Module 3
When To Test?
When to Submit a Urine Specimen for Testing?

Joseph Boero, MD, CMD
On Behalf of the Wisconsin Healthcare-Associated Infections (HAIs) in Long-Term Care Coalition

Why are you here and What’s the big deal about urine testing?
Thus, we propose to require that the IPCP incorporate preventing and controlling infections and communicable diseases, and an antibiotic stewardship program, which includes both antibiotic use protocols and a system to monitor antibiotic use.

This should reduce unnecessary antibiotic use and the risk to residents from being prescribed an unnecessary antibiotic or an inappropriate antibiotic for an inappropriate time.

... we propose to revise the regulatory description of the infection control program to: include infection prevention, identification, surveillance, and antibiotic stewardship; require each facility to periodically review and update its program; require performance of an analysis of their resident population and facility; designate an infection prevention and control officer(s) (IPCO)

The responsibility and necessary knowledge for an IPCO likely goes well beyond basic infection control training. Therefore, we propose to require that the IPCO be a healthcare professional with specialized training in infection prevention and control beyond their initial professional degree.
II. W. 483.80

“...the IP's primary professional training must be in nursing, medical technology, microbiology, or epidemiology, or other related field and that IPs can be qualified by education, training, experience or certification.”


PLUS..., it's the right thing to do.

20-50% antibiotic use in LTC is inappropriate

50% residents in LTC have asymptomatic bacteriuria

UTI # 1 Reason For Antibiotic Rx
Learning Objectives

Attendees will learn:
1. The concept of asymptomatic bacteriuria and its relationship to high rates of inappropriate antibiotic use in the nursing home
2. How to use the ‘When to Test-Nursing Tool’ as a critical thinking aid in your facility to decrease inappropriate urine testing
3. How to develop a QAPI project in your facility to lower inappropriate urine testing
Wisconsin Healthcare-Associated Infections in LTC Coalition

- UTI Toolkit
  - UTI Prevention
  - UTI Treatment
  - UTI Surveillance

WI HAI in LTC Coalition UTI Toolkit

1 - Overview
2 - How to Prevent
3 - When to Test
4 - When to Treat
5 - How to Treat
6 - Organizational Tools
Module 3 When to Test

- When to Test PowerPoint slide set
- When to Test Urine Nursing Tool
- When to Test Nurse Communication Scripts
- Urinary Tract Infection Spreadsheet

Module 3
When To Test?
When to Submit a Urine Specimen for Testing?

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"Test the urine when there is a reasonable chance of a urinary tract infection being present based on the presence of signs and symptoms localizing to the urinary tract."

Nace, et. al. JAMA 15 (2014) 143-148
What is a UTI?

- There is no gold standard definition of UTI, but several consensus definitions have been suggested and revised over time.
- These definitions differ slightly, but all require the presence of **signs** and **symptoms** localizing to the urinary tract.

Urinary Tract Signs and Symptoms Include*

- Dysuria
- New onset
  - Frequency
  - Urgency, or
  - Incontinence
- Flank pain or tenderness
- Suprapubic pain
- Gross hematuria
- Focal tenderness or swelling of testis, epididymis or prostate
- Recent catheter trauma, obstruction, or purulent drainage around the catheter

*Nace, et al. JAMDA 15 (2014) 133-139

What about Non-Communicative Residents?

- Residents frequently have non-specific geriatric symptoms and are unable to tell us what is bothering them.
- Non-specific symptoms are:
  - Fever alone
  - Functional decline
  - Aggressive behaviors
  - Mental status changes
- Unfortunately, these symptoms are just that: **non-specific**

Nace, et al. JAMDA 15 (2014) 133-139
What about Non-Communicative Residents?

- For residents who cannot reliably self-report symptoms, the presence of; fever, leukocytosis, or hemodynamic instability alone (without signs of infection in a site other than the urinary system) may be adequate to justify initiation of antimicrobial therapy, and therefore testing
- AMDA Choosing Wisely Campaign (See Item 3) (https://www.amda.com/tools/ChoosingWisely_5Things.pdf)

Is a Change in Mental Status, Fatigue, or a Fall a Symptom of a UTI?

