HAV IgM (Hep A Ab)
Antibodies to Hepatitis A, IgM
Advia Centaur XPT
by Chemiluminescence
LIS CODE = HAVAB

I. Intended Use

The ADVIA Centaur HAV IgM assay is an *in vitro* diagnostic immunoassay for the qualitative determination of IgM response to the hepatitis A virus (HAV) in human serum or plasma (potassium EDTA, lithium or sodium heparinized) using the ADVIA Centaur XPT System. This assay is intended for use as an aid in the diagnosis of acute or recent infection (usually 6 months or less) with hepatitis A virus.

Assay performance characteristics have not been established for immunocompromised or immunosuppressed patients, cord blood, neonatal specimens, infants, or children under the age of two.

WARNING: This assay has not been FDA cleared or approved for the screening of blood or plasma donors. United States federal law restricts this device to sale by or on the order of a physician.

II. Principle

The ADVIA Centaur® HAV IgM assay is an IgM capture immunoassay using a 2-pass format. In the first pass the sample is diluted using Multi-Diluent 2. After sample dilution biotinylated anti-human IgM monoclonal antibody is added to the cuvette binding IgM from the diluted patient sample. The IgM complex is then captured by the addition of streptavidin coated magnetic latex particles (MLP). The IgM-MLP is washed and resuspended.

In the second pass the anti-HAV IgM captured on the Solid Phase is detected by the sequential addition of HAV antigen and acridinium ester-labeled mouse anti-HAV antibody.

III. Clinical Significance

Hepatitis A is caused by infection with the hepatitis A virus. HAV is a 27 nanometer single-stranded, nonenveloped, RNA virus that is classified as a picornavirus. Transmission of Hepatitis A is usually via the fecal-oral route and infection occurs mainly due to contaminated food or poor sanitary conditions.

Hepatitis A virus replicates in the liver. The virus is excreted in the bile and shed in the stool. Only one serotype has been observed among HAV isolates collected from various parts of the world. The average incubation period for HAV infection is 30 days with a range of 15 to 40 days. Chronic infection has not been reported to occur following HAV infection. Symptoms last approximately 2 weeks and include hepatomegaly, jaundice, dark urine, fatigue, and

gastrointestinal distress such as anorexia, nausea, vomiting, and abdominal pain. At the onset of symptoms resulting from HAV infection, antibody to HAV is detectable. The early antibody response is largely comprised of the IgM antibody subclass. Anti-HAV IgM is detectable usually for 3 to 6 months after the onset of illness, whereas anti-HAV IgG can persist indefinitely. Because of the transient production of anti-HAV IgM, its presence in sera indicates ongoing or recent infection and is the most useful serological marker for diagnosing acute HAV infection.

Since symptomatic hepatitis A viral infections can not be clinically distinguished from hepatitis B or C viral infections, serological testing is important for proper diagnosis.

IV. Specimen

Order =HAVAB
This assay is also a component of the Acute Hepatitis Panel, order HEPP.

Serum is the specimen of choice; plasma (EDTA, sodium or lithium heparin) may also be used.

Serum and EDTA plasma are the recommended sample types for this assay. Na and Li heparinized plasma are acceptable, however these samples have been shown to increase the S/CO values in some HAV IgM reactive samples by up to 14% relative to serum. Results obtained from heparin specimens falling near the cutoff should be repeated with a serum specimen or interpreted with caution.

Do not use specimens with obvious microbial contamination. The performance of the ADVIA Centaur HAV assay has not been established with cord blood, neonatal specimens, cadaver specimens, heat-inactivated specimens, or body fluids other than serum or plasma such as saliva, urine, amniotic, or pleural fluids.

The following general recommendations for handling and storing blood samples are furnished by the National Committee for Clinical Laboratory Standards (NCCLS)[5] and augmented with additional sample handling studies using the ADVIA Centaur HAV IgM assay:

A. Handle all samples as if capable of transmitting disease.
B. Samples are processed by centrifugation typically followed by physical separation of the serum or plasma from the red cells. Centrifuge samples within 2 hrs post draw.
C. Test samples as soon as possible after collecting. Store samples at 2 to 8°C if not tested within 8 hrs of collection.
D. Store samples stoppered and upright at all times at 2 to 8°C up to 2 days.
E. Freeze samples, devoid of red blood cells, at or below -20°C for longer storage. Samples may be stored at or below -20°C for up to 180 days. Do not store in a frost-free freezer. When samples were subject to 4 freeze/thaw cycles, no qualitative differences were observed. Thoroughly mix and centrifuge thawed specimens before using. Centrifuge thawed specimens at 10,000 x g for 2 minutes before using.
F. Package and label samples for shipment in compliance with applicable federal and

international regulations covering the transport of clinical samples and etiological agents. Store samples stoppered and upright at 2 to 8°C upon arrival. If shipment is expected to exceed 2 days, ship specimens frozen.

