

The Weill Cornell Hip Pain Appropriate Use Criteria (AUC) addresses twenty-two clinical conditions common to patients presenting with Hip Pain and makes recommendations to optimize diagnostic effectiveness.

	Common Clinical Conditions – Hip Pain
0	Not Hip Pain
1	Acetabular Labral Tear Known or Suspected
2	Arthroplasty Loosening Known or Suspected - Status Post
3	Avascular Necrosis Known or Suspected
4	Cancer (Neoplasm) Known or Suspected
5	Hematoma
6	Hernia Known or Suspected
7	Heterotopic Bone Known or Suspected
8	Hip Pain without Trauma
9	Iliopsoas Subluxation
10	Impingement - Acetabular
11	Infection Known or Suspected
12	Inflammatory Arthritis Known or Suspected
13	Lateral Femoral Cutaneous Nerve Compression
14	Mass Known or Suspected
15	Muscle Tendon Disorder
16	Osteoarthritis Known or Suspected
17	Piriformis Syndrome - Sciatic Nerve Irritation
18	Post-Fracture Healing Assessment
19	Preoperative Planning or Known Hip Fracture
20	Soft Tissue Injury
21	Tendon Injury Repair Hip - Status Post
22	Traumatic Hip Pain - Known or Suspected Fracture

### The Hip Pain AUC is activated when a user orders one of the following fourteen Advanced Imaging Procedures.

	Advanced Imaging Procedures
1	CT Arthrogram Hip
2	CT Hip without Contrast
3	CT Hip with Contrast
4	CT Hip with and without contrast
5	MR Arthrogram Hip
6	MR Hip without Contrast
7	MR Hip with Contrast
8	MR Hip with and without Contrast
9	CT Pelvis without Contrast
10	CT Pelvis with Contrast
11	CT Pelvis with and without Contrast
12	MR Pelvis without Contrast
13	MR Pelvis with Contrast
14	MR Pelvis with and without Contrast



## **Hip Pain Appropriate Use Criteria**<sup>©</sup>

Revised December 2020

The Hip Pain AUC recommends from the following ten Imaging Procedures based on the clinical condition.

	Recommended Imaging Procedures
1	CT Arthrogram Hip
2	CT Hip without Contrast
3	CT Hip with Contrast
4	MR Arthrogram Hip
5	MR Hip without Contrast
6	MR Hip with and without Contrast
7	MR Lumbosacral Plexus without Contrast
8	NM Bone Scan
9	XR Hip
10	US Hip

## **Logic Tables**

The following Clinical Condition Logic Tables provide the Hip Pain AUC logic for each clinical condition. The logic includes priors, contraindications, metal reduction and advanced US techniques where applicable.

## Key

Value	Score
Blank	No Score Assigned
0	AUC Not Applicable
1	Inappropriate
2	Contact Radiology
3	Appropriate
4	Appropriate Preferred

## **Advice Text**

The Advice Text provided in each condition is for Ordering Provider information and education purposes.

## **Hip Pain Appropriate Use Criteria®**

Revised December 2020

### Condition 0 - Not Hip Pain AUC Logic Activated, AUC Not Applicable

Condition	CT Arth	CT w	CT wo	CT wwo	MRw	MRwo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	Reference
Not Hip Pain	0	0	0	0	0	0	0	0					0	0	0	0	0	0	1

#### **Condition 0 - Advice Text**

Not covered by guidelines.

#### Condition 1 - Acetabular Labral Tear Known or Suspected

Condition	Contraindications	CT Hip Arth	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR Hip wwo	MR Arth Hip	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Acetabular Labral Tear		1	1	1	1	1	4	1	4					1	1	1	1	1	1	LBP	а
Acetabular Labral Tear	GAD	1	1	1	1	1	4	1	1					1	1	1	1	1	1	,4,5,7, LE	b
Acetabular Labral Tear	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2	1,	С

### **Condition 1 - Advice Text**

а	MR Hip without contrast and MR arthrography of the hip preferred for suspected acetabular labral tear.

b MR Hip without contrast preferred for suspected acetabular labral tear in patients when gadolinium is contraindicated.

c Consult radiology. Patients with suspected acetabular labral tear with contraindication to MR should be reviewed with a radiologist.

