the body is placed in a prone position and the arterial tube is inserted inferiorly into the thoracic aorta to facilitate injection of the inferior trunk and extremities. The infant is again placed in a supine position and the arterial injection is continued. The author recommends that firmness not be used entirely as a sign of

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INFANT EMBALMING TECHNIQUESPART 6

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Umbilical Vein

It must be clearly understood at the start that this type of arterial injection can be done only where clearly indicated. Arterial injection via the two umbilical arteries or umbilical vein is sometimes advocated for the embalming of stillborn infants or those dying within a few hours after birth (Clarke, 1954).

The umbilical vein is arterially injected instead of the umbilical arteries because it is larger and carries oxygenated blood to the baby's circulatory system from the placenta during the gestation period. The major problem with this method is the passage through the valves of the heart to arrive into the arterial system, so arterial injection of the umbilical vein is not recommended for infants more than two days old. This is because the foramen ovale of the heart closes fairly rapidly after birth.

If the arterial injection process takes place before the foramen ovale closes, arterial injection can follow this course. First, one branch of the umbilical vein goes directly into the liver and the second branch goes directly into the inferior vena cava. At this point, the second

preservation, solution strength should be the determining factor.

Upon completion of the arterial injection, the body is placed in a prone position for the removal of the arterial tube and the ligation of the vessels. The rib section is returned to its normal position and at least three interrupted bright sutures are taken to hold it firmly in place.

Return the infant to a supine position and begin a thorough aspiration treatment. Generally, six to ten ounces of concentrated cavity fluid is sufficient. Finally, suture all incisions closed.

#### References

Stewart, R. L. (1954, June). Embalming infants by the posterior incision method. The Professional Embalmer.

branch meets the portion that went through the liver and follows the inferior vena cava to the right atrium of the heart. From this point, the fluid flows into the right atrium of the heart and thus supplies the upper extremities. Once the fluid leaves the head and the upper extremities, it enters the superior vena cava, continues into the right atrium and on to the right ventricle, finally entering the pulmonary artery. At this point, fetal circulation is different than adult circulation. That a temporary branch of the pulmonary artery is present, the ductus arteriosus. The ductus arteriosus connects directly with the aorta, thus almost all the fluid will pass directly into the aorta. The fluid that is moving inferiorly in the ductus arteriosus meets the fluid from the left ventricle and thus reaches the inferior extremities. When the fluid returns to the heart, it follows the common iliac arteries to the hypogastric arteries, and these in turn follow the umbilical artery, thus completing fetal circulation.

The embalming procedure continues by placing a small radial tube or blunt hypodermic needle into the umbilical vein. Injection of the arterial fluid can be achieved by; the embalming machine, gravity bottle, or hypodermic syringe. Drainage will be received through the umbilical arteries on its own accord and the amount of drainage is not absolutely necessary in completing the arterial injection process.



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Finally, perform a thorough cavity treatment and aspiration, and suture the umbilical vessels closed.

#### References

Clarke, W. L. (1954, Fourth Quarter). Umbilical injections of infants. ESCO Messenger.

## INFANT EMBALMING TECHNIQUES

### PART 7

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#### Abdominal Aorta

A simple technique can be employed in the embalming of the unautopsied infant by using the vessels of the abdominal cavity (Mayer, 1975).

The arterial embalming begins by making a four to five inch incision along the midline of the abdomen from the umbilicus to the pubes, or slightly to the right of the midline in the region of the umbilicus. The chief reason for keeping the incision as low as possible and slightly right of the midline is to avoid the enlarged infant liver, which almost completely fills the superior part of the abdominal cavity.

After the incision has been made through the abdominal wall into the peritoneal cavity, the intestines are gently eased out (not cut out) of the abdominal cavity using a pair of packing forceps. Next, the spinal column mesentery must be dissected open to expose the abdominal aorta and the inferior vena cava. Ligate the abdominal aorta and cut the inferior vena cava. Drainage from the inferior vena cava will then flood into the peritoneal cavity and later can be aspirated out. The abdominal aorta is opened an inch or two

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superior to the point where it bifurcates to form the common iliac arteries. Make an incision into the abdominal aorta and insert a medium size arterial tube into the vessel inferiorly in the direction of the legs.

The arterial fluid should be of the embalmer's preference. The use of low pressure and low rate of flow with pulsation is an excellent method of arterial injection for this technique. As soon as the discolorations and rigor mortis have lessened and the fluid dyes become evident, arterial injection should be stopped, unless pathological or postmortem conditions warrant additional fluid injection (Mayer, 1975).

The blood/drainage material in the abdominal cavity now can be sponged out or aspirated with a nasal aspirator. Next, the arterial tube is reversed and directed superiorly in the direction of the head. Again, using low pressure and low rate of flow with pulsation is advisable for this technique. Areas where rigor mortis is present can be gently massaged with massage cream during the arterial injection. Then as soon as the discolorations have lessened and the fluid dye becomes evident, stop the arterial injection process. Otherwise distension and/or wrinkling of the tissues can result.