Before placing samples on the system, ensure the following:

A. Samples are free of fibrin or other particulate matter. Remove particulates by centrifugation. (example: 1500 x g for 10 minutes; follow tube manufacturer's recommendations)
B. Samples are free of bubbles or foam.

This assay requires a minimum of 20 uL of sample for a single determination. This volume does not include the unusable volume in the sample container or the additional volume required when performing duplicates or other tests on the same sample.

V. Reagents

Store reagents upright at 2 - 8°C.

A. ADVIA Centaur HAV IgM Primary Reagent ReadyPack:
   1. Lite Reagent
      5.0 mL anti-HAV mouse monoclonal antibody [1] (~0.300 ug/mL) labeled with acridinium ester in buffer with bovine serum albumin, surfactant, sodium azide (< 0.1%), and preservatives. Stable at 2 - 8°C until the expiration date on the pack label, or 41 days on board.
   2. Solid Phase
      15.0 mL streptavidin coated paramagnetic microparticles in buffer with bovine serum albumin, surfactant, sodium azide (< 0.1%), and preservatives. Stable at 2 - 8°C until the expiration date on the pack label, or 41 days on board.
   3. Ancillary Well Reagent
      5.0 mL inactivated purified hepatitis A virus (< 0.1 ug/mL) in buffer with bovine serum albumin, surfactant, sodium azide (< 0.1%), and preservatives. Stable at 2 - 8°C until the expiration date on the pack label, or 41 days on board.

B. ADVIA Centaur HAV IgM Ancillary Reagent ReadyPack
   1. Ancillary Reagent
      25.0 mL biotinylated monoclonal mouse anti-human IgM (~0.500 ug/mL) in buffer with bovine serum albumin, mouse IgG, surfactant, sodium azide (< 0.1%), and preservatives. Stable at 2 - 8°C until the expiration date on the pack label, or 41 days on board.

C. ADVIA Centaur Multi-Diluent 2 Ancillary Reagent ReadyPack
   10.0 ml goat serum with sodium azide (0.1%) and preservatives. Stable at 2 - 8°C until the expiration date on the pack label, or 28 consecutive days after accessing reagent.

D. ADVIA Centaur Wash 1
2500 mL phosphate buffered saline with sodium azide (< 0.1%) and surfactant
Stable at 2 - 25°C until the expiration date on the vial or 14 days onboard.

1. Precautions

a. Sodium azide can react with copper and lead plumbing to form explosive metal azides. On disposal, flush reagents with a large volume of water to prevent the buildup of azides, if disposal into a drain is in compliance with federal, state, and local requirements.

b. **CAUTION! Potential biohazard**: Some components of this product contain human source material. No known test method can offer complete assurance that products derived from human blood will not transmit infectious agents. All products manufactured using human source material should be handled as potentially infectious. Handle this product according to established good laboratory practices and universal precautions.

The negative control has been assayed by FDA-approved methods and found nonreactive for HbsAg, anti-HCV, and anti-HIV1/2. The positive control and calibrators have been assayed by FDA-approved methods and found to be nonreactive for hepatitis B virus and antibody to HIV-1/2. The positive control and calibrators contain human plasma that is reactive for anti-HAV IgM. The units were treated with a BPL-UV inactivation procedure, however, all products manufactured using human source material should be handled as potentially infectious. The ancillary Well Reagent contains HAV virus inactivated with formalin.

c. Do not use kit components beyond expiration date

d. Safety Data sheets (MSDS/SDS) are available on www.siemens.com/diagnostics.

