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Managing Chronic Sinusitis

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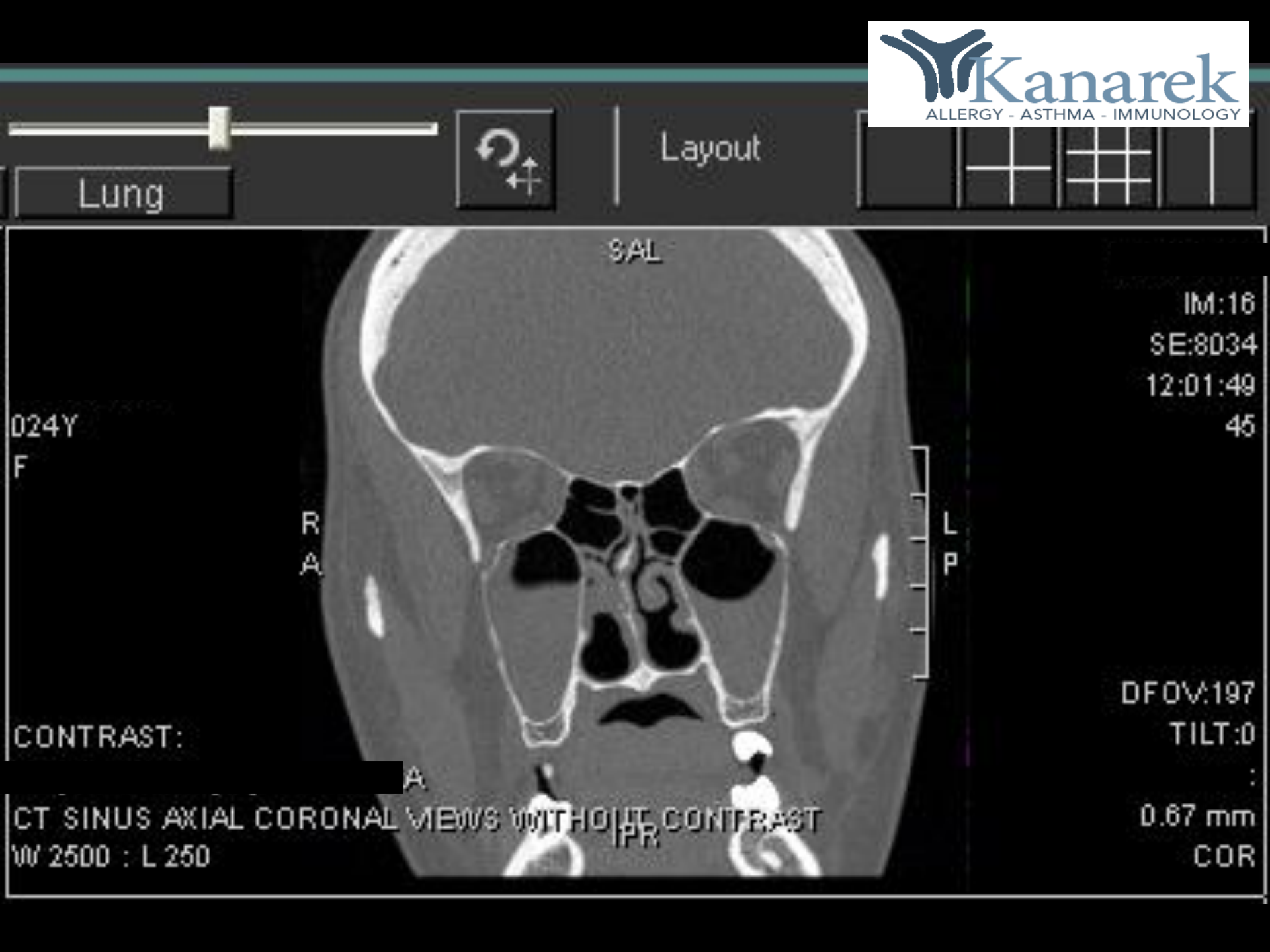
C-T scan of the Sinuses