## Condition 2 - Arthroplasty Loosening Known or Suspected - Status Post

Condition	Priors	Metal Reduction?	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR Hip wwo	MR Arth Hip	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Arthroplasty	XR	N		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1		а
Loosening																							
Arthroplasty	XR	Υ		1	1	4	1	1	4	1	1					1	1	1	1	1	1		b
Loosening																						βP	
Arthroplasty	XR	Υ	CT	1	1	1	1	1	4	1	1					1	1	1	1	1	1	, LBP	С
Loosening																						10,	
Arthroplasty	XR	N	MR	1	1	4	1	1	1	1	1					1	1	1	1	1	1	6	d
Loosening																							
Arthroplasty	XR	N	СТ	2	2	2	2	2	2	2	2					2	2	2	2	2	2		e
Loosening			MR																				

### **Condition 2 - Advice Text**

а	Hip x-ray preferred for initial evaluation of patients s/p hip arthroplasty with suspected loosening.
b	CT Hip without contrast preferred for hip s/p hip arthroplasty with suspected loosening. MR Hip without contrast also appropriate (if metal reduction techniques are available).
С	MR Hip without contrast preferred for hip pain s/p hip arthroplasty with suspected loosening when CT is contraindicated.
d	CT Hip without contrast preferred for hip s/p hip arthroplasty with suspected loosening where MR is contraindicated (or metal reduction not available).
е	Consult radiology. Cases of hip pain post arthroplasty with suspected loosening where CT and MR are contraindicated should be reviewed with a radiologist.

## Condition 3 – Avascular Necrosis Known or Suspected

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR Hip wwo	MR Arth Hip	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Avascular Necrosis	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	1, 11	а
Avascular Necrosis	XR		1	1	1	1	1	4	1	1					1	1	1	1	1	1	1	b
Avascular Necrosis	XR	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2	1	С

#### **Condition 3 - Advice Text**

а	Hip x-rays recommended for the initial evaluation of avascular necrosis.
b	MR Hip without contrast preferred for avascular necrosis of hip.
С	Consult radiology. Patients with avascular necrosis of the hip with contraindication to MR should be reviewed
	with a radiologist.

## Condition 4 - Cancer Known or Suspected

Condition	Priors	Contraindications	a:L 4tt V	: - -	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Cancer	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	1	а
Cancer	XR		1	1	3	1	1	3	4	1		3			1	1	1	1	1	1		b
Cancer	XR	GAD	1	3	3	1	1	4	1	1		3			1	1	1	1	1	1		С
Cancer	XR	IOD	1	1	3	1	1	3	4	1		3			1	1	1	1	1	1		d
Cancer	XR	MR	1	4	4	1	1	1	1	1		4			1	1	1	1	1	1		е
Cancer	XR	CT	1	1	1	1	1	3	4	1		3			1	1	1	1	1	1	LBP	f
Cancer	XR	GAD IOD	1	1	3	1	1	4	1	1		3			1	1	1	1	1	1	2 ,3, LE	g
Cancer	XR	GAD CT	1	1	1	1	1	4	1	1		3			1	1	1	1	1	1	1,	h
Cancer	XR	MR IOD	1	1	4	1	1	1	1	1		3			1	1	1	1	1	1		i
Cancer	XR	MR CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2		j

## **Condition 4 - Advice Text**

а	Hip x-ray recommended for the initial evaluation of neoplasm or infection (known or suspected).
b	MR Hip with and without contrast preferred for neoplasm or infection (known or suspected).
С	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium is
	contraindicated.
d	MR Hip with and without contrast preferred for the evaluation of neoplasm or infection (known or suspected)
	when iodinated contrast is contraindicated.
е	CT Hip without contrast or Nuclear Medicine Bone Scan preferred for evaluation of neoplasm or infection (known
	or suspected) when MR is contraindicated.
f	MR Hip without contrast preferred for neoplasm or infection (known or suspected) CT is contraindicated.
g	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium and
	iodinated contrast are contraindicated.
h	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium and CT are
	contraindicated.
i	CT Hip without contrast preferred neoplasm or infection (known or suspected) when MR and iodinated contrast
	are contraindicated.
j	Consult radiology. Cases where patients have hip pain, neoplasm, or infection (known or suspected) and multiple
	contraindications to imaging should be reviewed with a radiologist.