2. Loading Reagents

a. Ensure that the system has sufficient primary and ancillary reagent packs.

b. **CAUTION:** Mix all primary reagent packs by hand before loading them onto the system. Visually inspect the bottom of the reagent pack to ensure that all particles are dispersed and re-suspended.

c. Load the Ready Pack reagent packs in the primary reagent area using the arrows as a placement guide. The system automatically mixes the primary reagent packs to maintain homogenous suspension of the reagents. Load the Ready Pack ancillary reagent packs in the ancillary reagent entry.

d. **CAUTION:** The Low and High Calibrators provided in this kit are matched to the ReadyPack primary reagent pack. Do not mix calibrator lots with different lots of reagent packs.

e. **CAUTION:** The Ancillary Reagent provided in this kit is matched to the Solid Phase and Lite Reagent. Do not mix Ancillary Reagent lots with different lots of Solid Phase and Lite Reagent

f. **NOTE:** The Ancillary Reagent pack contains more volume than required to perform 100 tests. Since the Ancillary Reagent is matched to the Lite Reagent, Solid Phase,

and Ancillary Well Reagent in the ReadyPack primary reagent pack, discard the Ancillary Reagent pack when the ReadyPack primary reagent pack is discarded. Do not use beyond the onboard stability.

3. **Onboard stability**
   a. The ADVIA Centaur HAV IgM assay has an onboard stability of 41 days.
   b. Discard the primary and ancillary reagent packs at the end of the onboard stability interval.
   c. Do not use reagents beyond the expiration date.

VI. Instrumentation/Equipment

The ADVIA CENTAUR XPT system is an automated, immunoassay analyzer that offers optimal productivity and efficiency. No-pause reloading of reagents, samples, and supplies means that the system is always ready to process samples. All assays use direct chemiluminescent technology. Chemiluminescence is a chemical reaction that emits energy in the form of light. When used in combination with immunoassay technology, the light produced by the reaction indicates the amount of analyte in the sample. Direct chemiluminescent reactions directly measure the light energy without the use of added steps or amplifying molecules. The ADVIA Centaur assays use acridinium ester as the chemiluminescent label, since it does not require the addition of a catalyst or substrate.

When the sample start key is pressed, the barcode labels on the sample cups are read, sample is aspirated, reagent is dispensed, and the assay process begins. Particles are magnetically separated in the cuvette incubation ring. The addition of hydroxyl groups to complete the flash reaction is accomplished by the addition of Reagent 1 & 2; Acid and Base. The chemiluminescent reaction occurs in the luminometer. The photomultiplier tube measures the chemical light reaction that takes place.

There is one (1) main system operation key on the ACS:CENTAUR, the "**Sample Start button**". Pressing this key performs the following actions:

1. Homes the subsystems.
2. The system starts specimen sampling.
3. If the start button is pressed while the instrument is running, it stops sampling additional specimens, however it continues to process the specimens in the incubation ring.

VII. Additional Equipment and Supplies

Reagent Water
Sample cups / tubes
Cuvettes
Sample tips
Reagent 1 (0.5% H_2O_2; 0.1N HNO_3)
Reagent 2 (less than 0.25N. Sodium Hydroxide and surfactant)

ACS:CENTAUR Cleaning Solution
ACS:CENTAUR primary and ancillary reagents.

VIII. Calibration

The ADVIA Centaur system uses a Master Curve and a two-point operator initiated calibration to calibrate assays. The Master Curve is established as part of the manufacturing process for each assay lot number.

The ADVIA Centaur HAV IgM assay requires a Master Curve calibration when using a new lot number of Lite Reagent, Solid Phase, and Ancillary Reagent. For each new lot number, use the barcode reader to enter the Master Curve values on the system. The Master Curve Card contains the Master Curve values. Refer to the system operating instructions for more information.

A two-point calibration must be performed at regular, assay specific intervals. Replicates for two calibrators of known value are processed. If the calibrators meet defined validity criteria, the system is adjusted. Refer to the Centaur Operating Procedures for calibration procedure.

A. Calibration Frequency

Two-point calibration of the HAV IgM assay is required:

1. every 28 days
2. when changing lot numbers of primary reagent packs
3. when replacing system components
4. when QC results are unacceptable

B. Calibration Material

Advia Centaur HAV IgM Calibrators
2.0 mL/vial processed human plasma positive for IgM antibodies to HAV, with preservatives. Stable at 2 - 8°C until the expiration date on the vial or 8 hours onboard.

The HAV IgM assay is calibrated with the HAV IgM Calibrators, Low and High, provided with each kit. **The calibrators provided in this kit are matched to the ReadyPack primary reagent pack.**

NOTE: Calibrator barcode labels are lot number specific. Do not use barcode labels from one lot of calibrators with any other lot of calibrators.