- The following slides are actual C-T scan of infected sinuses
- Sinus surgery was performed 2 years ago
- The gray areas are infection
- The left and right maxillary sinuses, and the ethmoid sinuses are infected
- Antral windows are seen which is done to improve mucous clearing and airflow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Lung
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45
024Y
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DFOV:197
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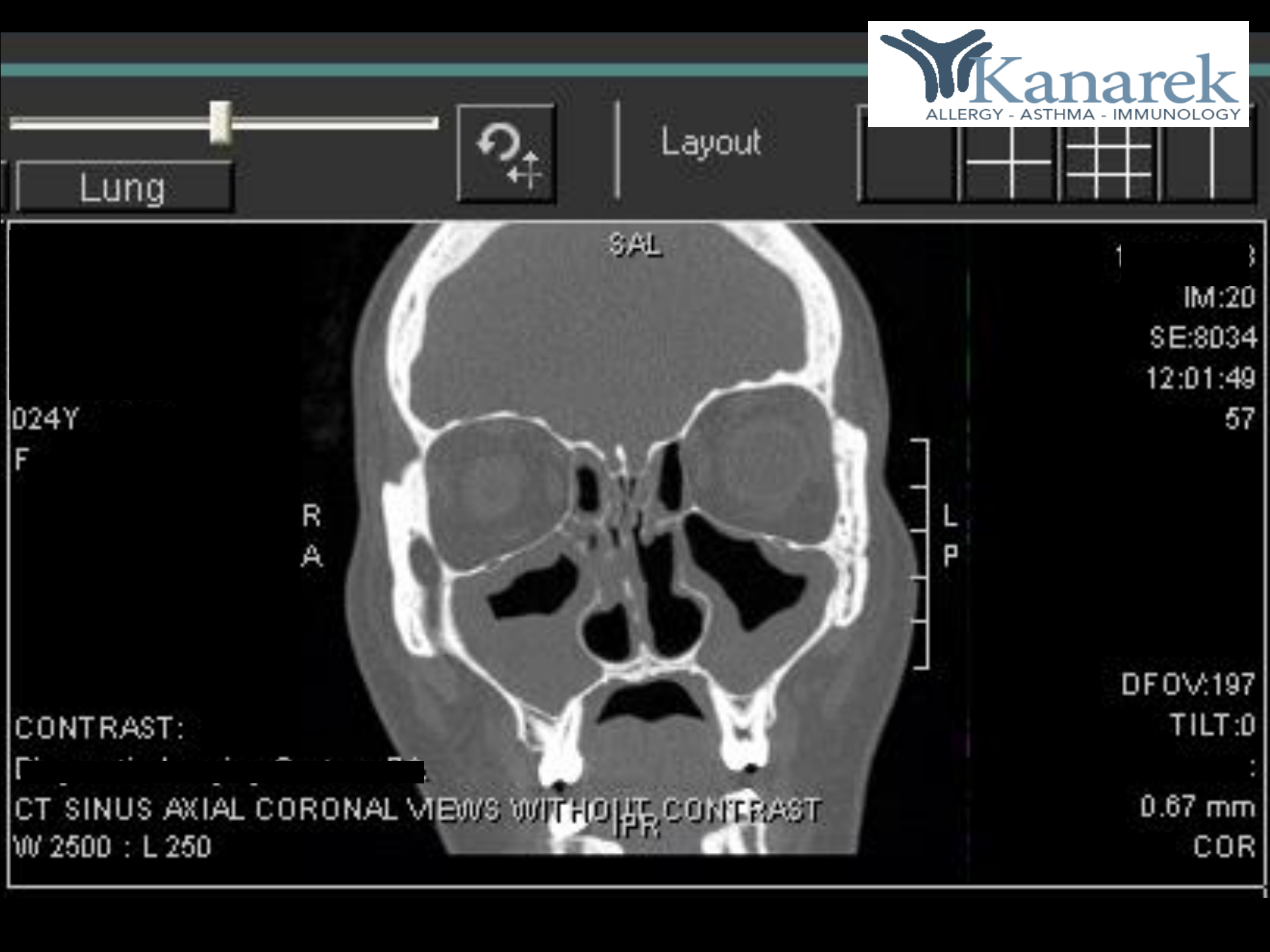
CONTRAST:
CT SINUS AXIAL CORONAL VIEWS WITHOUT CONTRAST
W 2500 : L 250
IPR
0.67 mm
COR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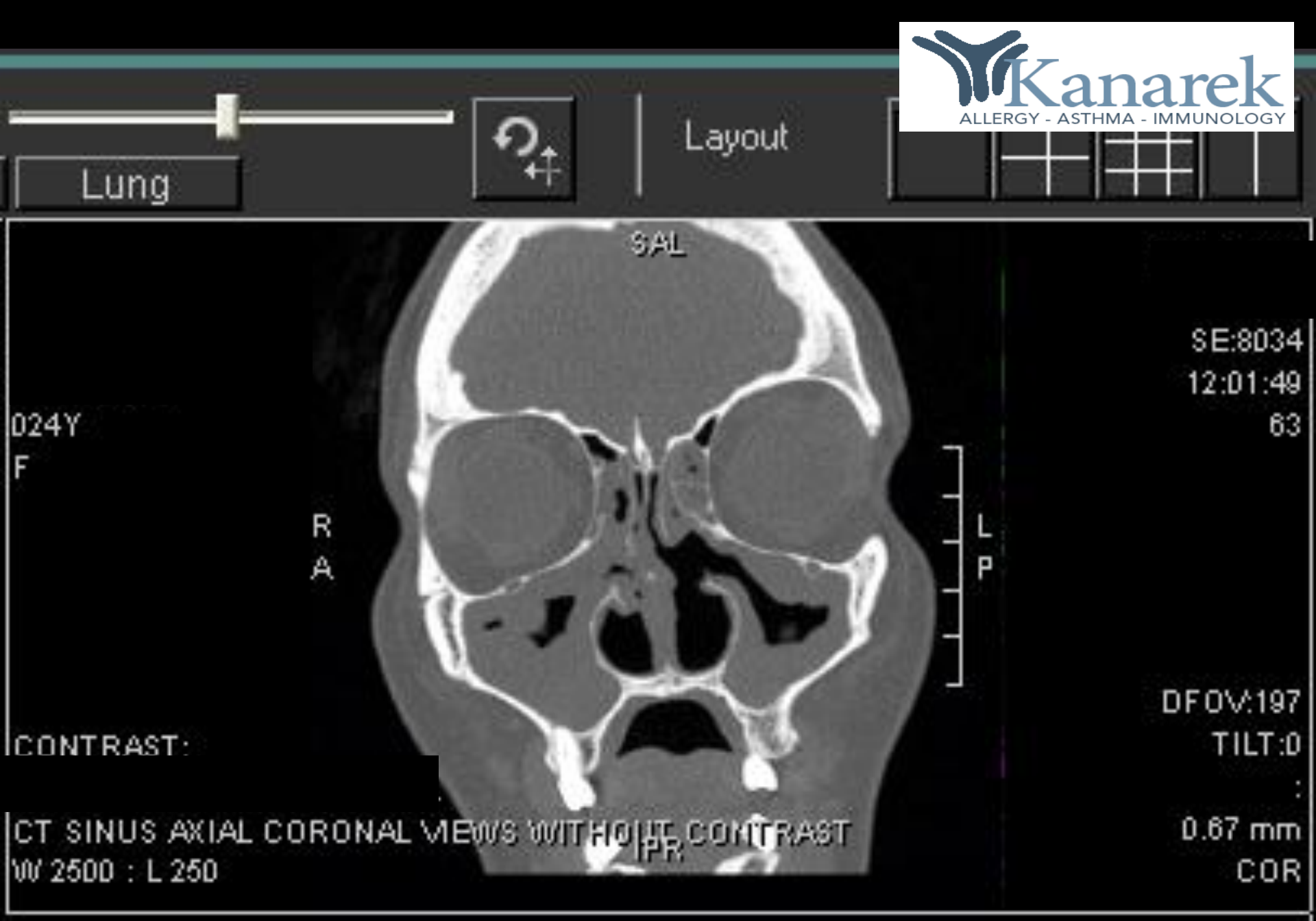
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DFOV:197