## Condition 5 – Hematoma Known or Suspected

Condition	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Hematoma		1	1	4	1	1	4	1	1				4	1	1	1	1	1	1		а
Hematoma	MR	1	1	4	1	1	1	1	1				4	1	1	1	1	1	1		b
Hematoma	СТ	1	1	1	1	1	4	1	1				4	1	1	1	1	1	1	LBP	С
Hematoma	MR CT	1	1	1	1	1	1	1	1				4	1	1	1	1	1	1		d

#### **Condition 5 - Advice Text**

а	CT Hip without contrast, MR Hip without contrast, or US Hip preferred for hip hematoma.
b	CT Hip without contrast or US Hip preferred for hip hematoma when MR is contraindicated.
С	MR Hip without contrast or US Hip preferred for hip hematoma when CT is contraindicated.
d	US Hip preferred for hip hematoma when MR and CT are contraindicated.

## Condition 6 – Hernia Known or Suspected

Condition	US Expertise?	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Hernia	Υ		1	1	1	1	1	4	1	1				3	1	1	1	1	1	1	~	а
Hernia	N		1	1	1	1	1	4	1	1					1	1	1	1	1	1	8, 7,	b
Hernia	Υ	MR	1	1	1	1	1	1	1	1				4	1	1	1	1	1	1	, 6	С
Hernia	N	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2	1	d

### **Condition 6 - Advice Text**

а	MR Hip without contrast or ultrasound (with appropriate expertise) of the hip preferred for soft tissue
	injuries/hernias/iliopsoas subluxation.
b	MR Hip without contrast preferred for hip soft tissue injuries/hernias/iliopsoas subluxation.
С	US Hip preferred for hip soft tissue injuries/hernia/iliopsoas subluxation when MR is contraindicated.
C	Consult radiology. Hip soft tissue injuries, hernias, or iliopsoas subluxation with contraindication to MR should be
	discussed with radiology.

## Condition 7 – Heterotopic Bone Known or Suspected

Condition	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Heterotopic		1	1	4	1	1	4	1	1					1	1	1	1	1	1		a
Bone																					
Heterotopic	MR	1	1	4	1	1	1	1	1					1	1	1	1	1	1		b
Bone																				15	
Heterotopic	CT	1	1	1	1	1	4	1	1					1	1	1	1	1	1	1	С
Bone																					
Heterotopic	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2		d
Bone	CT																				

#### **Condition 7 - Advice Text**

а	CT Hip without contrast or MR Hip without contrast preferred for hip pain and heterotopic bone.
b	CT Hip without contrast preferred for hip pain and heterotopic bone when MR is contraindicated.
С	MR Hip without contrast preferred for hip pain with heterotopic bone when CT is contraindicated.
d	Consult radiology. Patients with hip pain with heterotopic bone and multiple contraindications to imaging should be reviewed with a radiologist

## **Condition 8 – Hip Pain without Trauma**

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR Hip wwo	MR Arth Hip	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References
Hip Pain wo Trauma	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	1, 11
Hip Pain wo Trauma	XR		1	1	1	1	1	4	1	1					1	1	1	1	1	1	1
Hip Pain wo Trauma	XR	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2	1

#### **Condition 8 - Advice Text**

а	X-ray recommended for initial evaluation for hip pain without trauma.
b	MR Hip without contrast preferred for atraumatic hip pain with no high-risk features.
С	Consult radiology. Cases of atraumatic hip pain with no high-risk features when MR is contraindicated should be
	reviewed with a radiologist.



## **Condition 9 – Iliopsoas Subluxation**

Condition	US Expertise?	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Iliopsoas	Yes		1	1	1	1	1	4	1	1				3	1	1	1	1	1	1		а
Subluxation																						
Iliopsoas	No		1	1	1	1	1	4	1	1					1	1	1	1	1	1	∞	b
Subluxation																					7,	
Iliopsoas	Yes	MR	1	1	1	1	1	1	1	1				4	1	1	1	1	1	1	, 6,	С
Subluxation																					1,	
Iliopsoas	No	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2		d
Subluxation																						

### **Condition 9 - Advice Text**

а	MR Hip without contrast or ultrasound (with appropriate expertise) of the hip preferred for soft tissue
	injuries/hernias/iliopsoas subluxation.
b	MR Hip without contrast preferred for hip soft tissue injuries/hernias/iliopsoas subluxation.
С	US Hip preferred for hip soft tissue injuries/hernia/iliopsoas subluxation when MR is contraindicated.
d	Consult radiology. Hip soft tissue injuries, hernias, or iliopsoas subluxation with contraindication to MR should be
	discussed with radiology.

