Australian Government

Assessment Requirements for SHBBSSC004 Identify the function and structure of skin and hair for cosmetic tattooing

Release: 1

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Modification History

No equivalent unit.

Performance Evidence

Evidence of the ability to complete tasks outlined in elements and performance criteria of this unit in the context of the job role, and:

- source and interpret information on skin anatomy and physiology outlined in the Knowledge Evidence using at least three credible sources
- using the above information correctly identify and explain skin anatomy and physiology specified in the Knowledge Evidence on at least three different client servicing occasions.

Knowledge Evidence

Demonstrated knowledge required to complete the tasks outlined in elements and performance criteria of this unit:

- types of credible sources of information on skin anatomy
- skin and skin structure:
  - gross and microscopic
  - epidermis, dermis and subcutaneous
  - differences depending on location
- function and role of skin:
  - skin as the integumentary system
  - function as barrier
  - epidermal cells
  - epidermal appendages and dermal structures
  - homeostasis
  - protection
  - role in skin of tissues:
    - connective
    - nervous
    - vascular
    - sensation
    - thermoregulation
    - vitamin D production
- layers of the epidermis and function of each layer:
  - keratin filaments and desmosomes

  - the structure of the dermis and its appendages
  - target for pigment placement
  - components of the dermis and each component's function
  - blood vessels of the skin and describe their function
  - the role of cutaneous nerves
  - sensors – free nerve terminals
  - dermatomes of the body
- hair physiology:
  - the hair follicle
  - hair structure
  - hair growth cycle
  - types of hair
- skin physiology:
  - keratin structure
  - how keratinocytes are joined together
  - barrier functions
  - the lamellar bodies
  - epidermal kinetics–how skin maintains itself
  - the melanocyte
  - melanin chemistry
  - melanin physiology
  - melanogenesis
  - langerhans cells
  - how langerhans cells work in the skin
  - the fibroblast and its role, collagen and synthesis, collagen types
  - elastin production and role in the skin glycosaminoglycans
  - hyaluronic acid
- anatomy and physiology of the skin and skin structures as related to cosmetic tattooing treatments:
  - normal process of skin ageing and structural change
  - normal skin response to irritation and trauma
  - scars, including hypertrophic and keloid, their origin and evolution, and abnormal scar tissue
  - causes of skin damage
  - effects of implanted tattoo pigment on physical structure of the skin
  - wound healing in different skin types and locations
  - tissue interaction with cosmetic tattooing pigments
- innate immunity:
  - white blood cells interaction with cosmetic tattooing pigments in the skin
- structure and distribution of skin glands:

    - production, composition, functions and control of skin gland secretions:
        - sebum
        - eccrine and apocrine sweat fluids
- appearance and characteristics of skin types:
    - dry, alipid and lipid dry
    - oily and lipid
    - diffused red
- normal body flora
- electromagnetic spectrum and effect of light on skin
- physiological basis of skin colour:
    - factors that contribute to skin colour
    - structure and location of melanocytes and keratinocytes and responses to ultraviolet radiation
- relationship between skin type, minimal erythemal dose, skin protection factor and sunscreen use
- Fitzpatrick skin types
- skin as a sense organ:
    - process of nerve conduction
    - stimuli and skin receptors
    - systems and pathways of sensory and motor neuronal conduction
    - types of receptors
    - variations in sensory perception and their significance to cosmetic tattooing
- function, formation and behaviour of major skin chemicals:
    - complex fatty acids
    - complex lipids:
        - phospholipids
        - sphingolipids
    - glycosaminoglycans
    - lipids:
        - saponifiable
        - non-saponifiable
    - proteins:
        - soluble
        - insoluble
        - collagen
        - elastin
        - keratin
- growth, development, ageing and healing of human skin:
    - cell division and differentiation
    - growth of epidermis

- normal ageing and photo-ageing
- stages in wound healing
- theories about ageing
- wound healing:
  - hypertrophic
  - keloid
  - origin and evolution of scars
  - normal skin responses to irritation and trauma
  - innate immunity and the interaction with cosmetic tattooing pigment
- skin and hair conditions:
  - acne
  - eczema and atopic dermatitis
  - hair disorders
  - pigmentation disorders
  - vascular disorders
  - seborrheic dermatitis
  - transepidermal water loss
  - inflammatory skin disorders
  - bacterial infections
  - common bacteria on the skin
  - pathogenicity of bacteria
  - cocci, staphylococcus aureus
  - viral infections
  - common viral diseases of the skin
  - mechanisms of viral infections of the skin
  - herpes virus
  - fungal infections
  - fungal diseases of the skin
  - gram negative infections
  - how infections are transmitted
  - impetigo
  - folliculitis
  - furuncles
  - carbuncles
  - cellulitis
  - cancers of the skin
  - disorders of the sebaceous glands
  - hyperproliferative disorders
  - disorders of pigmentation, common lesions of the skin
  - lithification