TILT:0
CONTRAST:
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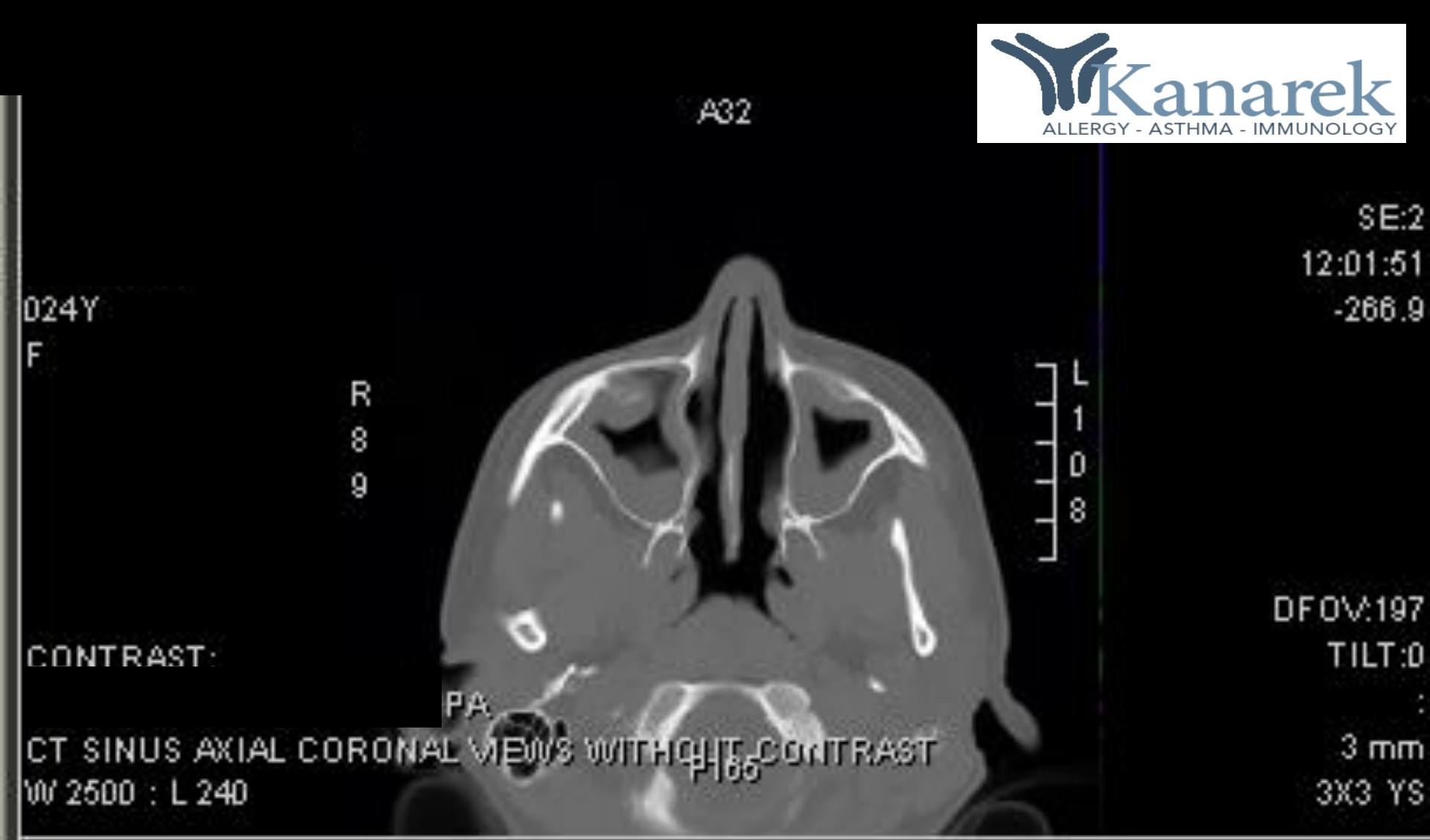
W 2500 : L 250
IPR
0.67 mm
COR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Kanarek
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DFOV:197
TILT:0
CONTRAST:
PA
CT SINUS AXIAL CORONAL VIEWS WITHOUT CONTRAST
3 mm
W 2500 : L 240
3X3 YS