## **Condition 10 – Acetabular Impingement**

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Acetabular Impingement	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	1	а
Acetabular Impingement	XR		1	1	3	1	1	4	1	4					1	1	1	1	1	1	1, 17 ,1 8, 19	b
Acetabular Impingement	XR	MR	4	1	4	1	1	1	1	1					1	1	1	1	1	1	1, 18, 19	С
Acetabular Impingement	XR	СТ	1	1	1	1	1	4	1	4					1	1	1	1	1	1	1, 17, 18, 19	d
Acetabular Impingement	XR	MR, CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2	LBP	е

### **Condition 10 - Advice Text**

а	Hip x-rays recommended for initial evaluation of hip impingement.
b	MR Hip without contrast preferred for hip impingement.
С	CT Hip without contrast preferred for hip impingement when MR is contraindicated.
d	MR Hip without contrast preferred for hip impingement when CT is contraindicated
е	Consult radiology. Cases of hip impingement with multiple contraindications to imaging should be reviewed with
	a radiologist.

## **Condition 11 – Infection Known or Suspected**

Condition	Prior Studies	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Infection	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	1	а
Infection	XR		1	1	3	1	1	3	4	1		S			1	1	1	1	1	1		b
Infection	XR	GAD	1	3	3	1	1	4	1	1		3			1	1	1	1	1	1		С
Infection	XR	IOD	1	1	3	1	1	3	4	1		3			1	1	1	1	1	1		d
Infection	XR	MR	1	4	4	1	1	1	1	1		4			1	1	1	1	1	1		е
Infection	XR	СТ	1	1	1	1	1	3	4	1		3			1	1	1	1	1	1	LBP	f
Infection	XR	GAD IOD	1	1	3	1	1	4	1	1		ß			1	1	1	1	1	1	2, 3, LI	g
Infection	XR	GAD CT	1	1	1	1	1	4	1	1		ß			1	1	1	1	1	1	1,	h
Infection	XR	MR IOD	1	1	4	1	1	1	1	1		3			1	1	1	1	1	1		i
Infection	XR	MR CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2		j

#### **Condition 11 - Advice Text**

а	Hip x-ray recommended for the initial evaluation of neoplasm or infection (known or suspected).
b	MR Hip with and without contrast preferred for neoplasm or infection (known or suspected).
С	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium is
	contraindicated.
d	MR Hip with and without contrast preferred for the evaluation of neoplasm or infection (known or suspected)
	when iodinated contrast is contraindicated.
е	CT Hip without contrast or Nuclear Medicine Bone Scan preferred for evaluation of neoplasm or infection (known
	or suspected) when MR is contraindicated.
f	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium and
	iodinated contrast are contraindicated.
g	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium and
	iodinated contrast are contraindicated.
h	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium and CT are
	contraindicated.
i	CT Hip without contrast preferred neoplasm or infection (known or suspected) when MR and iodinated contrast
	are contraindicated.
j	Consult radiology. Cases where patients have hip pain, neoplasm, or infection (known or suspected) and multiple
	contraindications to imaging should be reviewed with a radiologist.

## Condition 12 – Inflammatory Arthritis Known or Suspected

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Inflammatory Arthritis	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	14	а
Inflammatory Arthritis	XR		1	1	1	1	1	4	3	1					1	1	1	1	1	1	,	b
Inflammatory Arthritis	XR	GAD	1	1	1	1	1	4	1	1					1	1	1	1	1	1	14, LBP	С
Inflammatory Arthritis	XR	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2	П	d

#### **Condition 12 - Advice Text**

а	Hip x-rays are recommended for the initial evaluation for an inflammatory arthritis of the hip.
b	MR Hip without contrast preferred for hip pain and inflammatory arthritis (known or suspected).
С	MR Hip without contrast preferred for hip pain and inflammatory arthritis (known or suspected).
d	Consult radiology. Cases of hip pain with inflammatory arthritis when MR is contraindicated should be reviewed
	with a radiologist.

## **Condition 13 – Lateral Femoral Cutaneous Nerve Compression**

Condition	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Lateral Femoral Cutaneous		1	1	1	1	1	1	1	1	4				1	1	1	1	1	1	12	а
Lateral Femoral Cutaneous	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2	LBP	b

#### **Condition 13 - Advice Text**

Consult radiology. Cases of hip pain with suspected lumbar plexopathy when MR is contraindicated should be reviewed with a radiologist.

