MEDICAL TEXTILES FOR HEALTH & HYGIENE

STANDARDS

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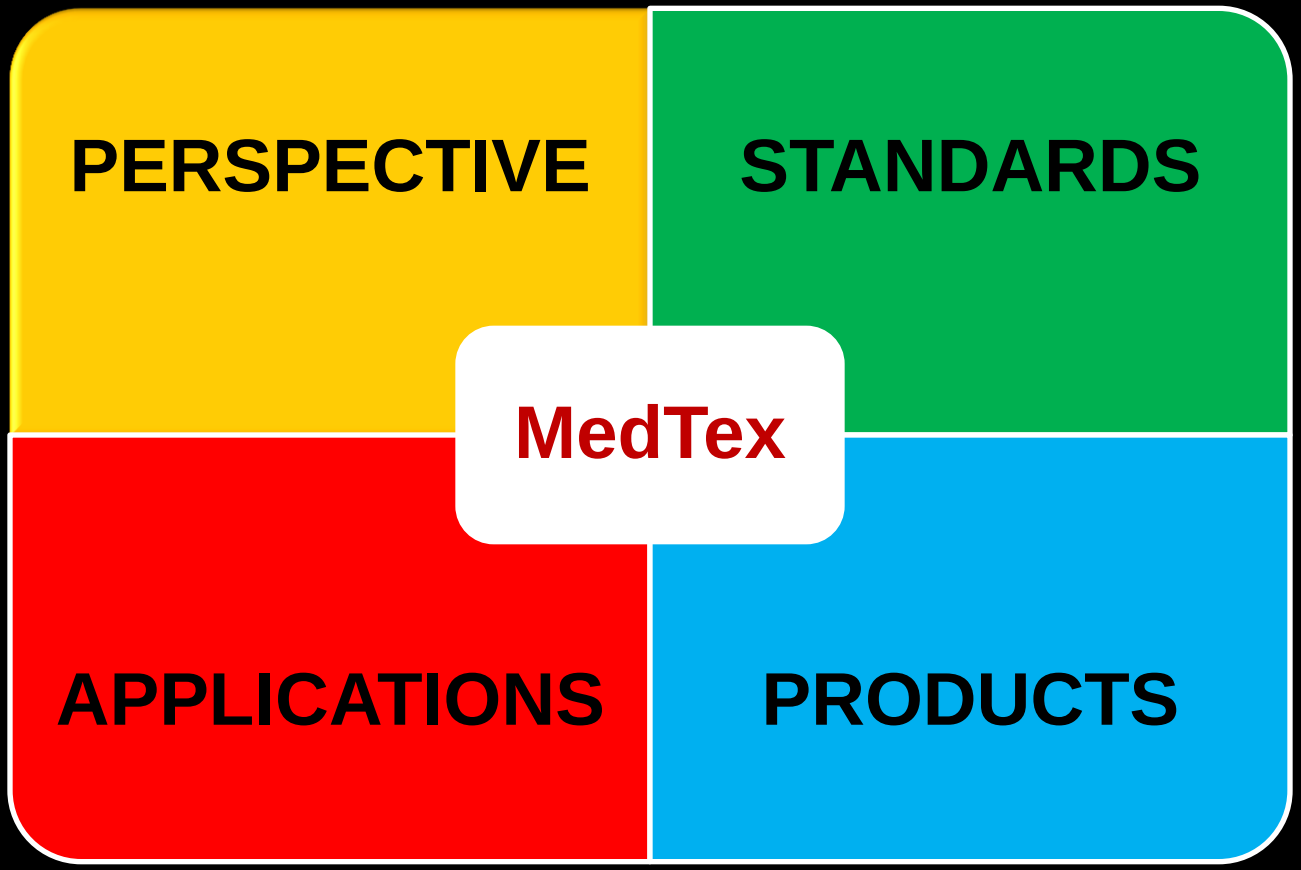
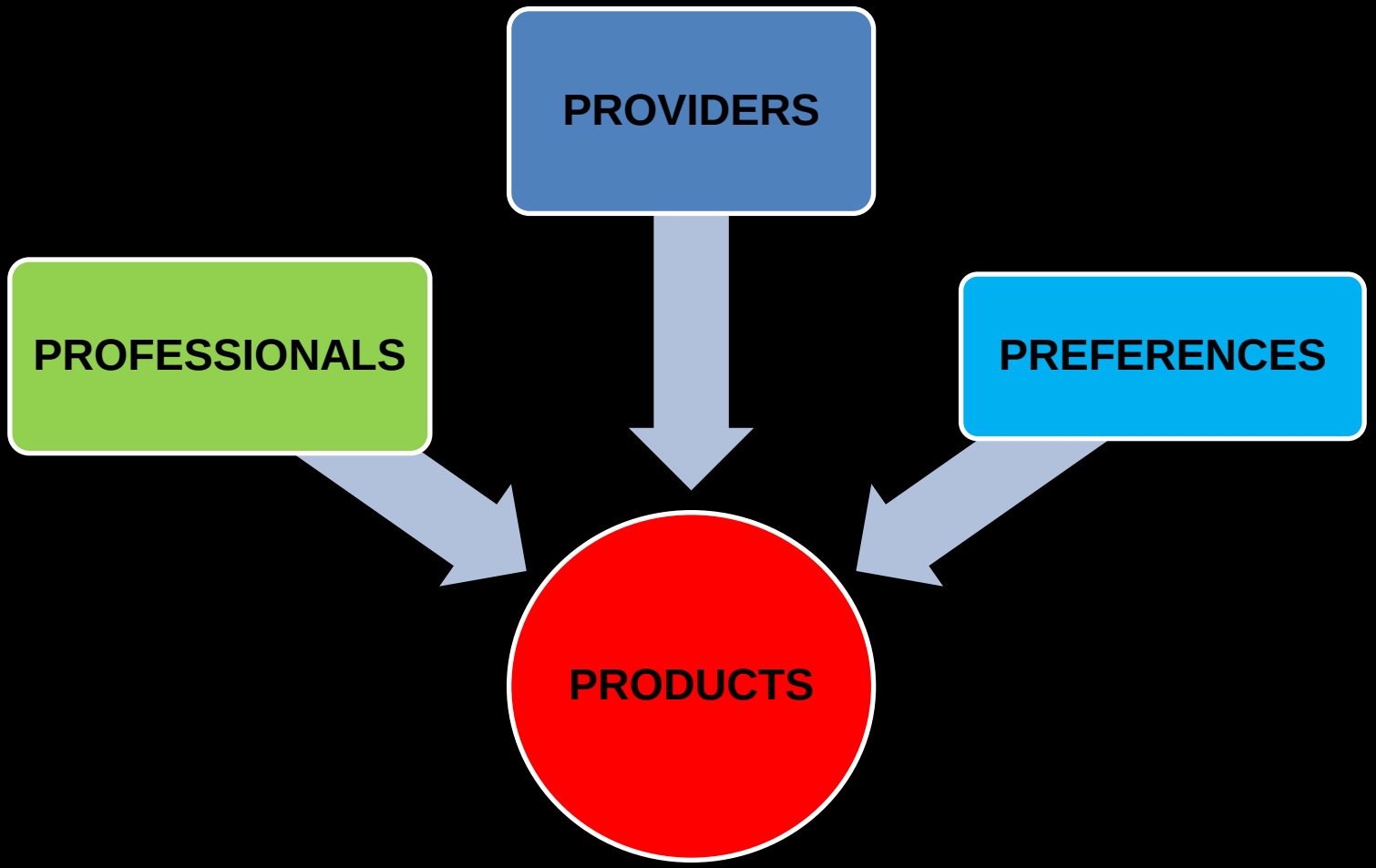