Use the ADVIA Centaur HAV IgM Calibrator barcode labels to identify the Low and High Calibrator sample cups when performing the ADVIA Centaur HAV IgM assay. Place the barcode label on the sample cup so that the readable characters on the side of the label are vertical on the sample cup.

C. Performing a Calibration

Each lot of calibrators contains a Calibrator Assigned Value card to facilitate entering the calibration values on the system. Enter the values using the barcode scanner or the keyboard. For detailed information about entering calibrator values, refer to the system operating instructions or to the online help system.

NOTE: This procedure uses calibrator volumes sufficient to measure each calibrator in duplicate.

1. Schedule the calibrators to the worklist.
2. Label two sample cups with calibrator barcode labels: one for the low and another for the high.

NOTE: Each drop from the calibrator vial is approximately 50 uL.

3. Gently mix the Low and High Calibrators and dispense at least 4 to 5 drops into the appropriate sample cups.
4. Load the sample cups in a rack.
5. Place the rack in the sample entry queue.
6. Ensure that the assay reagents are loaded.
7. Start the entry queue, if required.

NOTE: Dispose of any calibrator remaining in the sample cups after 8 hours. Do not refill sample cups when the contents are depleted; if required, dispense fresh calibrators.

Calibrations are considered valid when:

a. Ratio values for low and high calibrators are within acceptable limits.
b. Quality control performed after calibration meets criteria for acceptability.

IX. Quality Control

A. HAV IgM Controls:

1. Negative Control
   Viroclear, Bio-Rad Laboratories, Inc., Hercules, CA
   Viroclear is designed to be non-reactive/neg when analyzed in the same manner as unknown specimens.
2. Positive control:
   Virotrol 3, unassayed, Bio-Rad Laboratories, Inc., Hercules, CA
   Virotrol 3 is designed to be reactive/pos when analyzed in the same manner as unknown specimens.

B. Preparation/handling

1. Store HAVM QC material at 2 to 8°C. To prevent leakage into caps, bottles should be stored upright. Cap bottles tightly while in storage. Viroclear and Virotrol 3 have a 18 month shelf life at 2-8º C and a 60 day open-vial stability at 2-8ºC.
2. Mix by gentle inversion prior to dispensing. Approximately 3 drops (50ul / drop) are required for each level of QC.
3. Avoid microbial contamination when opening and dispensing aliquots from bottles.

4. Do not use controls beyond the expiration date.

C. Frequency

Both levels are run once each day that patient samples are analyzed.

D. Acceptability Criteria

Quality control results are reported numerically in the LIS using accession numbers associated with each specific material.

Acceptability of QC is determined by the lab internal QC policy. Corrective action for out- of-control QC is outlined in the QC policy and actions taken must be documented in the LIS system. No patient results may be released until QC results are acceptable.

X. Procedure

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A. Prepare the sample container for each sample, ensuring that a barcode label is affixed.
B. Use the appropriately coded sample racks for the type of sample tube to be used:
   1. Position 1 – aliquot tube (blue screw cap)
   2. Position 2 – primary sample tube
   3. Position 3 – sample cup-Siemens

   CAUTION: Do not load more than one size of sample container in each rack. The rack indicator must be positioned at the correct setting for the size of the sample container.
C. Load each sample tube into a rack, ensuring that the barcode is visible through the slot in the rack.
D. Place the rack(s) in the entry queue.
E. Press 'START' **only** if the system is not currently 'In Process'. The analyzer will read the barcode label and run the appropriate tests via the Cerner interface.
F. For the HAV IgM assay, the system automatically performs the following steps:
   1. dispenses 20 uL of sample and 180 ul of Multi-Diluent 2 into a cuvette
   2. aspirates 60 ul of diluted sample and dispenses it into a cuvette
   3. dispenses 150 uL of Ancillary Reagent and incubates for 6 minutes at 37°C.
   4. dispenses 150 uL of Solid Phase and incubates for 18 minutes at 37°C.
   5. separates the Solid Phase from the mixture and aspirates the unbound reagent.
   6. washes the cuvette with Wash 1.The relative light units (RLUs) detected by the ADVIA Centaur System are used to calculate the Signal-to-Cutoff (S/CO) Value from the Master Curve. A result of reactive or nonreactive is determined according to the S/CO Value established with the calibrators.