## Condition 14 - Mass Known or Suspected

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Mass	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	T	а
Mass	XR		1	1	3	1	1	3	4	1		3			1	1	1	1	1	1		b
Mass	XR	GAD	1	3	3	1	1	3	4	1		3			1	1	1	1	1	1		С
Mass	XR	IOD	1	1	3	1	1	4	1	1		3			1	1	1	1	1	1		d
Mass	XR	MR	1	4	4	1	1	1	1	1		4			1	1	1	1	1	1		е
Mass	XR	СТ	1	1	1	1	1	3	4	1		3			1	1	1	1	1	1	LBP	f
Mass	XR	GAD IOD	1	1	3	1	1	4	1	1		3			1	1	1	1	1	1	2, 3, L	g
Mass	XR	GAD CT	1	1	1	1	1	4	1	1		3			1	1	1	1	1	1	1,	h
Mass	XR	MR IOD	1	1	4	1	1	1	1	1		3			1	1	1	1	1	1		i
Mass	XR	MR CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2		j

#### **Condition 14 - Advice Text**

а	Hip x-ray recommended for the initial evaluation of neoplasm or infection (known or suspected).
b	MR Hip with and without contrast preferred for neoplasm or infection (known or suspected).
С	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium is
	contraindicated.
d	MR Hip with and without contrast preferred for the evaluation of neoplasm or infection (known or suspected)
	when iodinated contrast is contraindicated.
е	CT Hip without contrast or Nuclear Medicine Bone Scan preferred for evaluation of neoplasm or infection (known
	or suspected) when MR is contraindicated.
f	MR Hip without contrast preferred for neoplasm or infection (known or suspected) CT is contraindicated.
g	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium and
	iodinated contrast are contraindicated.
h	MR Hip without contrast preferred for neoplasm or infection (known or suspected) when gadolinium and CT are
	contraindicated.
i	CT Hip without contrast preferred neoplasm or infection (known or suspected) when MR and iodinated contrast
	are contraindicated.
j	Consult radiology. Cases where patients have hip pain, neoplasm, or infection (known or suspected) and multiple
	contraindications to imaging should be reviewed with a radiologist.

## **Condition 15 - Muscle Tendon Disorder**

Condition	US Expertise?	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Muscle Tendon	Υ		1	1	1	1	1	4	1	1				3	1	1	1	1	1	1		а
Disorder																						
Muscle	N		1	1	1	1	1	4	1	1					1	1	1	1	1	1		b
Tendon Disorder																					7,8	
Muscle	Υ	MR	1	1	1	1	1	1	1	1				4	1	1	1	1	1	1	1, 6,	С
Tendon																						
Disorder																						
Muscle	N	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2		d
Tendon																						
Disorder																						

### **Condition 15 - Advice Text**

а	MR Hip without contrast or ultrasound (with appropriate expertise) of the hip preferred for soft tissue
	injuries/hernias/iliopsoas subluxation.
b	MR Hip without contrast preferred for hip soft tissue injuries/hernias/iliopsoas subluxation.
С	US Hip preferred for hip soft tissue injuries/hernia/iliopsoas subluxation when MR is contraindicated.
d	Consult radiology. Hip soft tissue injuries, hernias, or iliopsoas subluxation with contraindication to MR should be
	discussed with radiology.

## Condition 16 - Osteoarthritis Known or Suspected

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Osteoarthritis	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	1	а
Osteoarthritis, Fracture and/or Surgical Candidate	XR		1	1	4	1	1	4	1	1					1	1	1	1	1	1	14	b
Osteoarthritis, Fracture and/or Surgical Candidate	XR	MR	1	1	4	1	1	1	1	1					1	1	1	1	1	1	13,	С
Osteoarthritis, Fracture and/or Surgical Candidate	XR	СТ	1	1	1	1	1	4	1	1					1	1	1	1	1	1	LBP	d
Osteoarthritis, Fracture and/or Surgical Candidate	XR	MR CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2	LBP	е
Osteoarthritis, No Fracture and/or Surgical Candidate	XR		1	1	1	1	1	1	1	1					1	1	1	1	1	1	LBP	f

### **Condition 16 - Advice Text**

а	Hip x-rays recommended for initial evaluation of hip osteoarthritis.
b	CT Hip without contrast or MR without contrast preferred for hip osteoarthritis with fracture (known or suspected) and/or being considered for hip surgery.
С	MR Hip without contrast preferred for hip osteoarthritis with fracture (known or suspected) and/or being considered for hip surgery.
d	CT Hip without contrast preferred for hip osteoarthritis with fracture (known or suspected) and/or being considered for hip surgery.
е	Consult radiology. Cases of hip osteoarthritis with fracture (known or suspected) and/or being considered for hip surgery with multiple contraindications to imaging should be reviewed with a radiologist.
f	Imaging not recommended. Patients with hip osteoarthritis without fracture and are not being considered for hip surgery do not benefit from advanced imaging.