After arterial injection is completed, remove the arterial tube and ligate the abdominal aorta. Again, the

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blood/drainage material in the abdominal cavity is to be aspirated out. Next, the embalmer will note that the intestines, which had been moved to the outside of the abdominal cavity during the arterial injection procedure have become distended. This however serves to preserve the viscera. The intestines now can be clipped and placed back into the abdominal cavity. The incision now is tightly sewn with a small baseball suture. Next, the thoracic and abdominal cavities can be aspirated by the use of an infant trocar. Injection of cavity fluid should follow this aspiration. The viscera can also be treated prior to sealing the incision by packing the thoracic and abdominal cavities with a hardening compound or embalming powder. This incision then can be sealed and sutured closed.

References

Mayer, R. G. (1975, November). A simple technique for embalming infants. Casket and Sunnyside.

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Normal Embalming Procedure

By far the most successful and satisfactory method, however, is by arterial injection following much the same techniques employed in embalming an adult body (Spriggs, 1963). Specifically, arterial injection via the right common carotid artery and drainage via the right internal jugular vein.

The principle difficulties encountered in embalming these bodies is the minute size of the vessels and securing a sufficient amount of blood drainage. Satisfactory drainage may safely be said to be the chief concern of the embalmer when treating infant bodies (Spriggs, 1963). The right internal jugular vein offers the best possibilities of securing the greatest amount of drainage. The arterial injection via the right common carotid artery allows the arterial injection to be made away from the face, thus minimizing the possibilities of distention of the features. It also permits the arterial fluid to be injected when there is resistance due to abdominal distention, which condition is so frequently found in infant bodies. Abdominal distention can be relieved by means of a hollow needle or an infant

trocar, after the arterial injection is completed.

The incision should be made in the crease of the inferior of two wrinkles, which are created naturally when the head is rotated to the right. The incision should be about one-half to three-quarters of an inch in length. When the right internal jugular vein is encountered, ligature is placed around it at either side of the incision and the right internal jugular vein is severed. The right common carotid artery will be found in the sheath with the right internal jugular vein, directly beneath it and slightly towards the midline of the neck. The same rules are followed for ligation of the right common carotid artery.

A small size (one-eighth inch outside diameter) drain tube should be inserted into the right inferior jugular vein inferiorly in the direction of the heart. Do not open the drain tube until two or three ounces of arterial fluid has been injected into the right common carotid artery. A small (three-sixty fourths to one-sixteenth outside diameter) arterial tube should be inserted inferiorly into the right common carotid artery. There is a tendency to inject too rapidly and the small tube will act as a governor to prevent too rapid an arterial injection. If the face is badly discolored, the superior ligature on the right internal jugular vein may be opening after the arterial injection has begun. The embalmer should bear in mind that the infant

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tissue is very delicate and therefore reacts more rapidly to arterial fluid. This reaction will continue for several days after embalming, frequently causing extreme desiccation of the face and hands unless measures are taken to prevent it.

The volume of arterial fluid required will depend upon body size and weight. Normally, one quart of arterial solution is an ample amount to complete the embalming operation. The arterial solution should consist of: six ounces of arterial fluid, six ounces of co-injection fluid, six ounces of water conditioner, two ounces of humectant, and fourteen ounces of water. The embalmer is cautioned against too rapid of an arterial injection for infants. At least ten minutes should be allowed for the arterial injection of one quart of arterial fluid, using one to two pounds of pressure. Do not expect a degree of firmness of tissue in infants that is comparable to that secured upon adult bodies (Spriggs, 1963). Reserve two to six ounces of arterial fluid for the injection superiorly into the right common carotid artery in order to more thoroughly preserve the right side of the head and face.

If an autopsy has been performed, the embalmer should use a six-point injection as with an adult, using the same dilution and arterial injection procedure outlined above.

Once the arterial injection is completed, be sure to ligate all vessels. If the abdomen is not distended when the

embalming is begun, it will probably become so during the arterial injection. This is an excellent indication that the arterial fluid has reached the abdominal viscera. Distention should be relieved immediately upon completion of the arterial injection and the cavities should be thoroughly aspirated. The aspiration should be followed by the injection of eight ounces of concentrated cavity fluid. All incisions and the trocar hole should be sealed and sutured closed.

#### References

Spriggs, A. O. (1963). The art and science of embalming.  
Chapter XIX.



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INFANT EMBALMING TECHNIQUESPART 9

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Angiocath/Syringe

Very successful results in preservation, skin texture, skin coloration, positioning, and general overall appearance can be obtained by utilizing an "angiocath" and a hypodermic syringe for arterial injection (Doty, 1981).

Angiocaths are used for intravenous feeding in hospitals where small vessels are needed for injection of fluids and medications into the body. An angiocath is a small diameter, flexible plastic catheter fitted with a hypodermic needle which fits inside. A sixteen gauge, three and one-quarter inch hypodermic needle is recommended (Doty, 1981).

