

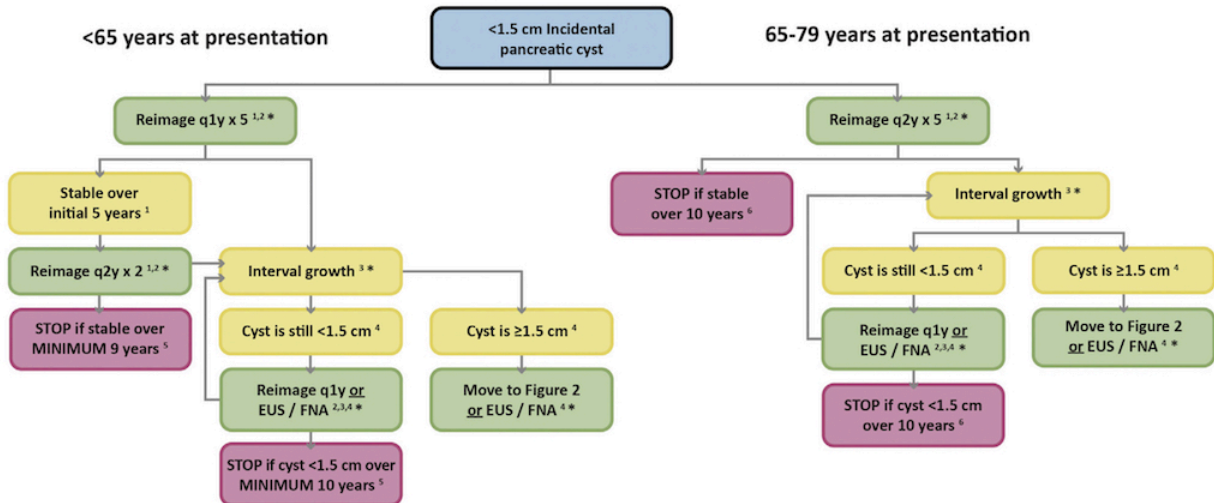
## **Pancreatic Cysts – Incidental (ACR guidance for managing incidental pancreatic cysts on CT or MRI)**

This module reflects updated recommendations for managing incidentally-detected pancreatic cystic lesions (from an article published in JACR in July, 2017, updated from 2010). There have been significant changes from the prior version, including recommendations for extended periods of follow-up and altered algorithms for intervention.

The module integrates information from five flowcharts and provides the structure for entering data, including patient's age, cyst size and features, the results of prior fine needle aspiration by endoscopic ultrasound, growth and several other factors. The module primarily specifies recommendations for follow-up and management based on observations when cysts are first recognized, although information on the definition and importance of growth is also provided. Recommendations for subsequent follow-up or intervention require reference to the article.

### Reference:

- Megibow A, Baker M, Morgan D, Kamel I, Sahani D, Newman E, Brugge W, Berland L, Pandharipande P. Management of Incidental Pancreatic Cysts: A White Paper of the American College of Radiology Incidental Findings Committee. J Am Coll Radiol 2017;14:911-923. <http://dx.doi.org/10.1016/j.jacr.2017.03.010>. (Updated from JACR 2010;7:754-773.)



LEGEND

1 While single follow-up of tiny “white dot” lesions at 2 years is appropriate, the need for further follow-up and length of follow-up, if stable, is unknown. Some radiologists do not report these lesions for patients with advanced age (>75-80 years of age).

2 Imaging follow-up with contrast-enhanced MRI or pancreas protocol CT.

3 Growth defined as 100% increase in longest axis diameter (on axial or coronal image) for cysts <5mm, and 50% increase for cysts ≥5mm and <15mm. No growth = stable.

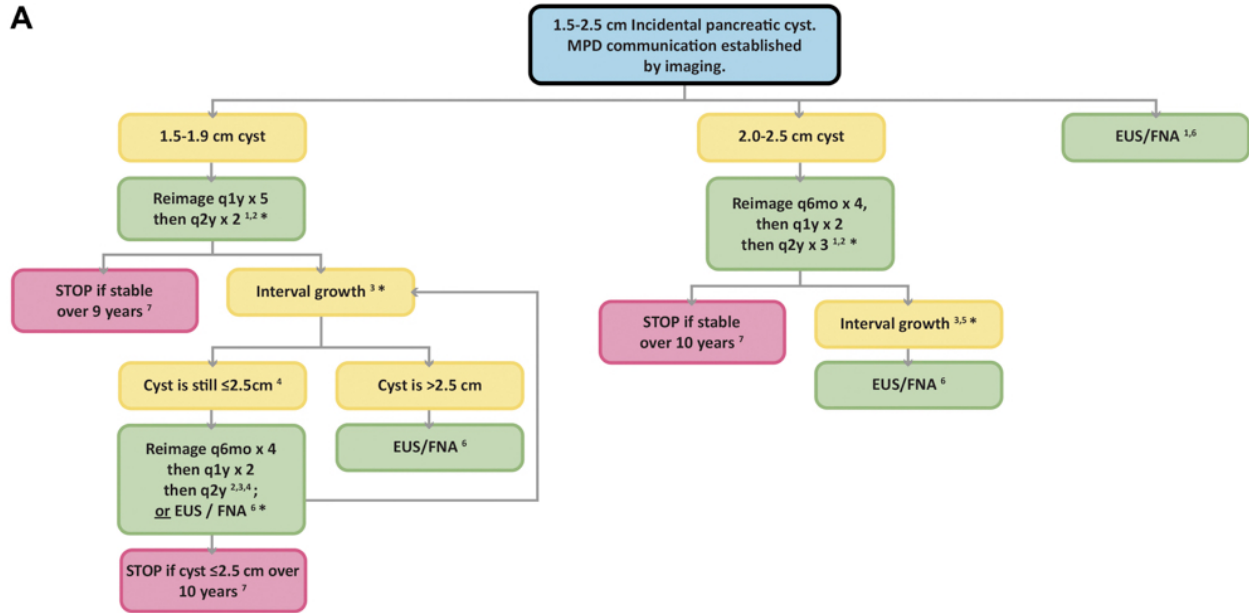
4 Following growth, imaging follow-up or EUS/FNA may be performed. In general, EUS/FNA merits stronger consideration for larger or faster-growing cysts relative to smaller or slower-growing cysts. After EUS/FNA, further work-up is result-dependent (see Figure 2B).