## **Hip Pain Appropriate Use Criteria®**

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#### Condition 17 - Piriformis Syndrome - Sciatic Nerve Irritation

Condition	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Piriformis Sciatica		1	1	1	1	1	1	1	1	4				1	1	1	1	1	1	12	а
Piriformis Sciatica	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2	LBP	b

#### **Condition 17 - Advice Text**

- a MR lumbar plexus without contrast preferred for suspected lumbar plexopathy.
- b Consult radiology. Cases of hip pain with suspected lumbar plexopathy when MR is contraindicated should be reviewed with a radiologist.

### Condition 18 - Post-Fracture Healing Assessment

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Post-Fracture Healing	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1		а
Post-Fracture Healing	XR		1	1	4	1	1	1	1	1					1	1	1	1	1	1	13	b
Post-Fracture Healing	XR	СТ	2	2	2	2	2	2	2	2					2	2	2	2	2	2		С

#### **Condition 18 - Advice Text**

la	Hip x-rays are recommended for initial evaluation of post-fracture healing	σ.

- b CT Hip without contrast preferred for post-fracture healing.
- c Consult radiology. Cases of hip pain post-fracture healing when CT contraindicated should be reviewed with a radiologist.

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#### **Condition 19 – Preoperative – Known Fracture**

Condition	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Preoperative Fracture		1	1	4	1	1	4	1	1					1	1	1	1	1	1		a
Preoperative Fracture	MR	1	1	4	1	1	1	1	1					1	1	1	1	1	1	LBP	b
Preoperative Fracture	СТ	1	1	1	1	1	4	1	1					1	1	1	1	1	1	H	С
Preoperative Fracture	MR CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2		d

#### **Condition 19 - Advice Text**

а	CT Hip without contrast or MR Hip without contrast preferred for preoperative assessment of known hip fractures
	or status post hip tendon repair.

- b CT Hip without contrast preferred for preoperative assessment of known fractures or status post tendon repair with contraindication to MR.
- c MR Hip without contrast preferred for preoperative assessment of known fractures or status post tendon repair.
- d Consult radiology. Preoperative planning for known fractures or status post tendon repair with multiple contraindications to imaging should be reviewed with a radiologist.

## **Condition 20 - Soft Tissue Injury**

Condition	US Expertise?	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice text
Soft Tissue Injury	Υ		1	1	1	1	1	4	1	1				3	1	1	1	1	1	1		а
Soft Tissue Injury	N		1	1	1	1	1	4	1	1					1	1	1	1	1	1	7, 8	b
Soft Tissue Injury	Υ	MR	1	1	1	1	1	1	1	1				4	1	1	1	1	1	1	1, 6,	С
Soft Tissue Injury	N	MR	2	2	2	2	2	2	2	2					2	2	2	2	2	2		d

### **Condition 20 - Advice Text**

а	MR Hip without contrast or ultrasound (with appropriate expertise) of the hip preferred for soft tissue
	injuries/hernias/iliopsoas subluxation.
b	MR Hip without contrast preferred for hip soft tissue injuries/hernias/iliopsoas subluxation.
С	US Hip preferred for hip soft tissue injuries/hernia/iliopsoas subluxation when MR is contraindicated.
d	Consult radiology. Hip soft tissue injuries, hernias, or iliopsoas subluxation with contraindication to MR should be
	discussed with radiology.

## Condition 21 – Hip Tendon Repair - Status Post

Condition	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	US Hip	CT Pelvis w	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Hip Tendon		1	1	4	1	1	1	1	1					1	1	1	1	1	1		а
Repair																				LBP	
Hip Tendon	CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2	۳	b
Repair																					

### **Condition 21 - Advice Text**

а	CT Hip without contrast preferred for hip pain post hip tendon repair.
	Consult and inlease. His prince of this transfer area is significant in the CT should be an income with an disland

b Consult radiology. Hip pain post hip tendon repair with contraindication to CT should be reviewed with radiology.

