How To Make A Decent Disease Card!

EXAMPLE:

Scalded Skin Syndrome
What Categories Do You Need To Consider?

• Disease Name & Causal Agent Name, Pathogen type & description
• Main Body System/Tissues affected
• Disease Signs & Symptoms
• Unique Virulence Factors - toxins, enzymes & structures, latency
• Reservoirs & Disease Transmission, Portals of Entry & Exit
• Diagnosis
  - Clinical presentation (see S & S), x-rays etc
  - Microscopic appearance & shape of etiological agent
  - Staining, Isolation media, Biochemical tests
  - DNA tests, Serological tests
• Prevention & Treatment
• Complications, Sequelae, Chronic, Latency
• Anything else (helpful for I.D.) e.g. age group, lifestyle, diet, employment, predisposed individuals, unique geographical location, unusual microbial characteristics, Drug Resistance (MDR) etc
Where Do I get the Info?

1. **Index** (Get page nos & chap no.)
2. Read the **chapter** & general information about the disease & the causal agent.
3. Look at all the **pictures & tables** - the text is useful too.
4. **Chapter ‘Checkpoints’ & Disease Cards.**
5. **Chapter Summary.**
6. **Appendix D** Disease tables by System.
Disease Card Categories?

- Disease name, Causal Agent - Main Characteristics
- System/Tissues affected
- Signs & Symptoms
- Unique Virulence Factors
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications, Sequelae, Chronic, Latency
- Anything else
Names: Disease & Etiological Agent

Disease Name

• #1. Scalded Skin Syndrome or Staphylococcal Scalded Skin Syndrome (SSSS)

Scientific Name? Genus species (strain/variant)

• *Italicize* the *Genus* (upper case 1st letter) and *species* (lower case)
• *Staphylococcus aureus*

**Warning! Endings are easily confused!**
*Staphylococcal* is the common name while *Staphylococcus* is the scientific name of the pathogen.
Type of Etiological Agent

**Type?** Bacterium, Fungus, Protozoan, Helminth, Virus, Prion

**Infection [most] or Intoxication?**

Shape/Main Characteristics?

(Cocci/Rods/Vibrios/Spiro/Molds/Yeasts/DNA or RNA Virus-Enveloped? Gram/Acid-Fast/Capsule/Endospore/O₂/O₂₂ requirements/Motility)

**BACTERIAL INFECTION, Gram +ve Cocci, clusters**

Facultative Anaerobe

*Warning! The terms Intoxication vs Infection are easily confused!*

**Intoxication** immediately poisons the host (mins/hrs). The chemical **toxin** is ingested/injected/absorbed directly into the body -> host cell targets.

**Infection (Toxigenic)** occurs much more slowly (days/wks) as toxins will only be produced & released *after* the process of pathogen infection, multiplication, spread & toxin synthesis poisoning -> host cell targets.
Disease Card Categories?

- Disease name, Causal Agent & Main Characteristics
- **System/Tissues affected**
- Signs & Symptoms
- Unique Virulence Factors
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications, Sequelae, Chronic, Latency
- Anything else
Systems/Tissues Affected?

Skin & Wound, Nervous System & Eye, Circulatory & Lymphatic, Respiratory Tract & Ear, Digestive System (GI), Urinary & Reproductive Tract (GU), (* = more than one system may be infected)

- *SKIN & Wounds
- Toxigenic (toxins are generated during infection process)
- Toxemia (toxins in blood) spread to Epidermal/skin cells
Disease Card Categories?

- Disease name, Causal Agent & Main Characteristics
- System/Tissues affected
- **Signs & Symptoms**
- Unique Virulence Factors
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications, Sequelae, Chronic, Latency
- Anything else
Signs & Symptoms

• **Rash & Blisters** = painful, bright red flush over entire body
• **Pyogenic** (generates **Pus**)
• **Peeling** - desquamation of the epidermis
  • Exfoliative toxins
Disease Card Categories?

- Disease name, Causal Agent & Main Characteristics
- System/Tissues affected
- Signs & Symptoms
- **Unique Virulence Factors**
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications, Sequelae, Chronic, Latency
- Anything else
Function of Virulence Factors: pathogen attachment, cell entry/exit, destruction of host tissue, spread/invasion of bloodstream, evasion of phagocytosis & disablement/avoidance of host immune responses.

Types of VRs include:

- **Unique Pathogen Structures**: e.g. spikes, hooks, capsules, endospores, waxes, M protein, receptors.
- **Toxins** e.g. Hemolysins, Toxic Shock Syndrome toxins.
- **Enzymes of “mass” Destruction**: e.g. Coagulase, Hyaluronidase, Staphylokinase, Lipase.
- **Anti-Immune system chemicals**: e.g. Leukocidins,
- **Drug Resistance Enzymes**: e.g. Penicillinase
- **Latency**: e.g. Herpes Viruses
Virulence Factors

- **Exfoliative Toxins A & B** cause skin at the dermis to shed (desquamation) & peel.

