



MEDICAL TOURISM AND INFECTION CONTROL

San Diego/Imperial and Inland

Empire APIC Conference

Samantha Tweeten





THE ATTENDEE WILL BE ABLE TO:

- Describe medical tourism
- Discuss the importance of medical tourism for Infection Control
- Describe organisms of current interest in medical tourism cases
- Understand the role of Public Health in these cases

MEDICAL TOURISM - DEFINITION



- AKA Health Tourism
- CDC 2016:
 - Traveling to another country to receive medical care
- Originally referred to travel from less developed to more developed countries to receive treatments not available in home country
- No internationally agreed upon definition



- Care/procedure is cheaper in another country
- Immigrants to US may prefer to return to home country for care
- Procedure or therapy not available in the US
- Most common procedures:
 - Cosmetic surgery, dentistry, heart surgery, bariatric surgery, transplant

WHO RECEIVES CARE?



All international inpatients
receiving care

100%

Subtract expatriates seeking care in
their country of current residence

-25% to -30%

Subtract emergency cases

-30% to -35%

35-45%

Medical travelers



TOP 14 MEDICAL TOURIST DESTINATIONS BY VOLUME OF CARE

1-Thailand

2-Hungary

3-India

4-Singapore

5-Malaysia

6-Philippines

7-United States

8-Costa Rica

9-Brazil

10-Mexico

11-South Korea

12-Colombia

13-Belgium

14-Turkey

“SPECIALTY LOCATIONS”

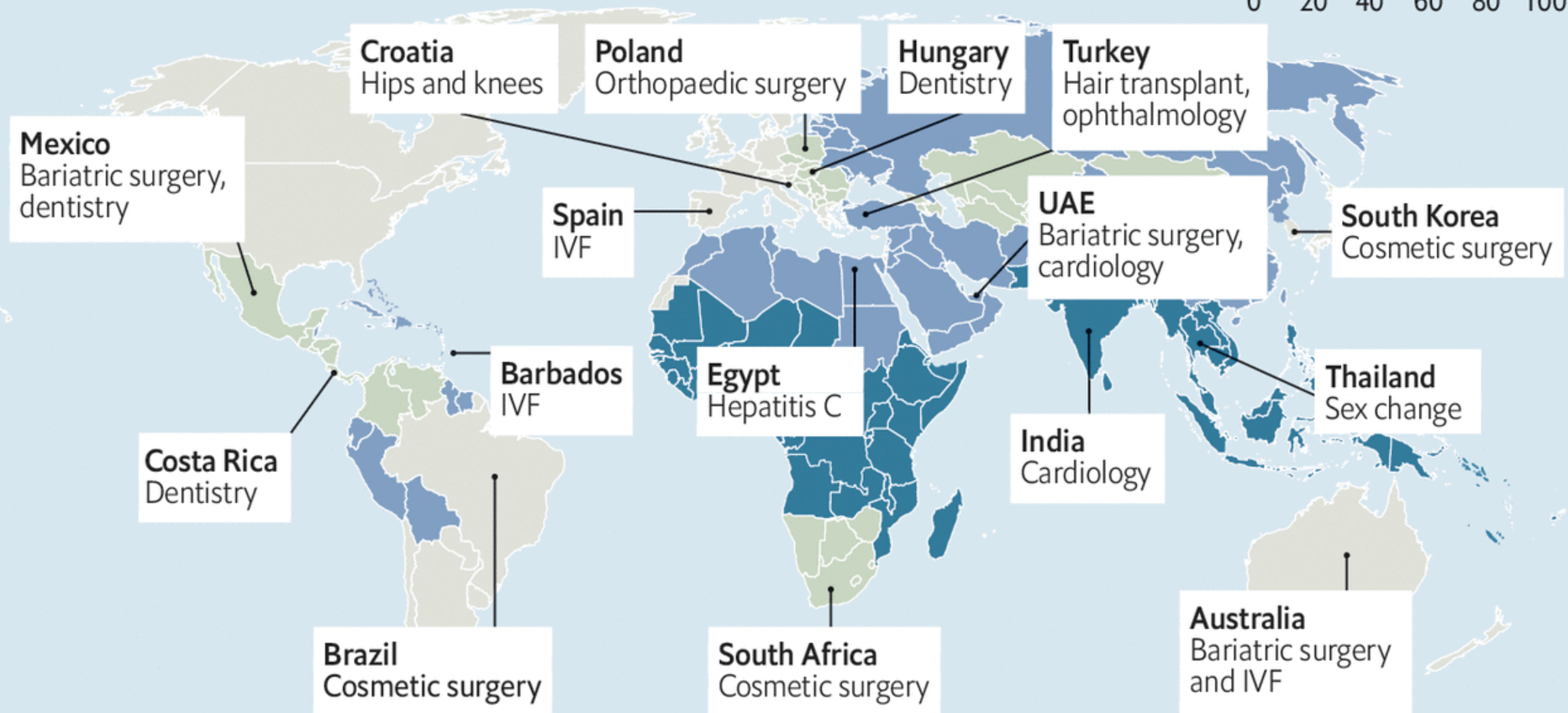
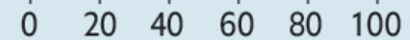