XI. Interpretation of Results

Indicator tests are generated by the Centralink software, which indicates the instrument test result, the test sequence, and the individual test result. Whenever an instrument test result

requires a retest, the system automatically generates an associated indicator test. The Aptio will receive an order from Centalink, and deliver the sample to the Cenatur for additional testing. The Aptio holds the sample in the "Infectious Disease Park" lane until the hepatitis testing is complete.

Interpretive tests are generated by the Centralink software to show the interpretive value of the instrument test result as recommended by the assay-specific instructions for use. Each interpretive test is designated by the suffix_INTR appended tp the test name. The possible results for interpretive tests are:

Non-Reactive (NR)
Reactive (R)
Equivocal (EQ)

For detailed information about how the system calculates results, refer to the system operating instructions or to the online help system.

The system reports HAV IgM results in S/CO Values and as reactive (positive), non-reactive (negative), or equivocal (needing retest). Values above the cutoff of the assay are not indicative of the antibody level present in the sample. Sample results are invalid and must be repeated if the controls are out of range.

A. Non-reactive

Samples with a calculated value of less than 0.80 S/CO Value are considered non-reactive for IgM antibodies to hepatitis A virus.

B. Reactive

Samples with a calculated value greater than or equal to 1.20 S/CO Value is considered reactive for IgM antibodies to hepatitis A virus.

C. Equivocal or Retest Zone

Samples with a calculated value greater than or equal to 0.80 S/CO Value and less than 1.20 S/CO Value are considered equivocal and must be repeated. The test must be repeated in duplicate and the results reported based on the repeat results. If the results are still equivocal after repeat testing, report as 'Equivocal' and footnote the following " Suggest repeat test using a new specimen".

The cutoff for the ADVIA Centaur HAV IgM assay was verified based on results of Receiver-Operator characteristics (ROC) Curve [10] and clinical agreement generated from clinical studies.

CAUTION: Heparin samples have been shown to increase the S/CO Values in some HAV IgM reactive samples by up to 14% relative to serum. Results falling near the cutoff should be interpreted with caution, or repeated using serum or EDTA plasma.

XII. Reporting Results

A. Verify the results in the LIS according to the 'Interpretation of Results' section.

B. Report REACTIVE Hepatitis A Antibody test results to the following:

1. Peoria County Health Department via fax.
2. For in-patients, to MMCI infection control

XIII. Limitations

A. The ADVIA Centaur HAV IgM assay is limited to the detection of IgM antibodies to hepatitis A virus in human serum or plasma (EDTA, Sodium heparin, and Lithium heparin).
B. The results from this or any other diagnostic kit should be used and interpreted only in the context of the overall clinical picture. A negative test result does not exclude the possibility of exposure to hepatitis A virus.
C. The ADVIA Centaur HAV IgM assay can be used to determine if a patient has or recently had an acute or asymptomatic hepatitis A infection. This test does not measure anti-HAV IgG and therefore cannot be used to determine a patient's immune status to hepatitis A.
D. The calculated values for hepatitis A in a given specimen as determined by assays from different manufacturers can vary due to differences in assay methods and reagent specificity. The results reported by the laboratory to the physician must include the identity of the assay used. Values obtained with different assay methods cannot be used interchangeably.
E. Assay performance characteristics have not been established for immunocompromised, immunosuppressed, infants, children under the age of two, or adolescent patients.
F. The performance of the ADVIA Centaur HAV IgM assay has not been established with cord blood, neonatal specimens, cadaver specimens, heat-inactivated specimens, or body fluids other than serum or plasma, such as saliva, urine, amniotic fluid, or pleural fluid.
G. Do not use specimens with obvious microbial contamination.
H. Heterophilic antibodies in human serum can react with reagent immunoglobulins, interfering with *in vitro* immunoassays. Patients routinely exposed to animals or to animal serum
I. products can be prone to this interference and anomalous values may be observed. Additional information may be required for diagnosis.
J. In patients receiving therapy with high doses of biotin (i.e. > 5 mg/day), no sample should be taken until at least 8 hours after the last biotin administration.
K. A reactive HAV IgM result does not exclude co-infection by another hepatitis virus.
L. If it is anticipated that the Centaur XP for an extended period of time, samples will be sent out for referral testing to ARUP lab.