- Sometimes, but most commonly NOT
- UTI is less likely without specific urinary symptoms
- Non-specific Geriatric Symptoms, such as change in mental status, fatigue, or a fall may be due to a variety of non-infectious causes including:
  - Constipation, Dehydration
  - Depression, Medication Side Effects
  - Pain, Poor Sleep

Non-specific Geriatric Symptoms May Accompany a UTI but...

Without another localizing urinary symptom or fever or leukocytosis and no other identified source of infection, these non-specific symptoms are unlikely a sign of UTI AND

A urine specimen should NOT be sent
Non-Specific Symptoms in Absence of Urinary Symptoms

• Should be evaluated to determine the correct cause of the symptom or behavior. So, update care plan...
  o Monitor vital signs and symptoms for several days
  o Review meds, bowel pattern, social milieu
  o Encourage fluids if appropriate
  o Perform ongoing assessments
  o Watch closely for progression of symptoms or change in clinical status
  o Consider blood work
• Wait and watch and re-evaluate... Notify provider as indicated

Non-Specific Symptoms in Absence of Urinary Symptoms

It is important to consider a range of possible causes for non-specific geriatric symptoms to prevent missing the real diagnosis because....

... Under Normal Condition

• The skin surface is not sterile...
• The mouth is not sterile...
• The colon is not sterile...
• And in many residents the bladder is not sterile
• Up to 50% of LTC residents have bacteria in their urine but no infection is present
Asymptomatic Bacteriuria ≠ UTI

- Asymptomatic bacteriuria is frequently mistaken for a UTI. It is important to understand this to avoid unnecessary testing and the error of inappropriate treatment with antibiotics.
Do Not Test, Do Not Treat
Asymptomatic Bacteriuria

Criteria for urine testing:
- Absent urinary infections otherwise
- Absent urinary infections otherwise
- Absent urinary infections otherwise
- Absent urinary infections otherwise
- Absent urinary infections otherwise
- Absent urinary infections otherwise
- Absent urinary infections otherwise
- Absent urinary infections otherwise

No symptoms of UTI:
- Do not test urine
- Do not treat if a urine test was done
- Be mindful of the possibility of asymptomatic bacteriuria
- Seek other causes

Specific UTI symptoms:
- Test or treat as usual

Urine Characteristics

- Dark concentrated and/or strong smelling urine are NOT specific urinary symptoms suggesting UTI
- Without specific urinary tract signs and symptoms, concentrated urine or strong smelling urine DOES NOT require urine testing

When Symptoms are Absent:

- "Positive" urine dip is meaningless
- "Positive" urinalysis is meaningless
- "Positive" urine culture is just Asymptomatic Bacteriuria

Regardless of symptoms:
- Poor urine collection technique causes false-positive urinalysis
- See unit on proper urine collection technique
In other words...

Don’t think urine first in a resident with a change in condition and no localizing urinary tract signs and symptoms.

How Do We Improve?

Sometimes there are systemic triggers to inappropriate urinalysis testing within systems and policies of the nursing home to include but not limited to standing orders.

It is recommended that all such systemic triggers for inappropriate or automatic urine collection and testing be considered and eliminated.

How Do We Improve?

Know the signs and symptoms of a UTI.

Educate the Line Nursing Staff about the signs and symptoms of UTI.

Develop minimum criteria to collect and test urine.
How Do We Improve?

• Consider use of surveillance criteria* to guide the decision to test urine

• Alternatively, create your own consensus-based criteria** to guide decision to test

• Incorporate your criteria into a QAPI project to improve your rate of appropriate urine testing within your facility


For example, working criteria for sending a sample for urinalysis might consist of something like...