Cutting-edge

Selected hotspots for treatment

Population without access to surgery, %

By region, %, 2015



Sources: Medigo; Qunomedical; Keith Pollard, LaingBuisson; Valorie Crooks, Simon Fraser University; “Global access to surgical care: a modelling study” by B.C. Alkire, N.P. Raykar et al., *Lancet*, 2015; *The Economist*

MOST-TRAVELLED DESTINATIONS FOR MEDICAL TOURISM



SAVINGS PERCENTAGE

65-90%

INDIA



65-80%

MALAYSIA



50-75%

THAILAND



50-65%

TURKEY



40-65%

MEXICO



45-65%

COSTA RICA



40-55%

TAIWAN



30-45%

SOUTH KOREA



25-40%

SINGAPORE



20-30%

BRAZIL



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The infographic features four categories of medical services, each with an icon and a savings percentage:

- Dental**: Save up to 70% the cost of the US. Icon: Dental chair and X-ray.
- Cosmetic**: Save up to 75% the cost of the US. Icon: Skincare bottles.
- Bariatric Surgery**: Save up to 80% the cost of the US. Icon: Stomach.
- Other Medical Procedures**: Save up to 70% the cost of the US. Icon: Red cross on a white background.

Below the categories is an illustration of a family (a woman, a child, a man, and another child) traveling with luggage and a medical bag, set against a background of a city and a sun.

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WHY IS THIS IMPORTANT?



IMPACT ON SAN DIEGO FACILITIES

- Repatriation
 - From Tijuana to San Diego
- MDRO
 - Makes treatment difficult
- Other unusual organisms
- Sepsis
- Infection Control Implications
 - MDRO
 - Enhanced precautions
 - Increased costs for control