- **Other Toxins**: Hemolysins, Leukocidins, Toxic Shock Syndrome toxins.

- **Destructive Enzymes**: Coagulase, Hyaluronidase, Staphylokinase, Lipase.

- **Drug Resistance**: Penicillinase
Disease Card Categories?

• Disease name, Causal Agent & Main Characteristics
• System/Tissues affected
• Signs & Symptoms
• Unique Virulence Factors
• Disease Reservoirs & Transmission, Portals of Entry & Exit
• Diagnosis
• Prevention & Treatment
• Complications, Sequelae, Chronic, Latency
• Anything else
Disease Reservoirs

- **Human mucous membranes**
- **Normal flora** (20 - 60% carriage rate)
  - skin
  - nostrils
  - nasopharynx
  - oral cavity
  - intestine

- **Environment** around humans,
  - very tough - survives drying, light, pH, temps well

(No animal hosts - not a zoonosis)
Disease Transmission

- **Nosocomial** - newborn nurseries
- Close contact/ poor hygiene
- Nasal and oral droplets
- **Fomites** - inanimate objects
- Tissue injury

(No animal vectors)
Portals

- Umbilical Stump
- Eyes
- Skin

Warning! Portal of Entrance may differ from Portal of Exit!
2nd Warning! Systems/Tissues affected may be nowhere near POE!
Disease Card Categories?

- Disease name, Causal Agent & Main Characteristics
- System/Tissues affected
- Signs & Symptoms
- Unique Virulence Factors
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications, Sequelae, Chronic, Latency
- Anything else
Diagnosis/Lab I.D.

- S&S + Isolation on Media (pus, blood)
  - Blood agar - hemolysis
  - Mannitol salt agar

- Gram+ve stain, irregular clusters

- Catalase test +ve (similar Streps are -ve)

- Coagulase test +ve (Other Staph spp are -ve)

- Rapid multitest system e.g. facultatively anaerobic & ferments e.g. mannitol

- Latex agglutination test Protein A
Disease Card Categories?

- Disease name, Causal Agent & Main Characteristics
- System/Tissues affected
- Signs & Symptoms
- Unique Virulence Factors
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications, Sequelae, Chronic, Latency
- Anything else
Prevention = Universal Precautions

- Hygiene & handwashing
- Cleansing of skin wounds
- Disposal - dressings & discharges
- Isolation - patients with open lesions
- Care with catheters & needles
- Ban nasal *Staph.* carriers - nurseries & delivery rooms
  - CAN NEVER BE ELIMINATED if humans are around!

Treatment

- **Toxemia treatment** = lengthy, intensive therapy
  (oral/ingested drugs)
- **Multidrug Resistance (MDR)**
- Perform lab. antibiotic tests
Disease Card Categories?

- Disease name, Causal Agent & Main Characteristics
- System/Tissues affected
- Signs & Symptoms
- Unique Virulence Factors
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications, Sequelae, Chronic, Latency
- Anything else
Complications

• Toxic Shock Syndrome (nausea, fever, vomiting, rash, organ damage & failure).
• Abscesses on major organs, joints.
• Meningitis.

Sequelae

• Heart abnormalities, valve destruction,
• Endocarditis.

Not chronic, no latency!
Disease Card Categories?

• The names of the disease
• Causal Agent Characteristics
• Systems/Organs/Tissues affected
• Disease Signs & Symptoms
• Unique Virulence Factors
• Disease Reservoirs & Transmission, Portals of Entry & Exit
• Diagnosis
• Prevention & Treatment
• Complications & Sequelae
• Anything else
Anything Else?

Predisposing conditions, agegroup, unique geographical location, special characteristics of pathogen, drug resistance, MDR/MRSA... etc

• Especially Neonates/Infants
• Kids under 4 years old

• Tough organism!
  • Resistant to drying, heat, harsh conditions (salt, pH, temp) & disinfectants.
  • Survives well outside host.

• Tough to treat! Multidrug resistance.
Worldwide Importance

• Ubiquitous
• Common wherever there are humans!
Disease Card Categories?

- The names of the disease
- *Causal Agent Characteristics*
- Systems/Organs/Tissues affected
- Disease Signs & Symptoms
- Unique Virulence Factors
- Disease Reservoirs & Transmission, Portals of Entry & Exit
- Diagnosis
- Prevention & Treatment
- Complications & Sequelae
- Anything else
What Diseases? See Disease List!

