EARLY LIVER ARTERIAL

- No arterial enhancement or arterial enhancement deemed insufficiently diagnostic.
- Maximal arterial enhancement occurs at a later phase.
IDEAL LIVER ARTERIAL

- Maximum arterial enhancement
- May see enhancement of early enhancing parenchymal lesions
LATE LIVER ARTERIAL

- Any level of intrahepatic portal or hepatic vein enhancement.
EARLY LIVER VENOUS

- No appreciable portal enhancement or intensity/distribution of portal enhancement deemed insufficient for diagnostic evaluation.
- Hepatic arterial enhancement exceeds venous enhancement.
- Intrahepatic portal veins are more enhancing on a later phase.
IDEAL LIVER VENOUS

• Peak intrahepatic portal enhancement or enhancement sufficient for diagnostic identification of portal vasculature.
LATE LIVER VENOUS

• Portal enhancement is too low (but homogenous).
• Portal veins more enhancing on an earlier phase.
• Excessive hepatic vein enhancement (similar or approaching degree of portal enhancement).
• Very Late: Portal vasculature difficult to differentiate from liver parenchyma.
- The liver is not sufficiently enhanced (though still greater than venous phase).
- Hepatic enhancement is heterogenous.
- (minor) Too much vascular enhancement.
IDEAL LIVER DELAYED

- Maximal homogenous hepatic parenchymal enhancement.
- Arteries and veins of similar enhancement.
- Maximal hepatic vein enhancement.
LATE LIVER DELAYED

• Maximum parenchymal enhancement occurs on an earlier phase.
• Similar and decreased overall enhancement of liver, arteries, and veins.
• No arterial enhancement or insufficient arterial enhancement insufficiently diagnostic.
• No renal cortical enhancement.
IDEAL KIDNEY ARTERIAL

- Maximal renal arterial (and branches) enhancement.
- Mild to moderate cortical enhancement.
- Medullary blushing permitted but the medulla should not be clearly demarcated (as in corticomedullary phase).
- Mild venous enhancement permitted but should not exceed arterial.
LATE KIDNEY ARTERIAL

- Marked cortical enhancement.
- Any medullary enhancement.
- (minor) Venous enhancement exceeds arterial enhancement.
EARLY KIDNEY VENOUS

- Less than maximal cortical enhancement (and no medullary enhancement).
- Arterial enhancement exceeds veins.
• Ideal corticomedullary phase. Maximal enhancement of renal cortex prior to substantial enhancement in medulla (but mild medullary enhancement permitted).
• Medulla continues to be relatively less enhanced.
• (minor) Renal venous enhancement peaks
LATE KIDNEY VENOUS

- Excessive medullary enhancement (less demarcated cortex and medulla)
- Urine production is evident.
EARLY KIDNEY DELAYED

- No (or minimal) medullary enhancement.
- Corticomedullary demarcation persists.
IDEAL KIDNEY DELAYED

- Ideal nephrogram.
- Homogenous cortical and medullary enhancement resulting in loss of corticomedullary distinction.
- Mild urine production is permitted (given overlap with excretory phase).
LATE KIDNEY DELAYED

- Excessively excretory.
- Nephogram and pelvic enhancement similar and/or pelvic enhancement/urine production is excessive.
• No arterial enhancement or arterial enhancement insufficient to achieve a diagnosis
IDEAL PANCREAS ARTERIAL

- Maximum arterial enhancement.
- Mild (patchy) parenchymal enhancement.

Pancreas
Pancreaticoduodenal Vein
LATE PANCREAS ARTERIAL

- Any pancreaticoduodenal venous enhancement.

Pancreas

Pancreaticoduodenal Vein
• No (or insufficient) pancreaticoduodenal/portovenous enhancement.
• Arteries hyperenhancing relative to veins.
• Veins more enhancing on a later phase.
• (minor) Pancreas is hyperenhancing relative to liver.

Pancreas

Pancreaticoduodenal Vein
IDEAL PANCREAS VENOUS

- Maximal pancreaticoduodenal venous enhancement.
- (minor) Pancreas is iso or slightly hypoenhancing relative to liver.

Pancreas

Pancreaticoduodenal Vein
• Decreased degree of pancreaticoduodenal enhancement. (closer to enhancement of parenchyma)
• Veins more enhancing on an earlier phase.
• (minor) Pancreas is markedly hypoenhancing to liver.
EARLY PANCREAS DELAYED

- Excessive pancreaticoduodenal/portovenous enhancement.
- (minor) Pancreas is hyperenhancing or isoenhancing relative to liver.
• Decreased degree of pancreaticoduodenal and portovenous enhancement.
• Pancreas is hypoenhancing to liver.
LATE PANCREAS DELAYED

• Decreased overall contrast enhancement of pancreas, arteries, and veins.

• Poor differentiation between vasculature and parenchyma.

Pancreas

Pancreaticoduodenal Vein
• No arterial enhancement or insufficiently diagnostic arterial enhancement.
IDEAL SPLEEN ARTERIAL

- Maximum arterial enhancement.
- May also see mild heterogeneous parenchymal enhancement.
LATE SPLEEN ARTERIAL

- Any splenic venous enhancement.
• Arterial enhancement greater than venous enhancement.
• Not yet maximal venous enhancement (or veins more enhancing on a later phase).
• No significant parenchymal enhancement.
• Maximum venous enhancement.
• Heterogenous parenchymal enhancement.
• (minor) Spleen approximately isoenhancing to liver.
LATE SPLEEN VENOUS

• Veins not maximally enhanced (or veins more enhancing on an earlier phase).
• Veins similar enhancement to parenchyma.
• (minor) Spleen is hypoenhancing to liver.
EARLY SPLEEN DELAYED

- Not homogenous parenchymal enhancement.
- Excessive venous enhancement or inadequate enhancement without parenchymal enhancement (if very early).
- (minor) Spleen is isoenhancing to liver.
Homogenous splenic parenchymal enhancement.

(minor) Spleen is hypoenhancing to liver.
• Vessels difficult to resolve from parenchyma.
• Decreased overall contrast enhancement of spleen and vessels.