COMPLICATIONS SEEN

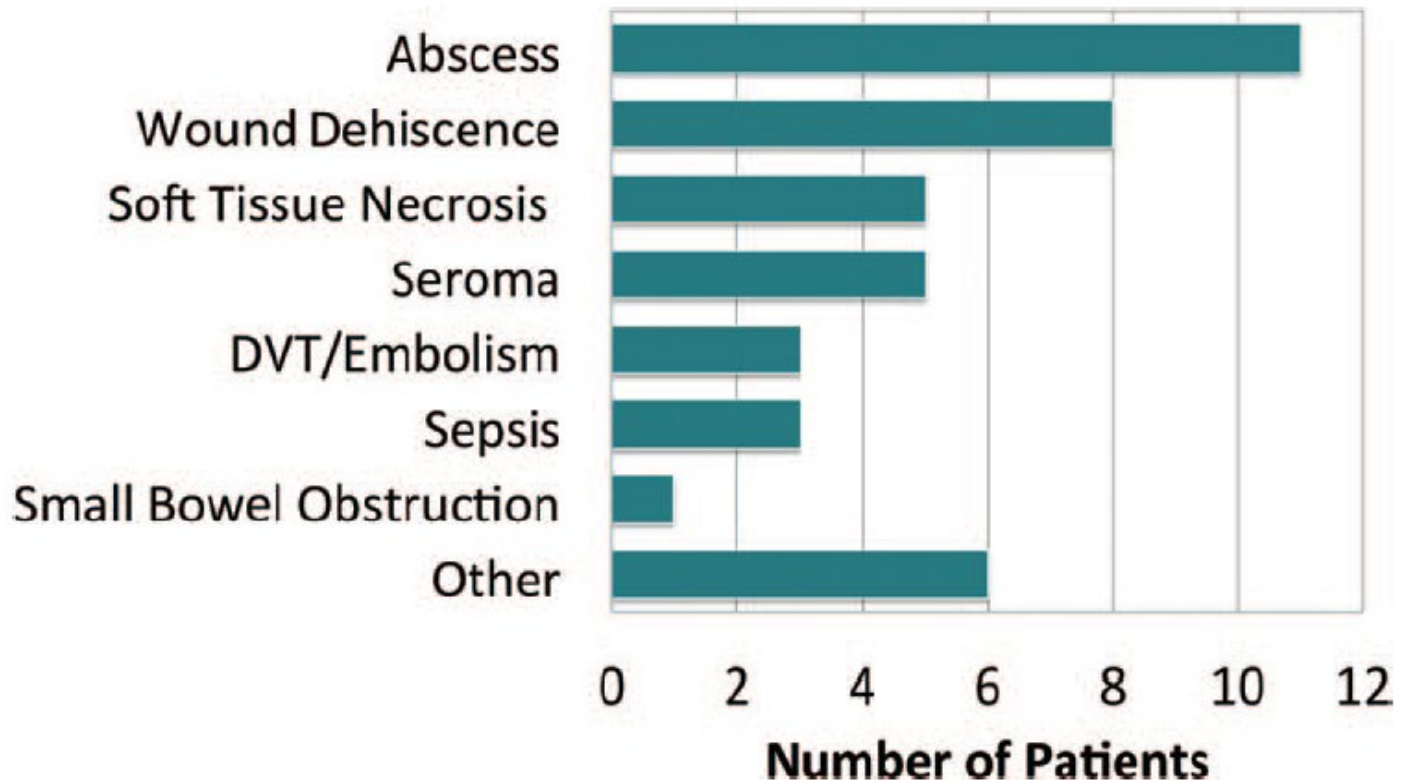


Fig. 3. Categorizing presenting complications. *DVT*, deep venous thrombosis.

COSMETIC EXAMPLES



Ref	Date	Country of origin of the study	Country of destination	Procedures	Infectious complications (other than SSI)	Wound infection-Causative agent/s
Cosmetic						
Parel-Amini et al. ³⁴	2019	Switzerland	North Africa, Europe, South America, USA	Breast augmentation	NA	SSI (71% of cases) <i>Pseudomonas aeruginosa</i> and <i>Mycobacterium (M.) abscessus</i> —MDR organisms (47%) including ESBL (extended-spectrum beta-lactamases)-, <i>Staphylococcus (S.) epidermidis</i> , <i>E. coli</i> , <i>Enterococcus faecalis</i> , <i>Klebsiella pneumoniae</i> and <i>Corynebacterium sp.</i>
Pereira et al. ⁴²	2018	Ireland	Brazil, Japan, Italy, Mexico	Women: Breast augmentation surgery, liposuction and eyelid surgery Men: Blepharoplasty, gynecomastia, rhinoplasty Other procedures: Gluteal lift, abdominoplasty, facelift, buttock augmentation, labiaplasty	NA	SSI <i>M. chelonae</i> , <i>fortuitum</i> and <i>abscessus</i>
Brightman et al. ⁴¹	2018	Australia	Europe, South America, South East Asia	Breast augmentation	Sepsis	SSI
Thineshkumar et al. ⁴³	2018	Denmark	Tunisia	Iris implantation	Bilateral eye infection	