## Condition 22 – Traumatic Hip Pain – Fracture Known or Suspected

Condition	Priors	Contraindications	CT Arth Hip	CT Hip w	CT Hip wo	CT Hip wwo	MR Hip w	MR Hip wo	MR wwo	MR Arth	MR L-plex	NM Bone Scan	XR Hip	ail Sili	CT Dolview	CT Pelvis wo	CT Pelvis wwo	MR Pelvis w	MR Pelvis wo	MR Pelvis wwo	References	Advice Text
Hip Trauma Known or Suspected Fracture	No XR		1	1	1	1	1	1	1	1			4		1	1	1	1	1	1	1	а
Hip Trauma Known or Suspected Fracture	XR		1	1	3	1	1	4	1	1					1	1	1	1	1	1	1, 20, 21	b
Hip Trauma Known or Suspected Fracture	XR	MR	1	1	4	1	1	1	1	1					1	1	1	1	1	1		С
Hip Trauma Known or Suspected Fracture	XR	СТ	1	1	1	1	1	4	1	1					1	1	1	1	1	1	20, LBP	d
Hip Trauma Known or Suspected Fracture	XR	MR CT	2	2	2	2	2	2	2	2					2	2	2	2	2	2		е

### **Condition 22 - Advice Text**

а	Hip x-rays are recommended for the initial evaluation of hip trauma or suspected fracture.
b	MR Hip without contrast preferred for traumatic hip pain or fracture (known or suspected).
С	CT Hip without contrast preferred for traumatic hip pain or fracture (known or suspected) when MR is
	contraindicated.
d	MR Hip without contrast preferred for traumatic hip pain or fracture (known or suspected).
е	Consult radiology. Traumatic hip pain or fracture (known or suspected) with multiple contraindications to imaging
	should be reviewed with a Radiologist.

## **Sources**

The Hip Pain AUC has been developed by Weill Cornell Medicine utilizing the following twenty-one published sources.

No.	Source	Score
1	Strategy and optimization of diagnostic imaging in painful hip in adults, Orthop Traumatol Surg Res. 2015 Feb, A. Blum, A. Raymond , P. Teixeira <a href="https://www.ncbi.nlm.nih.gov/pubmed/25599865">https://www.ncbi.nlm.nih.gov/pubmed/25599865</a>	5
2	Magnetic Resonance Imaging of Hip Tumors, Magn Reson Imaging Clin N Am. 2013 Feb, Laura W. Bancroft, MD, Christopher Pettis, MD, Christopher Wasyliw, MD	5
	https://www.ncbi.nlm.nih.gov/pubmed/23168188	
3	MR Imaging of Hip Infection and Inflammation, MRI Clinics February 2013, Luke Maj, MD, MHA, Yuliya Gombar III, MS, William B. Morrison, MD, https://www.mri.theclinics.com/article/S1064-9689(12)00113-4/abstract	5
4	Imaging of the Acetabular Labrum, Semin Musculoskelet Radiol. 2013 Jul, James D. Thomas, MBBS, FRCR Zhi Li, BS, Anne M. Agur, PhD, Philip Robinson, MB, ChB, FRCR, <a href="https://www.ncbi.nlm.nih.gov/pubmed/23787979">https://www.ncbi.nlm.nih.gov/pubmed/23787979</a>	5
5	Magnetic Resonance Imaging of Acetabular Labral Tears, J Bone Joint Surg Am. 2011 May, Kawan S. Rakhra MD, FRCPC	5
	https://www.ncbi.nlm.nih.gov/pubmed/21543685	
6	Imaging of the Tendons About the Pelvis, AJR September 2010, Laura W. Bancroft, Donna G. Blankenbaker <a href="https://www.ajronline.org/doi/10.2214/AJR.10.4682">https://www.ajronline.org/doi/10.2214/AJR.10.4682</a>	5
7	Imaging of Groin Pain: Magnetic Resonance Imaging and US Features, Sports Health. 2017 Sep/Oct, Susan C. Lee, MD, Yoshimi Endo, MD, and Hollis G. Potter, MD	5
	https://www.ncbi.nlm.nih.gov/pubmed/28850315	
8	The Painful Hip: New Concepts Skeletal Radiology, Skeletal Radiol. 2006 Jun, Donna G. Blankenbaker, Michael J. Tuite <a href="https://www.ncbi.nlm.nih.gov/pubmed/16552608">https://www.ncbi.nlm.nih.gov/pubmed/16552608</a>	5
9	Imaging of the Painful Hip Arthroplasty, Can Assoc Radiol J. 2016 Nov, Rikin Hargunani, MBBS, BSc, MRCS, FRCR, Hardi Madani, FRCR et al. <a href="https://www.ncbi.nlm.nih.gov/pubmed/27221697">https://www.ncbi.nlm.nih.gov/pubmed/27221697</a>	5
10	Imaging of Hip Arthroplasty, EJR, 2012 Dec, Theodore T. Miller <a href="https://www.ejradiology.com/article/S0720-048X(11)00380-9/abstract">https://www.ejradiology.com/article/S0720-048X(11)00380-9/abstract</a>	5
11	Current concepts on osteonecrosis of the femoral head., World J Orthop. 2015 Sep, Joaquin Moya-Angeler, Arianna L Gianakos, Jordan C Villa, Amelia Ni, Joseph M Lane <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4573503/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4573503/</a>	5