- telangiectasia
- macule
- petechiae
- erosion
- ulcer, fissures
- depression scar (striae)
- elevated lesions
- plaque
- pustule
- scale
- wheal
- burn scar
- nodule
- papule
- cyst
- vesicle
- crust and mole
- papovavirus

- skin ageing
- concepts of cosmetic chemistry:
  - formulation, function and action of cosmetic emulsions and ingredients:
    - anti-oxidants
    - emollients
    - humectants
    - moisturisers
    - occludents
  - differences between therapeutic, cosmetic and cosmeceutical products
  - contraindications to specific cosmetic formulations and ingredients identified in product information
- contraindications and precautions which may restrict treatment, or require referral to a medical practitioner for clearance:
  - bacterial, fungal, parasitic and viral infections
  - cancer
  - clients with symptoms of infectious disease
  - pigmented lesions
  - recent cosmetic treatments:
    - injectables
    - intense pulsed light
    - laser
    - dermabrasion

- undiagnosed lumps
- allergies
- areas exhibiting loss of tactile sensation
- dysfunction of the nervous system
- inflammations and swellings
- trichotillomania
- alopecia
- auto immunity
- vitiligo
- body dysmorphia
- herpes simplex
- skin trauma
- recent scar tissue
- medications and their relationship to the provision of cosmetic tattooing treatment

- medical treatments, drugs and side effects relevant to cosmetic tattooing:
  - vasodilating medications
  - herbal supplements or remedies
  - prescription medications
- scope of practice and when to refer to medical professionals
- appearance, possible medical treatments and limitations of facial treatments on skin conditions, diseases and disorders:
  - acne
  - closed comedones and milia
  - couperose
  - dehydration and transepidermal water loss
  - dermatitis and eczema
  - erythema
  - ichthyosis
  - lupus erythematosus
  - mature
  - photoaged
  - pigmentation disorders
  - dynamic lines
  - scleroderma
  - seborrhoea
  - sensitive and diffused red skin
  - skin tumours
  - urticaria
- physiology of adverse reactions to cosmetic tattoo treatments and products, and appropriate remedial action:

- allergic reactions
- erythema and skin inflammation
- normal skin responses to irritation and trauma
- skin blemishes
- skin inflammation
- alcohol consumption
- climate
- exercise routine
- hobbies
- nutrition
- sleeping patterns
- tobacco consumption
- type of employment

- aftercare advice, products and future treatments to maintain client treatment objectives
- use and functions of anaesthetics:
  - classifications and mechanisms of topical anaesthetics
  - application and clinical use
  - types
  - ingredients
  - scope according to state and territory legislation:
    - schedule
    - Therapeutics Goods Administration (TGA)
  - adverse effects
  - safety
  - effect on pain receptors
  - management of toxicity
  - physical reactions
- tattoo removal:
  - how saline tattoo removal works
  - osmosis and tonicity of a cell as it relates to saline tattoo removal
  - carcinogens in tattoo pigment
  - laser cleavage of tattoo pigment
  - how laser works in tattoo removal (chromophores)
  - advantages and disadvantages of different tattoo removal methods.
- cell membrane:
  - osmosis and osmotic pressure
  - contrast osmolarity and tonicity
  - difference between the terms isotonic, hypotonic and hypertonic
  - solutions in terms of comparative osmolarities (iso-, hypo- and hyper-)
  - difference between osmolarity and tonicity, and the tonicity (iso-, hypo- and hyper-)

- contrast penetrating solutes and nonpenetrating solutes
- osmotic water movement across a cell membrane in the presence of nonpenetrating and penetrating solutes

- overview of:
  - endocrine system
  - nervous system:
    - central nervous system
    - anatomy of the CNS
    - brain
    - brain function
- general properties of the sensory system:
  - somatic senses
- neurons:
  - organisation of the nervous system
  - cells of the nervous system
  - electrical signals in neurons
  - cell-to-cell communication in the nervous system
  - integration of neural information transfer division:
    - autonomic and somatic motor control
    - organisation of the sympathetic and parasympathetic branches and anatomical and functional differences between them
    - differences between the somatic motor division and the autonomic division
- muscles:
  - the skeletal muscle
  - fibre anatomy
  - the mechanics of body movement when applied to muscle physiology
  - major groups of smooth muscle
- control of body movement
- cardiovascular physiology:
  - basic structure of the CV system
  - the key functions of the CV system
  - how arteries differ from veins and what ensures one-way flow of blood through the system
  - diagram the structure of the heart
- blood flow and blood pressure:
  - the anatomy and roles of arteries, arterioles, capillaries, venules and veins
  - layered composition of the blood vessel walls
  - why blood pressure decreases as blood flows through the circulatory system
  - determinates of capillary density in a tissue and tissues with highest capillary density