For additional information on performance characteristics including cross reactivity, see the product information in the ADVIA Centaur Assay Manual.

IVX. Cross-Reactivity

The ADVIA Centaur HAV IgM assay was evaluated for potential cross reactivity with viral antibodies and disease state specimens. The nonreactive anti-HAV IgM status of each specimen was verified using a comparative anti-HAV IgM assay. The following results were obtained on the ADVIA Centaur HAV IgM assay:

Clinical Category	Number Tested	Nonreactive	Equivocal	Reactive
Hepatitis B Infection (HBV)	2	2	0	0
Hepatitis C Infection (HCV)	10	10	0	0
Epstein-Barr Virus (EBV) IgG	10	9	1	0
Epstein-Barr Virus (EBV) IgM	10	10	0	0
Herpes Simplex Virus (HSV) IgG	10	10	0	0
Herpes Simplex Virus (HSV) IgM	10	10	0	0
Syphilis IgG	10	10	0	0
Human Immunodeficiency Virus (HIV-1/2)	10	10	0	0
Varicella Zoster Virus (VZV)IgG	9	9	0	0
Cytomegalovirus (CMV) IgG	2	2	0	0
Cytomegalovirus (CMV) IgM	3	3	0	0
Toxoplasma IgG	10	10	0	0
Toxoplasma IgM	9	9	0	0
Rubella IgG	10	10	0	0
Multiparity	10	10	0	0
Influenza Vaccine Recipients	6	6	0	0
Rheumatoid Arthritis	9	9	0	0
ANA	5	5	0	0
Systemic Lupus Erythmatosus	2	2	0	0
HAMA	9	9	0	0
Total Samples Tested	157	156	1	0

XV. Interference

The potentially interfering effects of hemoglobin, triglycerides, conjugated bilirubin, unconjugated bilirubin, high protein, and low protein were evaluated using 10 serum samples. Interference testing was determined according to NCCLS Document EP7-P. In addition, a potentially interfering effect of biotin was evaluated using 6 plasma samples spiked with several levels of biotin.

Serum specimens that are . . .	Demonstrate ≤10% change in results up to . . .
hemolyzed	500 mg/dL of hemoglobin
lipemic	3000 mg/dL of triglycerides
icteric	60 mg/dL of conjugated bilirubin
icteric	40 mg/dL of unconjugated bilirubin
proteinemic (high)	12 g/dL of total protein

proteinemic (low)	3.5 g/dL of total protein
Biotin spiked	50 ng.ml of biotin

XVI. References

A. Bayer HealthCare ADVIA Centaur HAV IgM (aHAVM) product insert, Revision C.

B. Bayer Diagnostics ADVIA Centaur Reference Manual, Revision D.

C. Bayer Diagnostics ADVIA Centaur Assay Manual, Revision AT.

D. National Committee for Clinical Laboratory Standards (NCCLS). Clinical Laboratory Procedure Manuals—Third Edition (GP2-A3), 1996.

E. Siemens Centaur, Centaur XP IFU: Document 10629810_EN J, 2014-08.

POLICY CREATION :		
Author:	*Judy Wetzel, CLS*	***April 18, 2005***
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REVISION HISTORY (began tracking 2011)			
Rev	**Description of Change**	**Author**	**Effective Date**
1	Formatting changes, updates for new LIS system, Control clarifications, Acceptability Criteria for QC	R Pavlacic	11/9/11
2	Updated instrumentation from Centaur to Centaur XP	S. Burton	11/01/13
3	Edited reagent section; edited process for prolonged instrument downtime.	M Layette	6/19/13
4	Changed LIS Code due to Sunquest install.	M. Greer	6/8/16
5	Added children under the age of two, changed XP to XPT	A. Gibbs	01/26/17

Reviewed by

Lead	Date	Coordinator/ Manager	Date	Medical Director	Date
		Theresa R Mikolajczyk	11/8/2011	Donald J Fredrick	11/8/2011
		Theresa R King	4/16/2012	Donald J Fredrick	4/18/12
		Stephanie Burton	11/12/13	Robert Omsicke, PhD	12/6/13
		Michael Layette	6/19/14	Robert Omsicke, PhD	6/24/14
M. Greer	6/8/16	Stephanie Burton	6/15/16	L Racca DO	6/15/16
		Cerny Gibbs	1/26/17	L Racca DO	1/27/17