12	Hip pathology: the diagnostic accuracy of magnetic resonance imaging., Journal of Orthopaedic Surgery and Research, 2018 May, Lucas Annabell, Vahid Master, Alexander Rhodes, Brett Moreira, Cassandra Coetzee and Phong Tran <a href="https://josr-online.biomedcentral.com/articles/10.1186/s13018-018-0832-z">https://josr-online.biomedcentral.com/articles/10.1186/s13018-018-0832-z</a>	5
13	Fracture healing: A review of clinical, imaging and laboratory diagnostic options., Injury. 2017 Jun, Brian P. Cunningham, Sloane Brazina, Saam Morshed, Theodore Miclau III <a href="https://www.ncbi.nlm.nih.gov/pubmed/28483359">https://www.ncbi.nlm.nih.gov/pubmed/28483359</a>	5
14	Imaging of the hip in patients with rheumatic disorders., EJR, 2007 July, Nathalie Boutry, Chadi Khalil et al. <a href="https://www.ejradiology.com/article/S0720-048X(07)00162-3/fulltext">https://www.ejradiology.com/article/S0720-048X(07)00162-3/fulltext</a>	5
15	Pelvic heterotopic ossification: when CT comes to the aid of MR., Insights Imaging. 2013 Oct, Andrea Zagarella & Elisabetta Impellizzeri et al. <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3781260/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3781260/</a>	5
16	Computed tomography for preoperative planning in total hip arthroplasty., Skeletal Radiol. 2014 Aug, Alexander Huppertz & Sebastian Radmer et al. <a href="https://www.ncbi.nlm.nih.gov/pubmed/24622927">https://www.ncbi.nlm.nih.gov/pubmed/24622927</a>	5
17	Accuracy of MRI studies in the detection of chondral and labral lesions ., BMC Musculoskeletal Disorders, 2017 Feb, Saied et al. <a href="https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-017-1443-2">https://bmcmusculoskeletdisord.biomedcentral.com/articles/10.1186/s12891-017-1443-2</a>	4
18	Imaging of femoroacetabular impingement-current concepts, Journal of Hip Preservation Surgery, 2016 Oct, Christoph E. Albers et al. <a href="https://academic.oup.com/jhps/article/3/4/245/2559449">https://academic.oup.com/jhps/article/3/4/245/2559449</a>	5
19	The American Journal of Sports Medicine, Vol. 45, No. 1, The American Journal of Sports Medicine, Vol. 45, No. 1, Michael P. Reiman. (No URL)	5
20	Imaging of Traumatic Injuries to the Hip., Semin Musculoskelet Radiol. 2013 Jul, Jason W. Stephenson, MD, Kirkland W. Davis, MD. <a href="https://www.ncbi.nlm.nih.gov/pubmed/23787985">https://www.ncbi.nlm.nih.gov/pubmed/23787985</a>	5
21	MRI IDENTIFIES OCCULT HIP FRACTURES MISSED BY CT., J Emerg Med. 2012 Aug, David K. Hakkarinen. <a href="https://www.ncbi.nlm.nih.gov/pubmed/22459594">https://www.ncbi.nlm.nih.gov/pubmed/22459594</a>	4
22	Ethan A. Neufeld MR Imaging of the Lumbosacral Plexus: A Review of Techniques and Pathologies J Neuroimaging 2015;25:691-703 <a href="https://www.ncbi.nlm.nih.gov/pubmed/25940664">https://www.ncbi.nlm.nih.gov/pubmed/25940664</a>	5
23	Computed Tomography for preoperative planning in total hip arthroplasty: What radiologists need to know.  Huppertz, Radmer S, Wagner M, Roessler T, Hamm B, Sparmann M. <a href="https://www.ncbi.nlm.nih.gov/pubmed/24622927">https://www.ncbi.nlm.nih.gov/pubmed/24622927</a>	5
24	Sariali E et al. Orthopaedics & Traumatology: Surgery & Research (2012) 98, 151—158 (no URL)	5
LBP	Weill Cornell Medicine - Local Best Practice	NA



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