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Chronic Sinusitis

- The sinuses are cavities within the head that are producing mucous which is carried throughout the cavities by cilia
- When there are problems in handling the mucous due to obstruction, or problems in the immune system the individual will suffer with a sinus infection
- The sinuses receive little blood flow, so longer doses of antibiotics are generally needed
- Keeping the mucous moving and or addressing the immune system is key to management of infection

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Chronic Sinusitis

- An Immune work up for all chronic sinus patients should always be done
- C-T scan and or endoscopy is needed to evaluate extent of disease and progression of treatment
- Important to differentiate between patients
  - With nasal polyps
  - Without nasal polyps

Causes and Management of Chronic Sinusitis

- Immune deficiency
  - Focus on improving the immune system
- Allergy
  - Antihistamines, nasal sprays, allergen avoidance
  - Immunotherapy (allergy shots)
- Antibiotics
  - Long term 4 weeks to 12 weeks
  - Sometimes prophylactic antibiotics are needed
- Anatomical problems leading to obstruction as seen by C-T scan
  - That is why it is important to differentiate
    - Polyps or no polyps
  - Surgery may be needed

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Chronic Sinusitis With Nasal Polyps

- Immune work up
- Aspirin Allergy
  - Consider Desensitization
- No Aspirin Allergy
  - Be aware of side effects from all steroid use
  - Steroid nasal sprays, or drops, oral burst
  - Steroid nasal rinses such as Fluticasone 200 mcg/liter, use 20 ml per side once or twice a day
  - Oral steroid bursts
  - Oral antibiotics

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Immune Work Up

- Strep Pneumococcal titers 23 serotypes
  - If low titers vaccinate with Pneumovax23
  - Repeat titers in 4 weeks
- Immunoglobulin titers
- CBC/Diff
- ESR, and CRP
- T and B cells
- Sometimes add EBV panel looking for Mono Nucleosis

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Streptococcus Pneumoniae

- Major bacteria to cause ear infections, sinusitis, pneumonia, and meningitis
- Children are vaccinated at 2,4,6, 18 months of age with the Prevnar 13 (serotypes)
- Prevnar vaccine is Streptoccus Pneumoniae conjugated with Diptheria this allows for a stronger immune response
- Older patients receive this vaccine because their immunity has decreased

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Streptococcus Pneumoniae

- Vaccinate with the polyvalent 23 Pneumovax if over 2 years of age and repeat the titers in 4 weeks
- One of the following indicates a normal response to the Streptococcus pneumoniae vaccine:
  - 50% of the serotypes are within the normal range
  - and/or
  - 50% (70% for adults) of the titers increase by 2 to 4 fold
- This may be all the patient needs to feel better and be less ill
- If a poor response or even if there is a response, watching the patient overtime may make the diagnosis of Common Variable Immunodeficiency or of Specific Antibody Deficiency

Common Variable Immunodeficiency

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- Common Variable is the most common of all immune deficiency's
- Impaired antibody quantity and quality
  - Hypogammaglobulinemia (low levels of immunoglobulins) with impaired antibody specificity (poor ability to do their job)
- Frequently is associated with:
  - Recurrent sinusitis
  - Bronchial diseases-hard to manage and treat
  - Irritable bowel-weight loss, diarrhea
  - Blood problems like anemia and clotting
  - Autoimmune and oncologic diseases

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Case History

- 13 year old female with frequent sinus infections, fatigue, missing school
- She receives antibiotics with every infection, and the mother says antibiotics quit working
- Immunodeficiency labs are ordered and the next slide shows that her pneumococcal titers are low, this is why she maybe ill all the time

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Collected: 11/02/12 08:27
Received: 11/02/12 13:19
Specimen ID: [redacted]
Specimen: Serum / Clot, Gel

Immunology	Result	Reference Range
IgG	751	650-1600 mg/dL
IgA	108	40-350 mg/dL
IgM	122	49-310 mg/dL
Allergy Testing	**Result**	**Reference Range**
IgE	**191.3 H**	6.0-110.0 U/mL

S. pneumoniae IgG Abs		
Type 1 Abs	**0.6 L**	>1.0 ug/mL
Type 3 Abs	2.4	>1.0 ug/mL
Type 4 Abs	**<0.2 L**	>1.0 ug/mL
Type 5 Abs	1.7	>1.0 ug/mL
Type 6B Abs	2.3	>1.0 ug/mL
Type 7F Abs	1.4	>1.0 ug/mL
Type 8 Abs	**0.2 L**	>1.0 ug/mL
Type 9N Abs	1.2	>1.0 ug/mL
Type 9V Abs	2.9	>1.0 ug/mL
Type 12F Abs	**<0.2 L**	>1.0 ug/mL
Type 14 Abs	1.1	>1.0 ug/mL
Type 18C Abs	**<0.2 L**	>1.0 ug/mL
Type 19F Abs	1.9	>1.0 ug/mL
Type 23F Abs	1.2	>1.0 ug/mL