    - types of exchange between the plasma and interstitial fluid can take place at the capillary.
- the lymphatic system:
    - the three systems in which the lymphatics interact and the role of the lymphatics in each
    - what is lymph and what are lymph nodes
    - the lymphatic system and the circulatory system
    - where lymph re-joins the blood
- blood:
    - the composition of plasma and where most plasma proteins are made
    - main groups of plasma proteins and their function
    - main cellular elements of blood and their primary function(s)
    - other names for red blood cells and white blood cells
    - parent sells of platelets
    - five mature white blood cells found in blood and the function of each type.
    - where red blood cells are produced
    - the life span of red blood cells and white blood cells cytokines and their roles
    - main causes of anaemia
- platelets and coagulation:
    - challenges our bodies must overcome when repairing a damaged blood vessel
    - how platelets are formed, their intracellular components and life span
    - haemostasis and the three major steps in this process
    - how platelets are activated and the chemical released as they begin adhering to collagen fibres
    - vasoconstrictive chemicals and the process of coagulation
    - haemophilia
- breathing:
    - gas exchange and transport
    - gas transport in blood
- kidneys:
    - filtration
    - reabsorption
    - secretion
    - excretion
- digestive: Type 1 diabetes
- endocrine – cortisol- thyroid hormones
- the immune system:
    - immunity and the immune response
    - basic steps of the internal immune response
    - ways that leukocytes (white blood cells) differ from red blood cells

- the classification system for immune cells
- basophils, neutrophils, eosinophils, monocytes and macrophages and role(s) in the immune system
- lymphocytes in terms of numbers, percentage in circulation and role(s) in the immune system and major subtypes of lymphocytes
- PAMP's and PRR's and their roles in the innate immune response
- chemotaxis and examples
- process of phagocytosis
- roles inflammation has in fighting infection
- cells which create the inflammatory response
- the role cytokines play in the inflammatory response
- acute phase proteins role in the inflammatory response and their origin
- histamine and the purpose in the immune response
- response created by histamine action
- interleukins and the ways they modulate the immune response
- how acquired immunity differs from innate immunity
- the role of T-lymphocytes
- immune response pathways

- biochemistry:
  - electrons, neutrons and protons
  - molecules and chemical compounds
  - how chemicals bond
  - covalent and ionic bond
  - polarity and solubility
  - acids and bases
  - basics of organic chemistry
  - benzene, ketones
  - aldehydes and carboxylic acids
  - carboxyl groups, amines
  - proteins
  - amino acids
  - peptide bond and protein structure
  - making of cellular protein
  - secondary structure:
    - alpha helix
    - beta pleat
    - tertiary structures
    - quaternary structures
  - structural protein keratin
  - carbohydrate chemistry

- simple carbohydrates
- disaccharides
- complex carbohydrate molecule
- lipid chemistry
- structure of lipids
- fatty acids
- triglycerides
- complex lipids made from triglycerides
- steroids
- steroid hormones
- formation of steroid hormones
- introduction to endocrinology

- biology of the cell:
  - overview of the cell
  - the eukaryotes
  - membrane structure and function
  - the fluid mosaic model
  - cell membrane components, the concept of domains
  - glycoproteins
  - cell communication
  - cell surface receptors
  - growth factor receptors
  - signal transduction via G proteins
  - cytoplasmic signal transduction
  - the signalling cascades
  - the ion channel receptor
  - the cytoplasm
  - glycolysis
  - the anerobic metabolism of sugar
  - constituents of the cytoplasm
  - the cytoskeleton
  - centrosome
  - centrioles
  - organelles
  - lysosomes
  - peroxisomes
  - mitochondria
  - production of energy by the mitochondria
  - the citric acid cycle
  - the respiratory chain

- where sources of credible information on anatomy and physiology of the skin and skin structures as related to cosmetic tattooing treatment.

Assessment Conditions

Skills must be demonstrated in a beauty treatments area; that can be:

- an industry workplace
- a simulated industry environment.

Assessment must ensure use of:

- anatomical models, charts or diagrams
- colour photographs of aged and acne skin conditions
- dermal science texts, websites and journals
- industry journals
- relevant documentation including:
  - manufacturer equipment instructions
  - product instructions
  - manufacturer and product safety data sheets.

Assessors must satisfy the Standards for Registered Training Organisations' requirements for assessors and:

- have worked for at least three years where they have applied the skills and knowledge of this unit of competency.

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=255d312b-db07-48f2-b6d6-1b0b06c42898