Revised McGeer:
Without Indwelling Catheter

**Clinical (At least one of the following must be met)**

1. Either of the following:
   - Acute dysuria
   - Acute pain, swelling or tenderness of testes, epididymis or prostate

2. If either FEVER or LEUKOCYTOSIS present need to include ONE or more of the following:
   - Acute costovertebral angle pain or tenderness
   - Suprapubic pain
   - Gross hematuria
   - New or marked increase in incontinence
   - New or marked increase in urgency
   - New or marked increase in frequency

**Lab (At least one of the following must be met)**

1. Urine specimen: Positive single culture (≥ 10^5 CFU/mL)

2. Blood culture: Positive single culture (≥ 10^5 CFU/mL)

Fever => 100°F or 2°F over baseline  WBC => 14K or > 6% Bands

Rose Boero, 9/8/2016
### Revised McGeer Resident With Indwelling Catheter

**A1.** Clinical (At least one of the following must be met with no alt. explanation)
- Fever
- Rigors
- New onset hypotension
- New altered mental status
- New acute change in mental status or acute functional decline, with no alternate diagnosis
- New onset suprapubic pain
- New onset costovertebral angle pain or tenderness
- New onset suprapubic pain
- Acute pain, swelling or tenderness of the testes, epididymis or prostate
- Purulent drainage from around the catheter

**A2.** Lab (Must be met)
- Positive urine culture (> 10^5 CFU/ML)

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### Loeb Minimum Criteria

**Without Indwelling Catheter**

- Acute dysuria alone OR
- Fever* plus 1 or more of the symptoms below (new or increased) OR
- If no fever, at least 2 of the symptoms below (new or increased)
- Costovertebral angle tenderness
- Suprapubic Pain
- Gross Hematuria
- Urinary Incontinence
- Urgency
- Frequency

*Fever > 100° or 2.4° F above baseline

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### Loeb Minimum Criteria

**With Indwelling Catheter**

- At least one or more of the symptoms below (new or increased)
  - Fever > 100° or 2.4° F above baseline
  - Costovertebral angle tenderness
  - Rigors (shaking chills)
  - New onset delirium
Fever is from consensus panel based on McGeer I (1991)
Rose Boero, 9/8/2016
Summary – When to Test

• Establish facility criteria for testing urine
• Test the urine only when there are specific urinary tract signs or symptoms
• Perform assessment of facility rate of appropriate testing
• Improve appropriate testing rate to lower the avoidable harm of inappropriate treatment

References


“Clinical Uncertainties in the Approach to Long Term Care Residents With Possible Urinary Tract Infection” Nace, et.al. JAMDA 15 (2014) 133-139

“Treatment of Bacteriuria Without Urinary Signs, Symptoms, or Systemic Infectious Illness (S/S/S)” Drinka. JAMDA 10 (2009) 516-519

References


Wisconsin Healthcare-Associated Infections in LTC Coalition

Nurse Communication Scripts

When To Test - Nursing Tool

Vignettes

Nurse When to Test Tool and Seven Scripts
1. Jimmy Issick
2. Tommy Needalittlehelp
3. Larry Needtonotify
4. Suzie Notsosick
5. Suzi Notsosick (+24 hrs and worse.)
6. Suzi Notsosick (+48 hrs. and no change)
7. Suzi Notsosick (+48 hrs. and returned to baseline)

When to Test Urine - Nursing Tool
RB3  Fever same as surveillance criteria in McGeer 2 (2012)
Rose Boero, 9/8/2016
Box D

Warning Signs

- Fever
- Clear-cut Delirium
  - Altered LOC
  - Disorganized Thinking
  - Psychomotor Retardation
- Rigors (shaking chills)
- Hemodynamic Instability
  - Hypotension
  - Tachycardia

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 SCRIPT 1 - PHYSICIAN COMMUNICATION

Locating Signs and Symptoms with Warning Signs

PHOTO CONTACT NECESSARY

Resident: Jimmy Isick

Provider: Dr. Woosby

Date: 11/7/15 8:00PM

This message is to inform you of a change in condition:

Chief Complaint: Acute onset of dysuria and fever over the last two hours.

Situation: Jimmy has sudden onset of acute dysuria and frequency. Gross hematuria is present with small dots. There is no suprapubic or costovertebral tenderness.