COSMETIC EXAMPLES



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Rüegg et al. ⁴⁶	2015	Switzerland	Mexico	Bilateral breast implants, left, abdominal liposuction, gluteal lipofilling	Implant infection, gluteal abscess	SSI <i>M. abscessus</i> subsp. <i>massiliense</i> , <i>Propionibacterium</i> spp. and <i>St. epidermidis</i>
Hui et al. ²⁸	2015	Australia	Vietnam, China, Mexico	Breast augmentation and reduction, liposuction, gluteal lipofilling, fetal stem cell transfusion	Subcutaneous abscess	SSI <i>M. abscessus</i> subsp. <i>abscessus</i>
Schlarb et al. ²⁹	2015	Germany	Turkey	Abdominoplasty	Abdominal abscess	SSI <i>M. fortuitum</i>
Zosso et al. ³⁰	2015	Switzerland	Dominican Republic	Liposuction and liposculpture	NA	SSI <i>M. chelonae</i> and abscessus
Maurer et al. ²²	2014	Switzerland	Dominican Republic, Ecuador, Mexico	Abdominal liposuction, breast augmentation, breast reduction, abdominoplasty	Subcutaneous and deep tissue abscess	SSI <i>M. abscessus</i> subsp. <i>abscessus</i> , <i>M. abscessus</i> subsp. <i>massiliense</i> , <i>Mycobacterium</i> sp. <i>JAN1</i> and <i>M. conceptionense</i> (<i>M. fortuitum</i> group)
Schnabel et al. ²³	2014	USA	Dominican Republic	Liposuction, breast augmentation, abdominoplasty	Surgical wound abscess	SSI <i>M. abscessus</i>
Tran et al. ²⁵	2014	USA	Mexico	Abdominoplasty, liposuction, buttock fat grafting, mastopexy-augmentation	Cellulitis	SSI
Miyagi et al. ²⁴	2012	UK	Europe, India, Southeast Asia, Middle East	Breast augmentation and reduction, facelift, blepharoplasty, liposuction,	Peritonitis	SSI

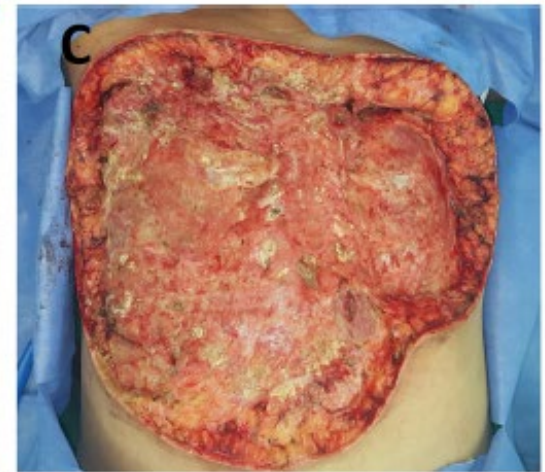


- Carbapenem-resistant Enterobacteriaceae (CRE)
 - *Ps. Aeruginosa* (also non-resistant)
 - *Klebsiella pneumoniae*
- *Acinetobacter baumannii*
- *Proteus* spp
- “Rapid-growing” Mycobacteria
 - *M. abscesses*, *M. fortuitum* group, *M. chelonae*
- Mucorales fungus (rare)
- Etc. etc. etc.

MUCORMYCOSIS



RARE BUT CATASTROPHIC



LIPOSUCTION COMPLICATION





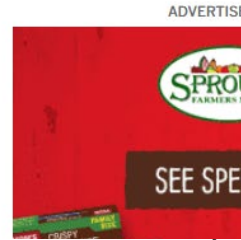
The San Diego Union-Tribune

CDC: Superbug involved in Tijuana bariatric surgery infections showed ominous mutation



This CDC illustration shows the structure of antibiotic-resistant pseudomonas aeruginosa bacteria. (U.S. Centers for Disease Control and Prevention)

By PAUL SISSON JAN. 12, 2019 | 6 AM



VAX BEFORE TRAVEL

Alerts Appointments Discounts Africa Asia Caribbean Central America Europe North America Oceania South America Vaccines

J.Crew



YOUR CLOSET WILL THANK YOU.