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Case History

- Labs show her immunoglobulin G is low but normal, IgA and IgM are normal
- Her pneumoccal titers were low. A level of 1.3 ug/ml is protective and only 6 titers were protective
- She received a Pneumovax23 vaccination
- 4 weeks later the titers were measured and the majority of her titers increased by 2 to 4 times their previous level
- Her mother on follow up reported she feels better and has not required antibiotics in a long time
- She will need to repeat the pneumococcal titers in 6 months to assure continued protection

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Collected: 02/28/13 10:49
Received: 02/28/13 14:55
Specimen ID: [redacted]
Specimen: [redacted]

Immunology	Result	Reference Range
IgG	834	650-1600 mg/dL
IgA	130	40-350 mg/dL
IgM	144	49-310 mg/dL

Collected: 02/28/13 10:49
Received: 02/28/13 14:55
Specimen ID: [redacted]
Specimen: Serum / Clot, Gel

Immunology	Result	Reference Range
S. pneumoniae IgG Abs		
Type 1 Abs	9.6	>1.0 ug/mL
Type 3 Abs	>20.0	>1.0 ug/mL
Type 4 Abs	7.6	>1.0 ug/mL
Type 5 Abs	>20.0	>1.0 ug/mL
Type 6B Abs	>20.0	>1.0 ug/mL
Type 7F Abs	18.8	>1.0 ug/mL
Type 8 Abs	16.5	>1.0 ug/mL
Type 9N Abs	12.7	>1.0 ug/mL
Type 9V Abs	4.5	>1.0 ug/mL
Type 12F Abs	**0.4 L**	>1.0 ug/mL
Type 14 Abs	8.8	>1.0 ug/mL
Type 18C Abs	13.6	>1.0 ug/mL
Type 19F Abs	12.9	>1.0 ug/mL
Type 23F Abs	12.3	>1.0 ug/mL

[redacted]

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Case History, 56 year old female

- The next patient has low pneumococcal titers and received a Pneumovax23
- She had been healthy but 5 years ago fatigue set in, along with one bout of pneumonia, and constant sinus infections

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DOB: [redacted] **AGE: 56**
Gender: F
Phone: [redacted]
Patient ID: NG
Health ID: 8573005541938428

Collected: 04/17/2013 / 15:49 CDT
Received: 04/17/2013 / 23:35 CDT
Faxed: 04/22/2013 / 08:01 CDT

KANAREK, HENRY MD
Attn: ADULT-PED ALLERGY/
FOXHILL MED
4601 W 109TH ST STE 350
OVERLAND PARK, KS 66211-1349

Test Name	In Range	Out Of Range	Reference Range	Lab
IMMUNOGLOBULINS				KS
IMMUNOGLOBULIN A	152		81-463 mg/dL	
IMMUNOGLOBULIN G	1537		694-1618 mg/dL	
IMMUNOGLOBULIN M		**278 H**	48-271 mg/dL	
CBC (INCLUDES DIFF/PLT)				KS
STREPTOCOCCUS PNEUMONIAE				XE
IGG AB (14 SEROTYPES)				
SEROTYPE 1 (1)	1.0		mcg/mL	
SEROTYPE 3 (3)	1.3		mcg/mL	
SEROTYPE 4 (4)	0.5		mcg/mL	
SEROTYPE 5 (5)	5.0		mcg/mL	
SEROTYPE 8 (8)	1.2		mcg/mL	
SEROTYPE 9 (9N)	0.7		mcg/mL	
SEROTYPE 12 (12F)	0.4		mcg/mL	
SEROTYPE 14 (14)	8.3		mcg/mL	
SEROTYPE 19 (19F)	3.9		mcg/mL	
SEROTYPE 23 (23F)	1.4		mcg/mL	
SEROTYPE 26 (6B)	4.1		mcg/mL	
SEROTYPE 51 (7F)	3.7		mcg/mL	
SEROTYPE 56 (18C)	1.1		mcg/mL	
SEROTYPE 68 (9V)	0.8		mcg/mL	

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Case History, 56 year old female

- A repeat measurement of her pneumococcal titers shows that she did not increase her titers 2 times or 4 times pre-vaccination levels
- She continues to require frequent antibiotics
- She has a Diagnosis of: Specific Antibody Deficiency