Vitals: Temperature 102.3°F, Pulse 104 palpable and irregular, Respiration 30 and shallow, R/P 150/90, O2Sat on room air is 98%

Sputum: Blood Sugar: 166

Background

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Diagnoses: Dementia, COPD, Type II DM, CHF, Hx of MA with left hemiplegia, MRSA carrier

Recent Antibiotics: Augmentin 500/125 mg tid x 14 days for lower respiratory infection 8/31-9/12

Allergies: Cephalosporins

Anticoagulants, Hypoglycemic, Digestive: None

Code Status: DNR

Resident: Jimmy Isick

Evaluation: He has mildly increased confusion since mid-afternoon today. He has had a functional decline requiring an increase in staff assistance with bed mobility, transfers, and other ADLs. His appetite is diminished and he is slightly dehydrated. In the last 12 hours, GI symptoms are clear. Bowel sounds are present in all quadrants. Abdomen is non-tender with no guarding or distention. His urine is dark colored and has mucous strands.

Appearance: This resident is exhibiting typical urinary tract infection symptoms with dysuria and alarming signs of fever and tachycardia.

Review/Notify: According to our understanding of best practices and our facility protocols, the information is sufficient to indicate an active urinary tract infection. We request an order to obtain a urinalysis and culture. Please advise regarding further treatment.

KH EN
Wisconsin Healthcare-Associated Infections in LTC Coalition

MAY FAX

Resident: Tommy Neddililtehelp
Provider: Dr. Wex

Date: 2/14/2017 3:00PM

This message is to inform you of a change in conditions:

Chief Complaint: Acute onset of dysuria, urgency and frequency starting after lunch today.

Situsi: Tommy is complaining of acute dysuria, urgency and frequency. He has been incontinent three times today which is unusual for him. Urine is clear and amber in color. He has no costovertebral angle tenderness or suprapubic tenderness. He is not otherwise in distress.

Vitals: Temperature 98 (oral), Pulse 78 apical, Respiration 20 and unlabored, B/P 112/68, O2 Sat 94%.

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Resident evaluation: He's had no recent medication changes. He has no change in mental status and is oriented to person, place and time and follows commands. He is independent with ADLs. He's eating and drinking and is on a 1400 cc 24 hr. Fluid restriction and took in 1400 ccs in the last 24 hours. His weight is stable. There is no shortness of breath, chest or abdominal pain and he is not vomiting. Bowel sounds are active in all quadrants.

Appearance: This resident is exhibiting localizing symptoms suggesting the need to obtain a urinalysis.

Review/History: According to our understanding of best practices and our facility protocols, the information is sufficient to indicate an active urinary tract infection. We request permission to obtain a urinalysis, continue to encourage fluids within resident's fluid restriction guidelines and continue to observe. This resident does NOT need an immediate prescription for an antibiotic, but may need further evaluation and treatment. We will update MD with lab results.

CH RN
Wisconsin Healthcare-Associated Infections in LTC Coalition

Locating Urinary S/S (Box B)
- Yes → Warning Signs Present (Box D)
- NO → Consult Provider See Script 1

Non-locating S/S - Non-specific Geriatric S/S (Box C)
- YES → Warning Signs Present (Box D)
- NO → Consult Provider See Script 2

Box C
Non-localizing / Non-Specific Geriatric S/S:
- Behavior Changes
- Fever alone
- Functional Decline
- Mental Status Change
- Falls
- Restlessness
- Fatigue
- “Not Being Her-Himself”

SCRIPT 3 - PHYSICIAN COMMUNICATION
Acute Ill with Non-localizing/Non-specific Geriatric Signs and Symptoms
with Warning Signs and/or Symptoms

PHONE CALL ONLY

Resident: Larry
Provider: Dr. Wesby
Date: 10/21/15 4:06PM

This message is to inform you of a change in condition:
Chief Complaint: Acute confusion with fever beginning at noon today and worsening throughout the day.
Situation: Larry is a 71 y/o male six days post-op cholecystectomy who has a complaint of general discomfort. He has no site specific pain. He says, “I just don’t feel good, I want to go home.” He has had a mental status change of acute confusion with some incontinence but no incontinence and trying to go home. His appetite has been poor and he refused lunch today. He has been continent and independent of bowel and bladder since he arrived and he has no evidence of any localizing urinary symptoms.
SCRIPT 4 - PHYSICIAN COMMUNICATION
No localizing urinary tract S/S no Warning S/S

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MAY 19

Resident: Seul Nottonlak
Provider: Dr. Wesby
Date: 5/21/17 4:30PM

This message is to inform you of a change in condition:

Chief Complaint: Generalized discomfort and mild confusion since lunch today.