SHOP NOW



Fact checked by Robert Carlson, MD + 1

April 22nd, 2019

4 min read

Article by Don Ward Hockett

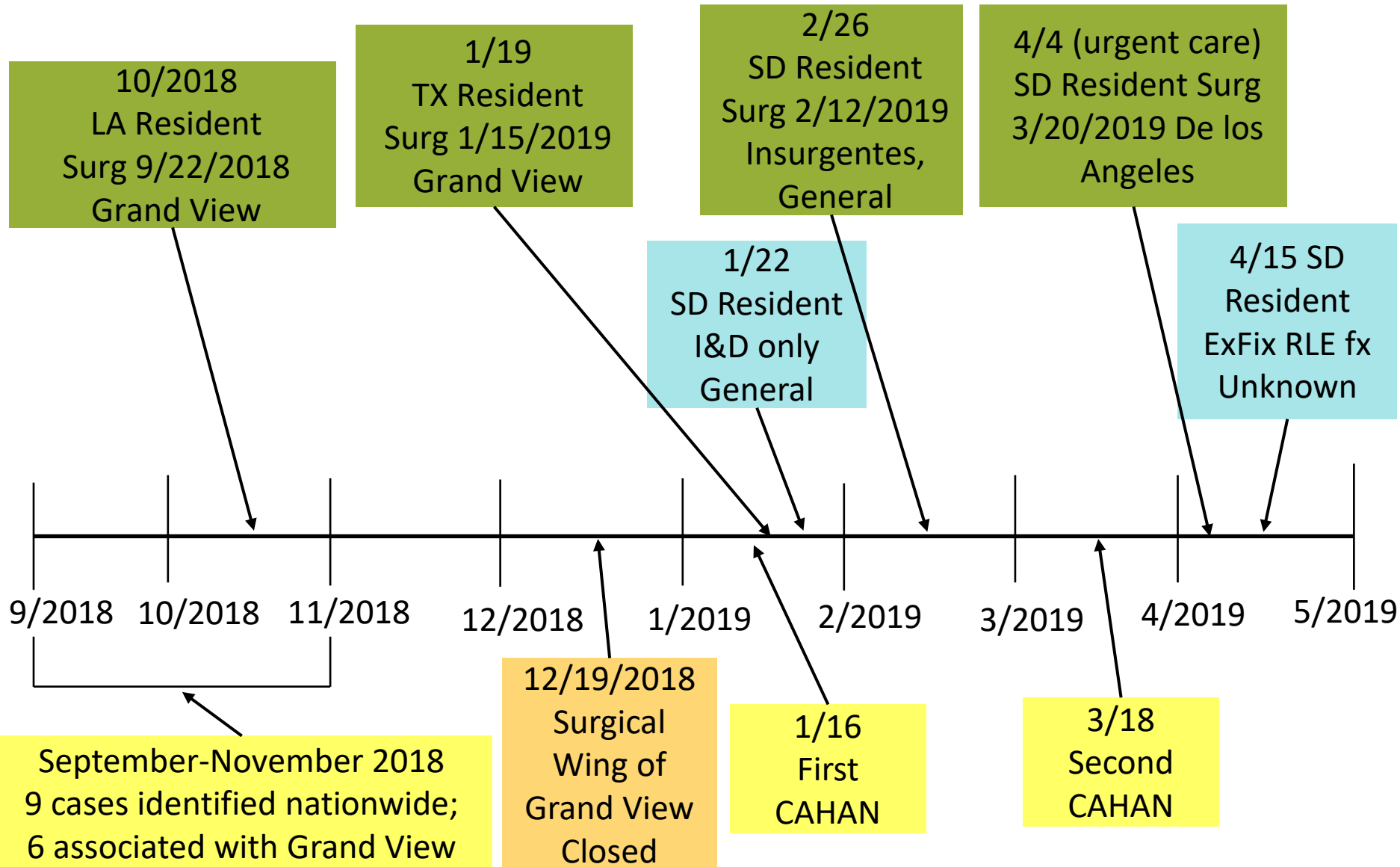
Texans Who Had Weight Loss Surgery at Grand View Hospital Should be on Alert

Mexican health officials identified poor infection control practices at Grand View Hospital in Tijuana, Mexico



- Carbapenem-resistant *Pseudomonas aeruginosa*
 - Verona Integron-encoded Metallo- β -lactamase (VIM)
- First case in San Diego
 - LA resident, October 2018
- Initial association with Grand View Hospital
- MLST 111 per Walter Reed
 - Subsequently other MLST identified
- Why San Diego?
 - Nearest place to repatriate from Baja California, MX

TIMELINE – SAN DIEGO ADMISSIONS





To: CAHAN San Diego Participants
Date: March 18, 2019
From: Epidemiology Program, Public Health Services

Update: Carbapenem-resistant *Pseudomonas aeruginosa* Infections after Hospitalization in Tijuana

This health alert updates providers that four local cases have been reported of *Pseudomonas aeruginosa* infections with carbapenem resistance due to Verona integron-encoded metallo- β -lactamase (VIM-CRPA) linked to previous hospitalizations in Tijuana, Mexico. The [level 2 travel alert](#) issued by the Centers for Disease Control and Prevention (CDC) regarding surgeries in Tijuana facilities has been updated. Recommendations and resource links are provided.

