American College of Radiology
ACR Appropriateness Criteria®

Suspected Physical Abuse-Child

Variant 1: Child. 24 months of age or younger. Concern for physical abuse based on clinical presentation or history. Neurological, skeletal, or visceral injuries not clinically apparent. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography skeletal survey	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	9	9	1	0	0	0	1	0	1	0	10

References	Study Quality
87 (19948569)	4
86 (29154020)	4
82 (23812002)	4
85 (24630357)	3
37 (25917988)	4
5 (24470642)	4
4 (30602409)	4
88 (34742547)	4

CT head without IV contrast	Usually appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	7	7	1	0	0	0	2	2	4	1	3

References	Study Quality
65 (26130384)	4
64 (23184067)	4
62 (26320000)	4
61 (20174986)	4
63 (26186360)	3

60 (17445894)	4
56 (26471745)	4
55 (26150078)	2
59 (25501731)	4
52 (23799250)	4
54 (24816086)	4
58 (30516697)	4
57 (30187091)	3
53 (30523144)	4
50 (15192615)	4
51 (12777556)	4
49 (24840754)	4
47 (29654352)	3
13 (29796797)	4
48 (20065898)	3

Radiography area of interest	May be appropriate (Disagreement)	Expert Opinion	Varies	Varies	5	5	4	1	3	0	3	0	3	1	0

References	Study Quality
5 (24470642)	4
84 (-3194101)	4
82 (23812002)	4
80 (21940592)	4
81 (27749806)	4
83 (4833902)	4
79 (25765815)	4
77 (25609436)	3
78 (28938085)	4
4 (30602409)	4

CT chest without IV contrast	May be appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	4	4	3	2	0	3	4	0	0	0	1

References	Study Quality
46 (30249541)	2
45 (18562001)	2
41 (25480434)	4
44 (-3194104)	4
43 (18832412)	4

CT abdomen and pelvis with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	4	1	5	1	3	1	0	0	0

References	Study Quality
39 (21088831)	4
38 (26219741)	4
36 (19620197)	3
34 (20936274)	3
37 (25917988)	4
35 (12667774)	4

MRI head without IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	0	3	6	2	2	1	1	0	0

References	Study Quality
73 (19348842)	4
72 (25698365)	4
70 (25274619)	4
71 (30125430)	4
69 (30406272)	3
68 (28970241)	3
56 (26471745)	4
55 (26150078)	2
67 (25700122)	2
66 (25646200)	3
59 (25501731)	4
58 (30516697)	4
23 (31533974)	2

US abdomen	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	3	3	8	1	0	0	0	0	0

References	Study Quality
20 (28609532)	1
89 (10845493)	2

CT head with IV contrast	Usually not appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	2	2	6	1	4	0	1	0	0	1	0

References	Study Quality
66 (25646200)	3
65 (26130384)	4
62 (26320000)	4
64 (23184067)	4
61 (20174986)	4
63 (26186360)	3
56 (26471745)	4
55 (26150078)	2
59 (25501731)	4
54 (24816086)	4
58 (30516697)	4
57 (30187091)	3
53 (30523144)	4
60 (17445894)	4
52 (23799250)	4
50 (15192615)	4
51 (12777556)	4
49 (24840754)	4
47 (29654352)	3
13 (29796797)	4
48 (20065898)	3

MRI head without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	2	2	6	2	3	0	1	1	0	0	0

References	Study Quality
73 (19348842)	4
72 (25698365)	4
70 (25274619)	4
71 (30125430)	4
69 (30406272)	3
68 (28970241)	3
56 (26471745)	4
55 (26150078)	2
67 (25700122)	2
66 (25646200)	3
59 (25501731)	4
7 (28245144)	4
58 (30516697)	4
23 (31533974)	2
74 (33079214)	2

MRV head without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	6	3	1	2	0	0	0	0	1

References	Study Quality
13 (29796797)	4
55 (26150078)	2
59 (25501731)	4
73 (19348842)	4
75 (33884464)	4
76 (36074163)	4

US head	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	6	1	4	1	0	0	0	0	1

References	Study Quality
95 (37093305)	3
94 (26999586)	3

US abdomen with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	4	3	2	0	3	0	0	0	1

References	Study Quality
93 (25142944)	4
92 (33978795)	4
90 (30536214)	4
91 (28351519)	2

CT abdomen and pelvis without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	8	3	1	0	0	0	0	0	1