Situation: She complains of generalized discomfort. She has had a change in her mental status and is currently exhibiting mild lethargy, mild confusion and a tendency to wander but is able to be restrained if needed. She didn't go to activities this afternoon and her appetite has been poor since this morning. She remained alert. She has had recent change consisting of addition of gabapentin 300 mg bid oral for pain.

Vitals: Temperature 97.2 (oral), Pulse 68 and regular, Respirations 20, BP 120/62, O2 Set on room air is 97%

Finger-stick Blood Sugar: 106

Diagnoses: Compression fractures of vertebral body multiple, osteoporosis, osteoarthritis, GERD, hx of surgery.
Recent antibiotics: None
Allergies: Docusate
Anticoagulants, Hyperglycemic, Digestive: None
Code Status: Full Code

Resident Evaluation: She has not recently fallen. Sungs are clear and there is no chest pain. She has had no change in BMs with last one yesterday and there is no vomiting or diarrhea. There are no localizing urinary symptoms or signs. There are no skin rashes or sores, and no new joint, chest, or abdominal pain. There is no exposure to infectious residents or visitors.

Appearance: This resident is an elderly female with 24-36 hours of complaint of poorly localized general discomfort with mild confusion and poor appetite. She has no warning signs, no localizing urinary signs or symptoms and no signs or symptoms of other focal infection.

Review/Notify: According to our understanding of best practices and our facility protocol, the information is insufficient to indicate an active urinary tract infection. The resident does NOT need an immediate prescription for an antibiotic or urine testing. We are asking for an order for a 24-48 hour period of observation and will call physician with resident change of condition. Please advise.

S/L/DN
Wisconsin Healthcare-Associated Infections in LTC Coalition

**Phone Call Only**

Resident: Sue Nelson
Provider: Dr. Wesley
Date: 10/22/13 8:00PM

This message is to inform you of a change in condition:

**Chief Complaint:** Changing condition during 24 hr. observation period now with tachypnea and hypotension.
**Situation:** She has been on 24 hr. observation since 4:00PM today for increase of mild non-localized pain with poor appetite and mild lethargy. In past four hours she has developed sustained rapid breathing and a drop in her O2 sat while on room air. She has only eaten 10% in the last 24 hrs. with fluid intake of 400s only.
**Vitals:** Temperature 98.8 (Buccal), Pulse 100 and regular, Respiration 34, B/P 120/62, O2 Set on room is 88%. There is no weight change in last three weeks.

**In-patients Blood Sugar: 160**

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**Diagnosis:** Compression fracture of vertebral body-multiple, osteoarthritis, osteoporosis, frailty, GERD, risk of mastectomy.

**Current Medication:** None

**Allergies:** Doxycycline

**Anticoagulants, Hypoglycemic, Diabetic:** None

**Resident Evaluation:** She remains alert but has difficulty focusing and is incontinent for brief periods. There has been no recent exposure to infections residents or visitors. Labs are clear and there is no fever. She had a normal bowel movement last night and there is no vomiting or diarrhea. There is no localizing urinary signs or symptoms, hematuria, abdominal or flank pain. There are no skin rashes or lesions, and no new joint or abdominal pain.

**Appearance:** This resident is an elderly female who developed new tachypnea and hypotension while she was undergoing a period of observation for the complaint of poorly localized general discomfort with mild confusion and poor appetite. She continues to show no signs or symptoms of focal infection and there are no localizing urinary tract signs or symptoms.

**Review/Notify:** According to our understanding of best practices and our facility protocols, the information is insufficient to indicate an active urinary tract infection. The resident does NOT need an immediate prescription for an antibiotic, but may need further evaluation and treatment. We request oxygen therapy and advice for further evaluation and treatment.