Key Messages

- Four cases of VIM-CRPA have been reported in San Diego County in individuals with previous hospitalizations in Tijuana, Mexico.
- The local cases are linked to an ongoing multistate cluster of VIM-CRPA in persons returning from Tijuana after having invasive medical procedures. About half of those infected had their surgery performed at Grand View Hospital in Tijuana.
- Travelers to Tijuana should not have surgery at Grand View Hospital until further notice.
- CDC recommends that any patient with surgery at Grand View Hospital after August 1, 2018 discuss screening for blood borne pathogens with their provider.
- Providers admitting patients with infections after invasive medical procedures in Tijuana should test for carbapenemase-producing organisms and strongly consider implementing pre-emptive contact precautions while awaiting lab results.
- Providers should report carbapenem-resistant *Pseudomonas aeruginosa* to the County Epidemiology Program and arrange to test these specimens for resistance mechanism via the San Diego County Public Health Laboratory (SDCPHL).
- Individuals planning to go abroad for medical procedures should consult with their local providers prior to departure and follow CDC medical tourism [travel advice](#).

EXAMPLE PATIENT – AN EXTREME



42-YEAR-OLD MALE

- From Texas
- Alcohol abuse
 - Case and a half of Bud Light per day
- Smoker
 - One pack per day
- BMI
 - Approximately 51
- Sought Roux-en-Y gastric bypass in Tijuana
 - Grand View Hospital
 - 1/16/2019

TIMELINE



- 1/16/2019 – Surgery in Tijuana, MX
- 1/17/2019 – Re-exploration of surgical site
 - Probably due to leaking anastomosis
 - Developed septic shock, renal failure (dialysis required)
 - Started on broad spectrum antibiotics
 - Marginal respiratory status intermittently on BiPAP
 - Hospital demands \$3K more to continue treatment
- 1/18/2019 – Repatriated to US San Diego County facility
 - Drain in place, on BiPAP
 - Cannot tell ED doc what happened in MX
 - Intubated
 - Admitted 11/19/2019, 3am
 - Admission diagnoses
 - RUL pneumonia, peritonitis, dilated loops of small bowel, acute renal failure, shock liver, anemia, sepsis, acute hypoxic respiratory failure



- 1/19/2019 – Admission
- 1/23/2019 – Exploratory Lap clean-out
 - Reopening of initial surgical lap
 - Debridement and repair of Roux-en-Y anastomosis
 - Ventral Hernia Repair (VHR) with bridging mesh for evisceration
- 1/25/2019 – VHR repair for popping sutures
 - Wound repair
 - Wound Vac
- 1/19-2/23/2019 – ICU
 - Intubated
 - 2/8/2019 – Tracheostomy placed
 - Developed rhabdomyolysis
- 2/24/2019 – D/C from ICU
- 2/25/2019 – On Tele floor
 - Waiting for LTAC placement

CULTURE RESULTS



- 1/18/2019 – ED
 - Blood – CRE VIM *Ps. aeruginosa*

- 1/19/2019
 - Blood – CRE VIM *Ps. aeruginosa*
 - Sputum/Bronch wash – *Stenotrophomonas maltophilia*
 - Resistant to Ceftazidime, naturally Carbapenem resistant

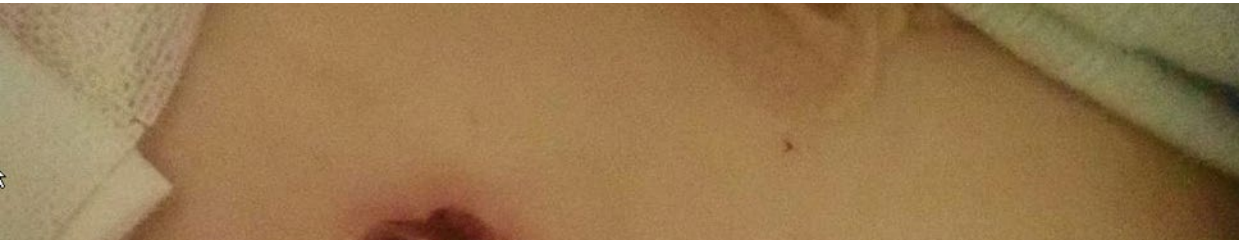
- 1/21/2019
 - Wound – CRE VIM *Ps. aeruginosa*