**Bacterial Diseases**

**COCCI of Medical Importance**

**Gram-Positive Staphylococcal Diseases:**
1. Scalded Skin Syndrome (SSS). *(Staph Sequelae: Toxic Shock Syndrome)*
2. Folliculitis, Boil (Furuncle), Carbuncle, Abscess, MRSA, VRSA, VRE.
3. Staphylococcal Osteomyelitis.

**Gram-Positive Streptococcal Diseases:**
4. Impetigo (Staph-bullous & Strep-pyoderma).
5. Pharyngitis/Scarlet Fever *(Strep Seq: Rheumatic Fever, AGN, Endocarditis)*
7. Pneumococcal Pneumonia.
8. Otitis Media.

**Gram-Negative Neisserial Diseases:**
10. Gonococcal Gonorrhea (GU), Ophthalmia Neonatorum
11. Meningococcal Meningitis *(Gram Negatives Sequelae: Toxic Shock Syndrome)*

**RODS of Medical Importance**

**Gram-Positive Endospore formers:**
14. Tetanus.
15. Clostridial Perfringens Gastroenteritis
17. Botulism.

**Gram-Positive Non-Endospore formers:**
18. Listeriosis.
19. Diphtheria.
20. Tuberculosis.

**Acid-Fast:**
21. Pseudomonad Infections *(P. aeruginosa)* *(Gram Negatives Sequelae: TSS)*
22. Whooping Cough.
23. Legionnaires Disease.

**Gram-Negatives:**
25. Shigellosis.

**CURVIFORM Rods/Vibrios**
27. Cholera. *(Gram Negatives Sequelae: TSS)*
28. Campylobacteriosis.

**SPIRALS of Medical Importance**

**Spiral/Unusual Spirochetes**
30. Leptospirosis.
31. Lyme Disease.
What Diseases? See Disease List!

OBLIGATE PARASITIC BACTERIA of Medical Importance
32. Chlamydial infections: NGU, Conjunctivitis

FUNGI of Medical Importance
33. Tinea Barbae/Tinea Capitis/Tinea Corporis/Tinea Cruris/Tinea Pedis/Tinea Manuum/Tinea Unguium (Ringworms).
34. Histoplasmosis.
35. Coccidioidomycosis.
36. Candidiasis
37. Pneumocystis Pneumonia (PCP)

PROTISTANS of Medical Importance
Dinoflagellate (Marine Photosynthetic Algae) Intoxications: "Red Tide"
Protozoans:
38. Amoebiasis (Amebic Dysentery).
39. Giardiasis (Beaver Fever).
40. Trichomoniasis
41. African Sleeping Sickness
42. Chagas Disease.

HELMINTHS of Medical Importance
Platyhelminthes: Trematoda: 45. Schistosomiasis

VIRUSES of Medical Importance DNA Viruses
49. HSV-1: Cold Sores & HSV-2: Genital Herpes
50. HSV-3: Chicken pox - Varicella (Shingles = reactivated latent Herpes Zoster).
51. HSV-4: Infectious Mononucleosis (Epstein-Barr Virus).
52. Hepatitis B.
53. Genital Warts.

RNA Viruses
54. Influenza.
55. Respiratory Syncytial Virus (RSV).
56. Mumps.
57. Red Measles (Rubeola)
58. German Measles (Rubella).
59. HIV and AIDS
60. Polio.
61. Hepatitis A (Infectious hepatitis).
62. Hepatitis C.
63. West Nile Virus.
64. Norovirus

PRIONS of Medical Importance
No Genus or species!! (Prions = altered host PrP proteins)
65. TSEs: CJD (Creutzfeldt-Jakob disease), vCJD & Mad Cow Disease - BSE (Bovine Spongiform Encephaly).
How Should I Organize My Card/Chart?

- 2 main options!
- Use cards or charts!
- Be concise!
- Try it out & see what works for YOU!

- **DO NOT** copy or photocopy other people's work (cheating)!
- You must write & make your own cards.
Different Ways to Make Disease Cards

• **Must** be typed! Calibri/Comic Sans fonts of 8/9 work well!
• **Summarize** information.
• Use **subheadings**, organize into further subheadings.
• Use **shorthand abbreviations** obvious to any reader.
• Type important information in bold/UPPER CASE.

Option 1 = Compact Disease Card Paragraphs pasted onto Index Cards
Type card on ONE SIDE of the page only. Approximately 2+ disease cards should fit per letter size page. Use the 10 subheadings given (see template) for each disease.

Option 2 = Disease Charts
Each column should have a heading - make 9 columns for the 10 headings (merge first two) - approx. 3 - 4 diseases per page.
- Use Excel (or equivalent)
- Use Power point (or equivalent)
- Use Microsoft word (or equivalent)
1. **#1 Scalded Skin Syndrome, SSSS**  
*Staphylococcus aureus*  
**BACTERIAL INFECTION:** Gram Positive Cocci , clusters, facultative anaerobe

2. **System:** SKIN  
**Tissues:** Toxigenic – toxins produced at local infection reach skin **epidermal cells**

3. **S & S:** Painful, bright red, flush, pus all over body leading to **blistering & peeling** of outer skin layers.