References	Study Quality
39 (21088831)	4

CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Limited	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	1	1	7	5	0	0	0	0	0	0	1

References	Study Quality
39 (21088831)	4
38 (26219741)	4
37 (25917988)	4

CT chest with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	7	3	5	0	0	0	0	0	0

References	Study Quality
41 (25480434)	4
44 (-3194104)	4
42 (31904738)	4
43 (18832412)	4
40 (34801840)	3

CT chest without and with IV contrast	Usually not appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	7	5	0	0	0	0	0	0	1

References	Study Quality
42 (31904738)	4

		45 (18562001)		2											
		46 (30249541)		2											
CT head without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	1	0	0	0	0	0	0	1
		References		Study Quality											
		66 (25646200)		3											
Bone scan whole body	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	9	2	1	0	0	0	0	0	1
		References		Study Quality											
		26 (26055408)		3											
		33 (-3194105)		4											
		32 (12716705)		3											
		31 (32935234)		4											
		30 (32767105)		4											
		29 (20308455)		3											
		27 (8256139)		4											
		28 (28417851)		4											

Variant 2: Child. Greater than 24 months of age. Concern for physical abuse based on clinical presentation or history. Neurological, skeletal, or visceral injuries not clinically apparent. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography area of interest	Usually appropriate	Limited	Varies	Varies	8	8	0	0	1	0	0	0	2	2	10
		References		Study Quality											
		85 (24630357)		3											
		96 (11239255)		4											
		41 (25480434)		4											
		40 (34801840)		3											

Radiography skeletal survey	May be appropriate (Disagreement)	Expert Opinion	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	5	0	2	0	2	8	1	1	1	0

References	Study Quality
85 (24630357)	3
86 (29154020)	4
97 (-3192269)	4
98 (34009892)	3
40 (34801840)	3

CT head without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	3	3	4	1	8	1	0	1	0	0	0
US abdomen	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	4	6	4	0	1	0	0	0	0
CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	4	3	0	3	2	0	0	0	1
CT chest with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	5	5	0	1	1	0	0	0	1
US abdomen with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	2	2	6	1	4	0	1	0	0	0	1
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	9	3	0	0	0	0	0	0	1
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	1	1	10	2	0	0	0	0	0	0	1
CT chest without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	8	1	2	1	0	0	0	0	1
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	10	2	0	0	0	0	0	0	1

CT head with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	1	1	9	3	0	0	0	1	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	10	1	1	0	0	0	0	1	0
MRI head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	3	5	0	0	0	0	0	0
MRI head without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	8	2	2	0	0	0	0	0	1
Bone scan whole body	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	9	3	0	0	0	0	0	0	1
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	3	1	1	0	0	0	0	1
US head	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	3	2	0	0	0	0	0	1

Variant 3: Child. 24 months of age or younger. One or more physical examinations or clinical findings suspicious for CNS injury due to physical abuse: neurologic signs , symptoms, or other injuries (scalp bruises, hematoma, or skin injury to the head, neck, or spine). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	9	9	1	0	0	0	0	0	1	2	9

References	Study Quality
13 (29796797)	4
37 (25917988)	4
62 (26320000)	4
64 (23184067)	4
65 (26130384)	4
63 (26186360)	3

		56 (26471745)	4												
		55 (26150078)	2												
		59 (25501731)	4												
		54 (24816086)	4												
		58 (30516697)	4												
		57 (30187091)	3												
		61 (20174986)	4												
		60 (17445894)	4												
		52 (23799250)	4												
		53 (30523144)	4												
Radiography skeletal survey	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	9	9	1	0	0	0	0	0	1	0	11
		References	Study Quality												
		37 (25917988)	4												
		110 (25589561)	3												
		82 (23812002)	4												
		86 (29154020)	4												
		109 (29040244)	4												
		87 (19948569)	4												
MRI head without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	1	0	1	3	2	2	1	3
		References	Study Quality												
		73 (19348842)	4												
		72 (25698365)	4												
		70 (25274619)	4												
		71 (30125430)	4												
		69 (30406272)	3												
		68 (28970241)	3												
		56 (26471745)	4												
		55 (26150078)	2												
		67 (25700122)	2												