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ACCESSION:	4172012	DOB:	[redacted]	**Kanarek,Henry J**
COLLECTED:	Dec 20, 2013 12:00 am	GENDER:	Female	HENRY J. KANAREK MD PA
RECEIVED:	Dec 20, 2013 6:55 pm	ACCT #:	-1	4601 W. 109th St. Ste. 350
REPORTED:		PHONE		Overland Park, KS 66211-1349
SENDER:	PRLLIS.PRL	ZIP:	64503	913-451-8555

Test Name	In Range	Out of Range		Reference Range	Loc.
Immunoglobins (G, M, A)					
IGG	1414			647-1797 mg/dL	
IGA	153			75-451 mg/dL	
IGM	233			49-310 mg/dL	
S. pneumoniae IgG Abs					
TYPE 1 ABS	1.5			>1.0 ug/mL	
TYPE 3 ABS	1.3			>1.0 ug/mL	
TYPE 4 ABS		0.6	L	>1.0 ug/mL	
TYPE 5 ABS	5.4			>1.0 ug/mL	
TYPE 6B ABS	3.1			>1.0 ug/mL	
TYPE 7F ABS	1.6			>1.0 ug/mL	
TYPE 8 ABS		0.9	L	>1.0 ug/mL	
TYPE 9N ABS		0.5	L	>1.0 ug/mL	
TYPE 9V ABS		0.6	L	>1.0 ug/mL	
TYPE 12F ABS		0.3	L	>1.0 ug/mL	
TYPE 14 ABS	4.4			>1.0 ug/mL	
TYPE 18C ABS		1.0	L	>1.0 ug/mL	
TYPE 19F ABS	1.4			>1.0 ug/mL	
TYPE 23F ABS	1.2			>1.0 ug/mL	

Specific Antibody Deficiency with Normal Immunoglobulins

- Normal antibody quantity but poor antibody quality
- Immunoglobulin levels may be normal but the poor quality allows for recurrent infections
- Recurrent infections can lead to permanent tissue and organ damage
- The patient is frequently ill and requires frequent antibiotics
- Treatment can be prophylactic antibiotics, even Immunoglobulin G replacement

Common Variable Immunodeficiency, Specific Antibody Deficiency Treatment

- Boost the immune system
  - Sleep well, eat well, moderate exercise
  - Reduce school hours, arrive at 9:00, attend class 4 days a week, change lifestyle to allow rest
- Prophylactic antibiotics
  - Daily during the winter
- Treat associated diseases
  - Iron, nutrition, anti-inflammatory if arthritis, inhalers for respiratory problems
- Intravenous or subcutaneous Immunoglobulin G infusions

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Immunoglobulin G infusions

- Intravenous infusions are given monthly since the life span of Immunoglobulins is 4 weeks
- Subcutaneous infusions can be given weekly or every 2 weeks
- Depending on the diagnosis, infusions may be temporary or for life
- Monitoring trough levels of IgG (levels immediately before next infusion), and the patients overall health determines the dosing
- Typically the patient receives ½ gram per kilogram monthly

Subcutaneous Immunoglobulin G

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- A wind up syringe is used to push the immunoglobulin
- Small tube is connected to syringe and splits into 2 to 6 small tubes with subcutaneous needles at the end
- Needles are applied to fatty areas of the body such as the abdomen, thighs or upper buttocks area
- Infusion can take 1 to 3 hours

Immune Deficiency Diagnostic Considerations

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- Always ill when compared to friends and family requiring frequent antibiotics
- Hard to treat respiratory problems, does not behave like asthma alone, look for bronchiectasis
- Irritable bowel and other gastro- intestinal problems
- Poor response to vaccinations
- Necessary to address the immune system to avoid constant illness

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Managing Chronic Sinusitis

- Make the correct Diagnosis
  - Immune deficiency needs to be assessed in all sinusitis, pneumonia, chronic otitis media
- C-T scan or Endoscopy of sinuses
- Determine if there are Polyps or no polyps
- Maintain airflow, keep the sinus cavities clear
  - Using sterile saline or steroid rinses
- Consider prophylactic or long term antibiotics or if there is immune deficiency consider Immunoglobulin G replacement

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Questions?

Visit our website at **KAllergy.com** or contact our office at **drkanarek@kallergy.com**