Back to the Future

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Disclaimer

• No products of Medtronics or Habibbi’s Durable Medical Equipment will be discussed during this presentation.
  – Dr. Yamauchi’s son and daughter are employed by these firms. There is no conflict of interest.
  – Dr. Yamauchi’s son also has patent rights on head-cooling athletic head gear and antibiotic-impregnated bandages.

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Back to the Future

- Over the past 25 years, Dr. Yamauchi has lectured on multiple topics at this conference.
- Several of these topics have developed important clinical significance over this time period.

Some of the Topics Presented

- Animal Flora
- MRSA Carriage in Dogs & Cats
- Vaccines
- Newer Antibiotics
- Influenza
- Bacterial Meningitis
- Bacterial Meningitis
- Common Cold
- HIV in Children
- Antibiotic Resistant Microorganisms
- Disease Transmission
- Infectious Diseases in the Movies
Back to the Future: Objectives

At the completion of this presentation, the participant will be able to:

• List two old infectious diseases that are making a come-back; and
• Name a new vaccine and the new potential recipient population; and
• Identify two old infectious diseases caused by a new microorganism.

Back in the Day

• Under the watchful eyes of wise pediatric nurses ...
• Most patients improved under the care of young doctors
• .... they STILL do!
Back in the Day

BUT ...

• Some did not

Back to the Future: Animal Flora

• Cultured animals at petting zoo.
• ALL reptiles shedding salmonella

• Reptiles test negative in familiar surroundings, BUT start shedding salmonella when stressed.
Back to the Future: Animal Flora

What is the flora of kangaroo?
Back to the Future: Dogs & Cats

- 2% of healthy household dogs and cats were colonized with MRSA
- 10 years later, repeated the study: 20% were colonized with MRSA
- Prediction – potential cause of infections in people with household pets

Arkansas Experience

- Post-surgery, 4 children leave hospital
- Return to hospital with surgical wounds infected (MRSA)
- All 4 had home pets colonized with MRSA (same strains)

SIGNIFICANCE?
- Healthcare-associated infections result in non-payment of hospital stay.
- Should pre-surgery patients be cultured?
- Should their pets be cultured?
The OTHER Arkansas Experience

Back to the Future: Vaccines

Changing Requirements
- Varicella
  - Lifetime protection
  - Booster now recommended

Newer Vaccines
- Influenza
  - Temperature-sensitive intra-nasal spray
  - Early work at CDC “And, on the first day, all the rats died.”
  - Universal Influenza Vaccine under development
Back to the Future: Vaccines

Back to the Future: Influenza

Changing Virus

- Recombinant Strains
  - Other species
  - More easily transmitted
  - Faster, stronger, harder to treat
  - 2009 swine flu pandemic (human, pig, bird)
Back to the Future: Influenza

Mandatory Immunizations in Arkansas

- Arkansas Children’s Hospital
- Arkansas Department of Health
- Baptist Health
- St. Vincent Health System
- University of Arkansas for Medical Sciences

Back to the Future: Antibiotics

Anti-Infectives
- Newer Antibiotics
- “Bugs and Drugs”

Antibiotic Resistance
- Increased use of antibiotics
  - Upper Respiratory Infections
  - Acute Otitis Media
  - Intensive Care

On Camera at the AAP Spring Session in Las Vegas

Dr. Arnold Smith, Professor of Pediatrics at the University of Washington, Seattle, and his wife Karen, R.N. (left), with Dr. Harry Hamlin (right) of Little Rock, Ark. Dr. Smith delivered a paper on new antibiotics.
Back to the Future: Resistance

Multi-Drug Resistant = SuperBugs

- Prevention
- Treatment
- Antibiotic Development

Staphylococcus aureus
Streptococcus and Enterococcus
Pseudomonas aeruginosa
Clostridium difficile
Salmonella and E. coli
Acinetobacter baumannii
Mycobacterium tuberculosis

Antibiotic Resistance

Animal Industry:
- Growth factor
- Used:
  - penicillin
  - tetracycline
  - cephalosporins

Animal vs. Humans:
- Antibiotics used to treat foodborne pathogens
- Same as feed = resistance
- FDA restricted use of cephalosporins in livestock
  (Ark. Democrat Gazette editorial Jan 17, 2012)
Antibiotic Resistance

Largest Industrial Nation
• Treating antibiotic-resistant infections in the U.S. cost about $20 BILLION per year

Second Largest Industrial Nation
• Three years ago, China began feeding Tamiflu to poultry
• Concerns about serious human disease caused physicians to be more liberal about prescribing antiviral agents

Questions for the Future

• How to pay for healthcare?
• How to teach medicine?
• How to develop new medicines?
• How to develop new vaccines?
Thoughts for the Future

"My best friend is the one who brings out the best in me." — Henry Ford