		66 (25646200)		3												
		59 (25501731)		4												
		7 (28245144)		4												
		58 (30516697)		4												
		23 (31533974)		2												
		74 (33079214)		2												
MRI complete spine without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	6	6	1	0	0	0	3	6	3	0	2	
		References		Study Quality												
		99 (22069156)		4												
		100 (24687620)		4												
		102 (31901991)		4												
		107 (35018794)		2												
Radiography area of interest	May be appropriate (Disagreement)	Expert Opinion	Varies	Varies	5	5	1	2	3	2	3	1	2	1	0	
		References		Study Quality												
		82 (23812002)		4												
		86 (29154020)		4												
		108 (23694887)		4												
MRV head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	4	4	1	0	1	5	6	1	1	0	0	
		References		Study Quality												
		13 (29796797)		4												
		55 (26150078)		2												
		59 (25501731)		4												
		73 (19348842)		4												
		75 (33884464)		4												
		76 (36074163)		4												
CT cervical spine without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	2	3	4	1	5	0	0	0	0	

References	Study Quality
105 (23283258)	4
104 (23436856)	4
100 (24687620)	4
101 (24557483)	4
103 (21700979)	4
102 (31901991)	4
82 (23812002)	4
99 (22069156)	4

MRI head without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	4	2	5	4	0	0	0	0	0

References	Study Quality
73 (19348842)	4
72 (25698365)	4
70 (25274619)	4
71 (30125430)	4
69 (30406272)	3
68 (28970241)	3
56 (26471745)	4
55 (26150078)	2
67 (25700122)	2
66 (25646200)	3
59 (25501731)	4
7 (28245144)	4
58 (30516697)	4
23 (31533974)	2
74 (33079214)	2

MRI cervical spine without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	2	3	5	1	3	1	0	0	0

References	Study Quality
82 (23812002)	4

		102 (31901991)	4													
		100 (24687620)	4													
		99 (22069156)	4													
		101 (24557483)	4													
		106 (36261511)	4													
MRI cervical spine without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	4	3	7	0	1	0	0	0	0
		References	Study Quality													
		82 (23812002)	4													
		102 (31901991)	4													
		100 (24687620)	4													
		99 (22069156)	4													
		101 (24557483)	4													
MRI complete spine without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	4	2	4	0	3	0	0	0	0
		References	Study Quality													
		99 (22069156)	4													
		100 (24687620)	4													
		102 (31901991)	4													
		107 (35018794)	2													
CT head with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	2	2	6	5	3	0	0	0	0	0	1
		References	Study Quality													
		66 (25646200)	3													
CT cervical spine with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	5	3	3	0	1	0	1	0	0
		References	Study Quality													
		105 (23283258)	4													
		104 (23436856)	4													
		100 (24687620)	4													

		101 (24557483)		4											
		103 (21700979)		4											
		102 (31901991)		4											
		82 (23812002)		4											
		99 (22069156)		4											
US head	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	5	2	3	0	2	0	1	0	0
		References		Study Quality											
		94 (26999586)		3											
		95 (37093305)		3											
CT head without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	7	2	3	0	0	0	1	0	0
		References		Study Quality											
		66 (25646200)		3											
CT cervical spine without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	10	1	0	1	0	0	0	0	1
Bone scan whole body	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	9	2	0	0	1	0	0	0	1
		References		Study Quality											
		26 (26055408)		3											
		28 (28417851)		4											

Variant 4: Child. Greater than 24 months of age of age. One or more physical examinations or clinical findings suspicious for CNS injury due to physical abuse: neurologic signs or symptoms or other injuries (scalp bruises, hematoma, or skin injury to the head, neck, or spine). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT head without IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	9	9	1	0	0	0	0	0	1	2	9

References	Study Quality
65 (26130384)	4
64 (23184067)	4
62 (26320000)	4
61 (20174986)	4
63 (26186360)	3
60 (17445894)	4
56 (26471745)	4
55 (26150078)	2
59 (25501731)	4
52 (23799250)	4
54 (24816086)	4
58 (30516697)	4
57 (30187091)	3
53 (30523144)	4
37 (25917988)	4
13 (29796797)	4

Radiography area of interest	Usually appropriate	Limited	Varies	Varies	8	8	1	0	0	1	2	1	0	2	6

References	Study Quality
82 (23812002)	4
85 (24630357)	3
86 (29154020)	4
108 (23694887)	4

MRI head without IV contrast	May be appropriate	Strong	O 0 mSv	O 0 mSv [ped]	6	6	0	1	0	0	5	7	1	0	1