PERSPECTIVE
STANDARDS
MedTex
APPLICATIONS
PRODUCTS


PROVIDERS
PROFESSIONALS
PREFERENCES
PRODUCTS

Uses of Medical Textiles

- Identity
- Professionalism
- Sterile field
- Barrier Protection

Uses of Medical Textiles

- **Barrier Protection**
  - decrease bio-burden
  - decrease microbe sustainability

PERSPECTIVE

Segregation

- UNIVERSAL PRECAUTIONS
- STANDARD PRECAUTIONS

We are using more

- Population – More People
- Demography – More People who need
- Income – More People who can afford
- Travel -Awareness
- Awareness – Increased use of hygiene products
- Medical tourism – Attitudes
- Growth of healthcare industry – demand
- Products – Increasing Range of products

SCENARIO

- **Hygiene and medical textiles ~ 12% of the global TechTex market**
- Applications - going beyond the usual wound care, incontinence pads, plasters etc

CATEGORIES OF MEDICAL TEXTILES

NON-IMPLANTABLE

IMPLANTABLE

HEALTHCARE &HYGIENE PRODUCTS

Requirements

- In the Patient – Biocompatible, Non toxic, Non Allergenic, *Sterility Standards of Highest Level*
- On the Patient – Non toxic, Non Allergenic, *Sterile, Biocompatibility ?!!*
- Near the Patient – Sterile, Lint free
- For the Patient – Clean
- General Properties – Strength, Elasticity, Durability, Fire Resistance, Antistatic, Biodegradability

HEALTHCARE AND HYGIENE PRODUCTS

The healthcare and hygiene products are not directly used in medical treatment but are used for healthcare and good hygiene applications :

- Surgical clothing – gowns, caps, masks, gloves, aprons
- Surgical covers – drapes, clothes

HEALTHCARE AND HYGIENE PRODUCTS

- Beddings – blankets, sheets, bed mattress, pillow
- Clothing garments/uniforms
- Incontinence diapers
- Sanitary napkins
- Clothes/wipes

HEALTHCARE AND HYGIENE PRODUCTS

- High anti-bacterial anti-viral resistance
- Aesthetic colours
- Comfort - breathability
- Soft , light-weight
- Hygienic
- Abrasion resistance
- Tear strength
- Tropicalization

Why we need them

STANDARDS

Standards

- ‘*A set of rules for ensuring quality*‘
- 'A *technical specification approved by a recognized standardization body for repeated or continuous application, with which compliance is compulsory , aimed at the achievement of the optimum degree of order in a given context*‘

Why Standards?

MedTex products have **crucial life-saving** applications

Standards

- Confidence - positive impact on consumption
- Internationally competitive
- Decrease dependence on imports
- Regulation of use

BIOLOGICAL PROTECTIVE GARMENTS : BASIC REQUIREMENTS

BIOLOGICAL PROTECTIVE GARMENTS

- It should prevent infectious materials from passing through the skin and it should last long enough*
    - Affordable
    - Breathable
    - Comfortable
    - Dependable
    - Effective

- *OSHA

BIOLOGICAL PROTECTIVE GARMENTS (OSHA)

DEFINITION : Personal protective clothing will be considered appropriate only if it does not permit blood and other infectious materials to pass through to reach an employees' work clothes, street clothes, undergarment, skin, eyes, mouth or other mucous membranes under the normal conditions of use and for the duration of time the protective equipment will be used.

Barrier Requirements

- Rapid increase in blood borne dis- HBV, HCV, HIV.
- Coating and Laminating technologies - lighter, comfortable, more protective clothing for superior protection of operating room staff and patients.
- Products that consistently pass the viral barrier test are fabrics reinforced with impervious film

Various types of textiles in medical care

I. Natural	Man Made
II. Woven	Non-Woven
III. Sterile	Unsterile
IV. Disposable	Re-useable
V. Patient	Non-Patient
VI. Implantable	Non-implantable

Non Woven Fabrics

- Advantage
- manufactured directly from fibres - lower cost
  - Suitable for disposable products
- Special breathable films are added to fibres and fabrics
- Adhesive bonded non woven fabrics are used for hospital and sanitary applications, including nappy liners and complete throwaway items.

Non Woven Fabrics

- Cloth-like characteristics - softness, opacity, substance, absorbency, low static, comfort, acoustic deadness, porosity and improved liquid holding capacity, and fast drainage

Antimicrobial Fibers

- Combination of antimicrobial compounds, based on metallic salts.
- Prevent hazardous bacteria from build up
- Applications in the fields of personal hygiene
- Compounds are embedded in the matrix of fibres which renders it impervious to washing and wear.