4. **VF:** Exfoliative toxins A & B cause desquamation of skin, **Other Toxins:** Hemolysins, Leukocidins, Toxic Shock Syndrome Toxin, **Enzymes:** Coagulase, Hyaluronidase, Staphylokinase, Lipase, Penicillinase.

5. **Res:** most **environments near humans, nosocomial, normal flora** of human skin, mucous membranes, mouth, intestine, 20-60% carriage rate in healthy humans, fomites. **Trans:** Portal of entry: umbilical stump, eyes, skin wounds.

6. **Diag:** S&S, **Gram+ cocci in irregular clusters.** Facultative anaerobe. Isolation of pus, tissue exudates on sheep’s blood agar (beta hemolysis) or mannitol salt agar. **Catalase producer** (differentiates from Streps), **Coagulase producer** (differentiates *S. aureus* from other Staphs). ID with **Rapid multitest** systems e.g. fermentation, **Protein A latex agglutination** test.

7. **Pr:** Universal precautions, hygiene, **Tr:** MDR. – do Antibiotic susceptibility tests.

8. **Comp:** **Toxemia & toxic shock syndrome,** bacteremia -> **abscesses** on organs, joints, meningitis. **Seq** heart abnormalities, **endocarditis & valve destruction,** arthritis.  
**Anything Else:** Most common in neonates, infants & children <4 years. Most strains resistant to Penicillin & Ampicillin (penicillinases). Survives harsh (pH, salt, temp, light, disinfectants) environments well. Tough & resistant microbe!
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<td>#1. Scalded Skin Syndrome, SSSS. <em>Staphylococcus aureus</em> BACTERIAL INFECTION Gram + Coccus Irregular Clusters, Facultative Anaerobe</td>
<td>SKIN* Toxigenic, local infection toxins -&gt; epidermal cells</td>
<td>Painful, bright red flush all over body, pus, blistering &amp; peeling of outer skin layers</td>
<td>Exfoliative Toxins A &amp; B. Causes desquamation, Toxins: Hemolysins, Leukocidins, TSS toxins, Enzymes: Coagulase, Hyaluronidase, Staphylokinase, Lipase, Penicillinase</td>
<td>Res: humans &amp; environment around humans, normal flora (20-60% healthy humans) skin, mucous mem, mouth, nasopharynx, intestine, Fomites, Nosocomial.</td>
<td>S&amp;S, G+ clusters of cocci, Isolation on Sheep Blood's agar (Beta Hemolysins) or Mannitol Salt agar, Catalase +ve, Coagulase +ve., Rapid multitest system e.g CHO fermenter, Protein A latex agglutination test.</td>
<td>Pr: Hygiene, correct hospital procedures (universal precautions).</td>
<td>Comp: Toxemia, Toxic Shock Syndrome(TSS), Bacteremia, abscesses on major organs, meningitis.</td>
<td>Mostly found in &lt;4 year olds, neonates. Most strains are Penicillin &amp; Ampicillin resistant (penicillinases). Survives harsh (pH, salt, temp, light, disinfectants) environments well. Tough &amp; resistant microbe!</td>
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<td>#2. Folliculitis, Boil (Furuncle), Carbuncle, Abscess. <em>Staphylococcus aureus</em> BACTERIAL INFECTION Gram + Coccus Facultative Anaerobe</td>
<td>SKIN* Toxigenic, local cutaneous/subcutaneous infections: folliculitis = hair follicles, furuncle/boil = deeper inflammation of skin glands/haair, carbuncle= very large &amp; deep lesion</td>
<td>Folliculitis = superficial inflamed lesion, furuncle/boil = a large red, inflamed &amp; tender abscess/pustule, often in clusters eg buttocks, back of neck, axillae carbuncle= very large &amp; painful mass, swollen &amp; ruptures</td>
<td>Toxins: Hemolysins, Leukocidins, TSS toxins, Enzymes: Coagulase, Hyaluronidase, Staphylokinase, Lipase, Penicillinase</td>
<td>Res: humans &amp; around humans, normal flora of skin, mucous mem, mouth, nasopharynx, intestine, Fomites, Nosocomial.</td>
<td>As above</td>
<td>As above</td>
<td>Carbuncles may be fatal in elderly patients.</td>
<td>All ages. As above</td>
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<td>#3. Staphylococcal Osteomyelitis <em>Staphylococcus aureus</em> BACTERIAL INFECTION Gram + Coccus Facultative Anaerobe</td>
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