References	Study Quality
73 (19348842)	4
72 (25698365)	4
70 (25274619)	4
71 (30125430)	4

		69 (30406272)		3												
		68 (28970241)		3												
		56 (26471745)		4												
		55 (26150078)		2												
		67 (25700122)		2												
		66 (25646200)		3												
		59 (25501731)		4												
		58 (30516697)		4												
		23 (31533974)		2												
MRI complete spine without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	0	0	0	1	7	5	1	0	1
		References		Study Quality												
		99 (22069156)		4												
		100 (24687620)		4												
		102 (31901991)		4												
		107 (35018794)		2												
Radiography skeletal survey	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	5	1	0	1	4	6	2	1	0	0
		References		Study Quality												
		96 (11239255)		4												
		97 (-3192269)		4												
		110 (25589561)		3												
		109 (29040244)		4												
MRV head without IV contrast	May be appropriate	Limited	O 0 mSv	O 0 mSv [ped]	5	5	1	1	2	2	6	0	1	0	0
		References		Study Quality												
		59 (25501731)		4												
		73 (19348842)		4												
CT cervical spine without IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	3	3	3	1	6	1	4	0	0	0	0

References	Study Quality
105 (23283258)	4
104 (23436856)	4
100 (24687620)	4
101 (24557483)	4
103 (21700979)	4
102 (31901991)	4
82 (23812002)	4
99 (22069156)	4

MRI head without and with IV contrast	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	4	1	3	2	2	1	0	0	0

References	Study Quality
73 (19348842)	4
72 (25698365)	4
70 (25274619)	4
71 (30125430)	4
69 (30406272)	3
68 (28970241)	3
56 (26471745)	4
55 (26150078)	2
67 (25700122)	2
66 (25646200)	3
59 (25501731)	4
7 (28245144)	4
58 (30516697)	4
23 (31533974)	2
74 (33079214)	2

MRI cervical spine without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	2	2	6	1	3	1	0	0	0

References	Study Quality
82 (23812002)	4

		102 (31901991)		4												
		100 (24687620)		4												
		99 (22069156)		4												
		101 (24557483)		4												
		106 (36261511)		4												
MRI cervical spine without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	3	3	5	0	5	1	1	0	1	0	0
MRI complete spine without and with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	4	5	6	0	0	0	0	0	0
		References		Study Quality												
		99 (22069156)		4												
		100 (24687620)		4												
		102 (31901991)		4												
		107 (35018794)		2												
CT cervical spine with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	5	4	2	0	2	0	0	0	0
		References		Study Quality												
		105 (23283258)		4												
		104 (23436856)		4												
		100 (24687620)		4												
		101 (24557483)		4												
		103 (21700979)		4												
		102 (31901991)		4												
		82 (23812002)		4												
		99 (22069156)		4												
CT head with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	1	1	8	2	1	1	0	1	0	0	0
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	9	1	0	1	1	0	0	0	1

CT cervical spine without and with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	7	3	1	0	0	1	0	0	1

References	Study Quality
105 (23283258)	4
104 (23436856)	4
100 (24687620)	4
101 (24557483)	4
103 (21700979)	4
102 (31901991)	4
82 (23812002)	4
99 (22069156)	4

Bone scan whole body	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	8	3	0	0	1	0	0	0	1

References	Study Quality
26 (26055408)	3
28 (28417851)	4

US head	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	8	3	1	0	0	0	0	0	1

Variant 5: Child. 24 months of age or younger. One or more physical examinations or clinical findings suspicious for visceral injury due to physical abuse: abdominal pain or other injuries (bruising, hematoma, or skin injury to the chest wall or trunk). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	9	9	0	0	1	1	0	0	1	2	8

References	Study Quality
39 (21088831)	4
38 (26219741)	4
36 (19620197)	3

		34 (20936274)	3												
		37 (25917988)	4												
		35 (12667774)	4												
		32 (12716705)	3												
Radiography skeletal survey	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	9	9	1	0	0	0	0	0	1	3	8
		References	Study Quality												
		37 (25917988)	4												
		85 (24630357)	3												
CT chest with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	3	2	3	6	1	0	0
		References	Study Quality												
		42 (31904738)	4												
		45 (18562001)	2												
		41 (25480434)	4												
		44 (-3194104)	4												
		43 (18832412)	4												
		112 (29337841)	4												
CT chest without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	0	2	9	3	1	0	0
		References	Study Quality												
		42 (31904738)	4												
		45 (18562001)	2												
		41 (25480434)	4												
		44 (-3194104)	4												
		43 (18832412)	4												
Radiography area of interest	May be appropriate (Disagreement)	Expert Opinion	Varies	Varies	5	5	3	0	3	1	4	1	2	0	1
		References	Study Quality												
		4 (30602409)	4												