Sterilization Stability

- Methods
  - Steam
  - Dry Heat
  - Ethylene oxide
  - Irradiation process
  - Peroxide Plasma

121 – 138 C

Sterilization brings changes in properties

Strength

Absorbency

Appearance

Testing of healthcare garments

- Methods – Repellency
  - Launderability (recyclable)
  - Burst strength
  - Tear strength
- These methods assist in characterisation whether product is
  - Blood resistant
  - Blood proof
  - Viral proof

Reusable Vs Disposable

- Functional Requirements
  - Cost
  - Protection
  - Comfort
- Environmental Impact
- Economics
- No clear superiority of either
- Need Life Cycle studies

Gowns, Drapes & Caps

- Various designs – Unreinforced
  - Reinforced
- Performance features
  - Tear resistance
  - Fluid barrier
  - Abrasion resistance
  - Breath-ability

Barrier Requirements: Drapes

- Barrier to moisture and bacteria
- Able to withstand prolonged handling & lengthy procedures.
- Non-slip surface
- Flammability compliance
- Tough & waterproof – even when **wet**.
- Flexible - readily conforming to the patient's shape
- Dyes used must be fast and non-irritant
- No glare

Barrier Requirements: Drapes

- Able to hold towel clips without tearing.
- Should not give rise to wetness or sweat from the patient's skin.
- Anti - static compliance.
- Burnable for disposal
- Lint-free
- **Economical**

Flexibility, Sterility, Tensile Strength, Non-fraying, Knotting Security, Bio-compatible, Durability, Stability, Sterilizability, Stiffness, Ease Of Handling, Low Adherence, No Loose Fibers, Absorbent, Adsorbent, Form-fitting, Causing no mechanical injury, Light - weight,Firmness, Bio-degradable, Durable, Non-toxic, Absorbable, Comfortable, Ease of maintenance, Hydrophobic, Breathability, Hydrophilic, Environment-friendly, Disposable, Economy, Bio-compatible, Comfortable, Safe, Smart....

Incontinence care products

- Soft polyesters – absorb all moisture
- Vinyl centre – prevents passage of fluids
- Dignity Pants – for secure leak proof and bowel protection.
- Light incontinence - use of short fibre, air laid cellulose and super absorbent cores used in products

Medical face Masks

- US market – 6% of yardage consumption ($60 ml)

- Material – Inner and outer lining
  - Filtration media
  - Ties

Clothes and Wipes

Made from non woven bonded fabrics which may be soaked with an antiseptic finish. The cloth or wipe may be used to clean the wounds or the skin prior to wound dressing application, or to treat rashes or burns.

Sutures & Ligatures

- Easy to handle
- Good knot security
- Minimal tissue reaction
- Unfriendly to bacteria
- Strong yet small
- Won't tear through tissues
- Affordable

- Absorbable / Non-abs
- Natural / Synthetic
- Mono / Multi-filament

- Double – barbs
- Anti-bacterials
- Staplers
- Glue

Surgical Hoisery

- Purposes – Light support to a limb
  - Treatment of venous disorders

- Knee and elbow caps – Support and compression

Dressings

- Cover
- Stop bleeding
- Aid healing
- Prevent infection
- Non-linting
- Soft on granulation tissue
- Drug delivery
- Easy to remove
- Affordable

Vascular Grafts, Mesh, Soft tissue implants

- Bio-compatibility
- Anti-coagulant
- Flexibility, resilience
- Porosity
- Texture
- Mech strength

INNOVATIONS

Innovations

- Metallized textiles
- Nanotechnology
- Anti-microbial fabrics
- Fire retardant fabrics
- Bones -Textiles are replacing metal implants
- Nerve guidance channels
- Smart / intelligent
  - Switches, Sensors, Secretions
- Tissue Engineering
  - Scaffolds
  - Embroidery technology

- Spray on Surgical Drapes
- Nano-silver treated hospital linen for burn patients
- Controlled drug release

ISSUES

Quality Standards

D&CA – schedule F2: Cotton, Bandages & Gauze

- Nonwovens
- Fibre, yarn, fabrics, final product
- Raw material suppliers
- Innovation

MILITARY OPERATIONS

"To die for your country"

MILITARY OPERATIONS

"The object of war is not to die for your country but to make the other b*****d die for his".

George Patton

Tourniquet

Conclusion

- Textile-based materials for medical use are helping to improve people's lives—and in some cases transform them.
- We have to leverage innovations in this field to improve health care delivery and make it affordable & safe.
- Standards are essential

THANK YOU

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