After the general pre-embalming procedures have been performed, remove all autopsy sutures (if applicable) and examine the condition of the internal cavities. The embalmer is looking for any abnormalities that may hinder the embalming process. Clean and ligate all vessels that are going to be utilized. Be sure to use a seven cord braided ligature to ligate the vessels, since this type of ligature will not cut or damage the vessels. Lubricate the extremities with a liquid soap and gently massage them following the course of the vessels. This is to force out

any blood clots in the vascular system that may cause problems with distribution and drainage. Arterial injection should start with the legs, then the arms, and finally the head. This order should be followed because it mimics the body's collateral circulation. The ligated artery is raised and the angiocath is inserted into the vessel. The hypodermic needle is removed from the angiocath and the angiocath becomes "self-sealing". The vessel wall tightly compresses around the angiocath, thus ligating the angiocath is not necessary. This compression eliminates leakage during the arterial injection and allows the vessel to close once the angiocath is removed.

Since there is a high moisture content in the infant which minimizes dehydration, a stronger arterial solution strength can be used (Sawyer, 1982). A 50cc syringe is filled with the arterial fluid solution, it is then connected to the angiocath, and then the fluid is manually injected into the artery. The use of the syringe allows the embalmer to determine if there might be intravascular resistance present simply by the amount of pressure necessary to depress the plunger of the syringe. The syringe should be filled ten to fifteen times to completely saturate the tissue of a normal weight infant (Doty, 1981).

Carefully watch for distribution and tissue saturation in the infant's body. Normal drainage points are utilized

for venous return and the use of drainage forceps or a drain tube is not necessary. Gently massage the hands, fingers, arms, legs, and feet during the arterial injection process. When arterially injecting the head, use the same procedures as used in an adult.

After arterial injection is completed, remove the angiocath and ligate all vessels. Hypodermic treatment of the walls of the cavities may be necessary if the arterial fluid solution did not reach them by collateral circulation. Aspirate or sponge out the thoracic and abdominal cavities, then dust all surfaces liberally with a preservative drying powder (Sawyer, 1982). The viscera should be treated with an autopsy chemical or cavity fluid and returned back to the thoracic and/or abdominal cavities. The ribs and sternum should be coated with a penetrating preservative gel chemical.

Once this is completed, fill all other cavity spaces with brown nonabsorbent cotton. Cover the cotton with a plastic sheet to prevent the cotton from getting entangled in the thoracic and/or abdominal sutures.

Now the calvarium, which is in three pieces can be treated. The floor of the cranial vault and the scalp should be thoroughly cauterized and coated with a preservative drying embalming powder (Sawyer, 1982). Fill the cranial vault with brown nonabsorbent cotton, return the three

calvarium pieces to their normal positions, and apply a flexible sealer over the cracks to hold them in position. This is done to conceal the ridges of the calvarium once the scalp is returned to its normal position. The scalp is finally returned to its normal position and the incision is sutured by the use of either a baseball suture or intradermal suture.

#### References

- Doty, K. B. (1981, June). "A new approach to infant embalming." Champion Expanding Encyclopedia of Mortuary Practice, 518, p. 2092.
- Sawyer, D. W. (1982, February). "Infant embalming." Dodge Seminar, Sarasota, Florida.

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INFANT EMBALMING TECHNIQUESPART 10

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Conclusion

One of the most important factors in the care of the infant case is the manner in which the infant is positioned for the viewing by the significant others.

A little bed, crib, or bassinet should be used in place of a casket until shortly before the time of the funeral service, or even until after the funeral service has been completed. The infant's body should be placed in an attitude of natural sleep, as with one hand beneath the head and a favorite toy held in the other hand. This creates a more natural and comforting picture than the stiff conventional positioning so frequently used with adults.

As it was stated in the introductory quotation in Article #1, the mother and father may need to hold the infant for a few moments to say I love you and good-bye. This expression of love and acceptance of their loss can be greatly helpful to the parents in working out their grief. Embalmers should keep this in mind when they are making funeral arrangements with parents or significant others who have just suffered the death of an infant.

A properly embalmed infant and an ethically conducted funeral service will definitely create the feeling in the community, especially to the parents and the significant others that the funeral home and its staff are reliable and sincere in its claim of service.

In conclusion, this series of articles have shown how the embalmer can be a care-giving individual. By the use of these infant embalming techniques, these technical aspects can allow grieving parents and significant others to fulfill their psychological and social needs. Embalming of the infant has earned the gratitude of the bereaved families and this is particularly true in cases where the infant survived but a few days, as it made it possible once the mother was discharged from the hospital to place her baby's dead body in her arms.

All that can be said now is that the embalmer is in control and your actions do indeed control the destiny of those individuals who are looking for help in their time of need, no matter how small they happen to be.