US abdomen	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	5	1	8	1	0	0	0	0	0

References	Study Quality
20 (28609532)	1
89 (10845493)	2
113 (33755750)	4

US abdomen with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	3	3	4	3	7	0	1	0	0	0	0

References	Study Quality
113 (33755750)	4
92 (33978795)	4
90 (30536214)	4
91 (28351519)	2

CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	4	10	1	0	0	0	0	0	0
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	2	2	6	1	4	1	0	1	0	0	0
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	8	2	0	2	0	0	0	0	1
Bone scan whole body	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	10	0	1	0	1	0	0	0	1

References	Study Quality
28 (28417851)	4
27 (8256139)	4
26 (26055408)	3

Variant 6: Child. Greater than 24 months of age. One or more physical examinations or clinical findings suspicious for visceral injury due to physical abuse: abdominal pain or other injuries (bruising, hematoma, or skin injury to the chest wall or trunk). Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
CT abdomen and pelvis with IV contrast	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	9	9	0	1	0	0	0	0	1	1	10
References	Study Quality														
39 (21088831)	4														
38 (26219741)	4														
36 (19620197)	3														
34 (20936274)	3														
37 (25917988)	4														
35 (12667774)	4														
Radiography area of interest	Usually appropriate	Limited	Varies	Varies	7	7	0	0	0	0	3	2	5	3	2
References	Study Quality														
85 (24630357)	3														
CT chest without IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	6	6	0	0	1	2	4	6	2	0	0
References	Study Quality														
43 (18832412)	4														
44 (-3194104)	4														
42 (31904738)	4														
CT chest with IV contrast	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	4	1	9	0	1	0	0
References	Study Quality														
43 (18832412)	4														
44 (-3194104)	4														
42 (31904738)	4														

Radiography skeletal survey	May be appropriate (Disagreement)	Expert Opinion	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	5	0	0	2	3	6	2	1	1	0
	References		Study Quality												
	85 (24630357)		3												
US abdomen	Usually not appropriate	Strong	O 0 mSv	O 0 mSv [ped]	3	3	5	2	7	0	1	0	0	0	0
	References		Study Quality												
	20 (28609532)		1												
	89 (10845493)		2												
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	2	2	4	8	3	0	0	0	0	0	0
US abdomen with IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	4	5	4	0	2	0	0	0	0
	References		Study Quality												
	113 (33755750)		4												
	92 (33978795)		4												
	90 (30536214)		4												
	91 (28351519)		2												
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	1	1	7	1	1	2	0	1	0	0	1
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	7	3	1	1	0	0	0	0	1
Bone scan whole body	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	8	3	0	0	1	0	0	0	1
	References		Study Quality												
	28 (28417851)		4												
	27 (8256139)		4												
	26 (26055408)		3												

Variant 7: Child. 24 months of age or younger. Suspected physical abuse. Negative initial skeletal survey and CT head. Follow-up imaging within 10 to 14 days.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography skeletal survey	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	9	9	0	0	1	0	0	0	1	0	11

References	Study Quality
12 (-3192268)	4
37 (25917988)	4
121 (25070311)	4
120 (16315349)	4
119 (21910901)	3
122 (20846722)	3
117 (23400607)	4
118 (26342432)	4
116 (16416103)	4

CT chest without IV contrast	May be appropriate	Strong	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	2	0	2	2	7	1	1	0	0

References	Study Quality
45 (18562001)	2
43 (18832412)	4
41 (25480434)	4
46 (30249541)	2
40 (34801840)	3

MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	1	2	1	3	4	0	3	0	1

References	Study Quality
59 (25501731)	4

		73 (19348842)	4													
		115 (15492737)	4													
Bone scan whole body	May be appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	5	5	0	0	0	3	10	1	1	0	0
		References	Study Quality													
		114 (19403511)	4													
		33 (-3194105)	4													
		32 (12716705)	3													
		31 (32935234)	4													
		30 (32767105)	4													
		29 (20308455)	3													
		26 (26055408)	3													
		27 (8256139)	4													
		28 (28417851)	4													
MRV head without IV contrast	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	2	2	5	3	3	2	1	0	0	0	1
		References	Study Quality													
		13 (29796797)	4													
		76 (36074163)	4													
		70 (25274619)	4													
		72 (25698365)	4													
		71 (30125430)	4													
		75 (33884464)	4													
		56 (26471745)	4													
		55 (26150078)	2													
		58 (30516697)	4													
CT abdomen and pelvis with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	7	3	0	1	1	1	0	0	0
		References	Study Quality													
		34 (20936274)	3													

CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	1	0	0	0	0	0	0	1
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	1	1	12	0	0	0	0	0	1	0	0
CT chest with IV contrast	Usually not appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	8	0	1	1	3	0	0	0	0

References	Study Quality
41 (25480434)	4
45 (18562001)	2
42 (31904738)	4

CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	0	0	1	0	0	0	0	1
MRI head without and with IV contrast	Usually not appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	1	1	7	2	1	1	1	1	0	0	0

References	Study Quality
59 (25501731)	4
73 (19348842)	4
7 (28245144)	4
115 (15492737)	4
74 (33079214)	2

MRI cervical spine without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	7	3	1	1	0	0	0	0	1
MRI cervical spine without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	1	1	0	0	0	0	0	1
MRI complete spine without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	8	4	0	0	0	0	0	0	1
MRI complete spine without and with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	2	0	0	0	0	0	0	1

US abdomen	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	10	4	0	0	1	0	0	0	0

References	Study Quality
39 (21088831)	4
89 (10845493)	2
123 (10993539)	4

US head	Usually not appropriate	Limited	O 0 mSv	O 0 mSv [ped]	1	1	8	2	1	1	0	0	0	0	1

References	Study Quality
95 (37093305)	3
94 (26999586)	3

US abdomen with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	2	0	0	1	0	0	1

Variant 8: Child. 24 months of age or younger. Asymptomatic, who shares a home with a child with suspected or known physical abuse. Initial imaging.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Radiography skeletal survey	Usually appropriate	Limited	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	9	9	0	0	1	0	0	0	1	0	11

References	Study Quality
9 (22778300)	3
37 (25917988)	4
130 (29195170)	4
129 (30177540)	4

CT head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	5	5	1	1	0	1	4	0	5	1	2

References	Study Quality
13 (29796797)	4

128 (19809839)	2
62 (26320000)	4
127 (19797789)	3
64 (23184067)	4
63 (26186360)	3
50 (15192615)	4
51 (12777556)	4
49 (24840754)	4
47 (29654352)	3
48 (20065898)	3
126 (36877504)	4

MRI head without IV contrast	May be appropriate (Disagreement)	Expert Opinion	O 0 mSv	O 0 mSv [ped]	5	5	0	0	3	3	4	3	1	1	0

References	Study Quality
13 (29796797)	4

CT abdomen and pelvis with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	0	0	1	0	0	0	0	1
CT abdomen and pelvis without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	1	0	0	0	0	0	0	1
CT abdomen and pelvis without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢☢ 10-30 mSv	☢☢☢☢☢ 10-30 mSv [ped]	1	1	11	1	0	0	0	0	0	0	1
CT chest with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	12	0	0	0	0	0	0	0	1
CT chest without IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	10	0	0	2	0	0	0	0	1
CT chest without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	1	0	0	0	0	0	0	1

CT head with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢ 0.3-3 mSv [ped]	1	1	9	1	1	1	0	0	0	0	1
CT head without and with IV contrast	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	10	1	1	0	0	0	0	0	1
MRI head without and with IV contrast	Usually not appropriate	Moderate	O 0 mSv	O 0 mSv [ped]	1	1	8	0	2	1	1	0	0	1	0

References	Study Quality
7 (28245144)	4
74 (33079214)	2

Bone scan whole body	Usually not appropriate	Expert Consensus	☢☢☢ 1-10 mSv	☢☢☢☢ 3-10 mSv [ped]	1	1	11	0	1	0	0	0	0	0	1
US abdomen	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	1	1	0	1	0	0	0	1
MRV head without IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	2	0	1	0	0	0	1
US head	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	9	0	2	1	0	0	0	0	1
US abdomen with IV contrast	Usually not appropriate	Expert Consensus	O 0 mSv	O 0 mSv [ped]	1	1	10	0	0	1	1	0	0	0	1

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality**: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at **www.acr.org/ac.**