- 1/23/2019
 - Blood – no growth

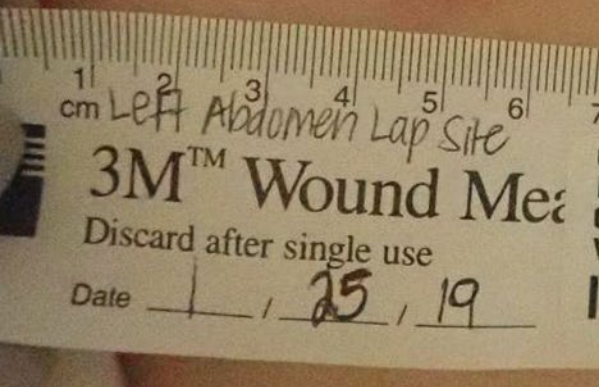
- 2/4/2019
 - Sputum – *S. maltophilia* and CRE VIM *Ps aeruginosa*

- 2/13/2019
 - Trach aspirate – CRE VIM *Ps. aeruginosa*

WOUND HEALING



1/25/2019



1/28/2019

WOUND HEALING



1/30/2019

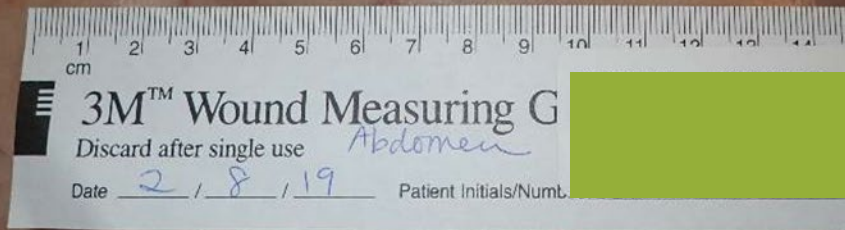


2/4/2019

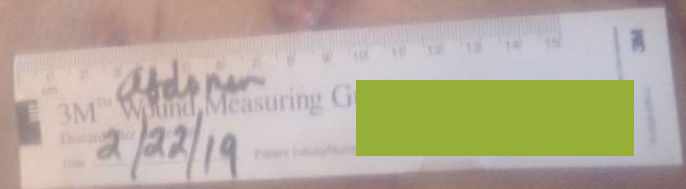
WOUND HEALING



2/8/2019



2/22/2019

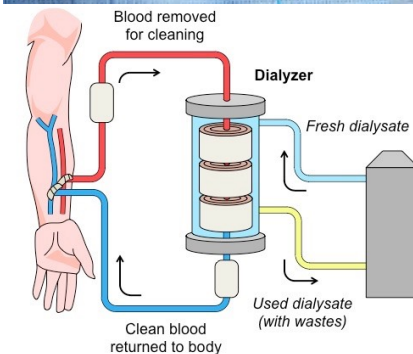
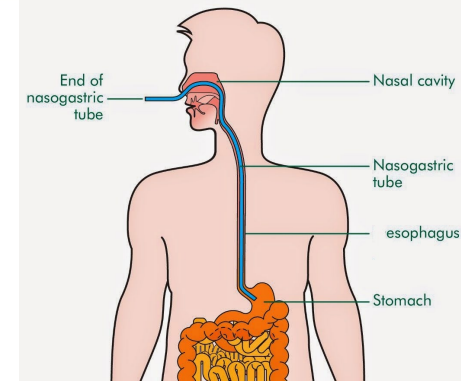


OUTCOME



AT LTAC PLACEMENT

- Tracheostomy
 - Remains for vent management
- Tube feedings
- A&O X 1
 - Intermittently follows commands
 - Agitated
- Acute kidney injury
 - On dialysis
- Medical bills
 - Hundreds of thousands of dollars



QUESTIONS



On May 17, 2016, the County of San Diego Health and Human Services Agency Division of Public Health Services received accreditation from the Public Health Accreditation Board.

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