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**When to Test Urine - Nursing Tool**

[Diagram showing steps to determine when to test urine for infections in LTC facilities]
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Consult Provider
See Script 4
Observe / Monitor
24-48 hours

Worse

Consult Provider
See Script 5

Improve

No Urine Testing
Necessary
See Script 7

No Change

Consult Provider
See Script 6
Monitor per
Medical Director
Protocol

SCRIPT 6 - PHYSICIAN COMMUNICATION

No Improvement of Non-Urinary, Non-specific Gastrointestinal Symptoms after 24-48 hr.*

Wisconsin Healthcare - Associated Infections in LTC Coalition

Resident: Sue Notosick
Provider: Dr. Welby

Date: 10/03/15 4:00 PM

This message is to inform you of a change in condition:

Chief Complaint: No improvement of pain, mild confusion and poor appetite after a 48 hr. period of observation that began on 10/21 at 4:00 PM.

Condition: She has been on 24-48 hr. observation for the complaint of generalized discomfort and mild confusion with recent addition of aseptic trauma to her medication regimen. Her symptoms have continued without improvement in spite of using pre-antimicrobials and encouraging oral intake. She has had no worsening pain, no new significant complaints or signs or symptoms of other infection, other illness, and no localized urinary signs or symptoms.

Vitals: Temperature 97.2 (oral), Pulse 68 and regular, Respiration 20, BP 120/81, O2 Sat on room air 97%.

Resident evaluations: She was observed and treated with pre-antimicrobials according to standing orders. She continues with same complaints without increase of pain or confusion. She is alert and oriented x3. She denies headache, dyspnea, chest pain, abdominal pain or diarrhea. She had a bowel movement yesterday consistent with normal consistency. There is no rash or sores. Lungs clear.

Appearance: She has been on 48 hr. observation for change of condition consisting of mild increase of diffuse pain and mild confusion. She is better. She has no localized urinary tract signs or symptoms or other S/S of local infection.

Review/Notes: According to our understanding of best practices and our facility protocols, the information is insufficient to indicate an active urinary tract infection. The resident does NOT need an immediate prescription for an antibiotic, but may need additional observation and medical evaluation. Additionally, we request a physician’s review of next scheduled rounds tomorrow or as soon as possible. Please advise.

E11 EN
**Wisconsin Healthcare-Associated Infections in LTC Coalition**

**SCRIPT 7 - PHYSICIAN COMMUNICATION**

Resolution of non-urinary, non-specific geriatric signs and symptoms after 24-48 hrs.

**NOTIFY PER PHYSICIAN PREFERENCE**

**Resident:** Sadie Notosick  
**Provider:** Dr. Wesby

**Date:** 10/23/15 8:00PM

**This message is to provide you with an update following 24 hr. skilled nurse observation for increased pain and mild confusion beginning 10/21/15 at 4:00PM.**

**Chief Complaint:** Symptoms resolved. Resident condition returns to baseline.

**Situation:** She has been on 24-48 hrs. of skilled nursing observation for the complaint of generalized discomfort and mild confusion. Her mental status, intake and activity have returned to baseline. She says her pain is improved with scheduled acetaminophen within limits of her current orders. She had no new significant complaints or signs or symptoms of focal infection. She has continued on her regular medication regimen including new gabapentin order from a week ago.

**Wisconsin Healthcare-Associated Infections in LTC Coalition**

**Vitals:** Temperature 97.2°F (oral), Pulse 68 and regular, Respirations 20, B/P 120/80, O2 Sat on room air is 97%.

**Finger-stick Blood Sugar:** Not done

**Background:**

**Diagnosis:** Compression fractures vertebral body multiple, osteoarthritis, osteopenia, GERD, N/U mastectomy

**Recent antibiotics:** None

**Allergies:** Doxycycline

**Antidepressants, Hypoglycemic, Diuretics:** None

**Code Status:** Full Code

**Appearance:** She had no new significant complaints or signs or symptoms of localized infection or other illness. She was observed and treated according to standing orders. She has resumed normal activity and intake.

**Review/Schedule:** We have provided skilled observation for 48 hrs. According to our understanding of best practices and our facility protocols, the information is insufficient to indicate an active urinary tract infection. The resident does NOT need an immediate prescription for an antibiotic. We request that her baseline care plan be renewed.

**HFN**
### Annual Urinalysis PMNH

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Thank You

Dr.boero.pfmc@gmail.com