5 Some may choose to continuously follow cysts detected in patients <65-years-old until those patients reach 80.

6 If the patient reaches 80 years before the end of follow-up, follow-up should generally stop. If the patient is close to – but not yet – 80 years when the cyst is first detected, then when the patient reaches 80 years, Figure 4 can be used to guide further management.

\*Appearance of any mural nodule, wall thickening, dilation of MPD ≥7mm, or extrahepatic biliary obstruction/jaundice should prompt immediate EUS/FNA and surgical evaluation regardless of size or amount of growth.

A



LEGEND

- 1 EUS/FNA can be performed instead of follow-up imaging: 1) at detection; or 2) after entry into chart (from Figure 1). In general, EUS/FNA merits stronger consideration for larger or faster-growing cysts relative to smaller or slower-growing cysts.
- 2 Imaging follow-up with contrast-enhanced MRI or pancreas protocol CT.
- 3 Growth defined as 20% increase in longest axis diameter, as depicted on either axial or coronal image. No growth = stable.
- 4 Following growth, imaging follow-up or EUS/FNA may be performed. In general, EUS/FNA merits stronger consideration for larger or faster-growing cysts relative to smaller or slower-growing cysts.

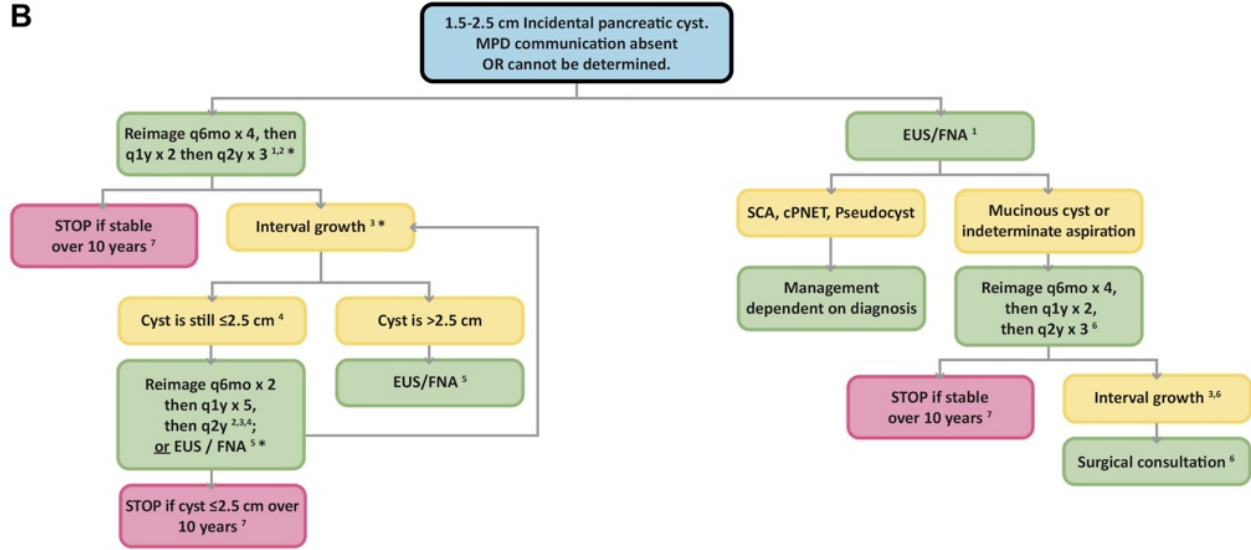
5 Definable growth of any cyst  $\geq 2$ cm at detection (or at entry from Figure 1) will result in a cyst that is at minimum 2.4cm; for such cysts, EUS/FNA is advised.

6 After EUS/FNA, further work-up is result-dependent (see Figure 2B).

7 If the patient reaches 80 years before the end of follow-up, follow-up should generally stop. If the patient is close to – but not yet – 80 years when the cyst is first detected, then when the patient reaches 80 years, Figure 4 can be used to guide further management.

\*Appearance of any mural nodule, wall thickening, dilation of MPD  $\geq 7$ mm, or extrahepatic biliary obstruction/jaundice should prompt immediate EUS/FNA and surgical evaluation regardless of size or amount of growth.

B



LEGEND

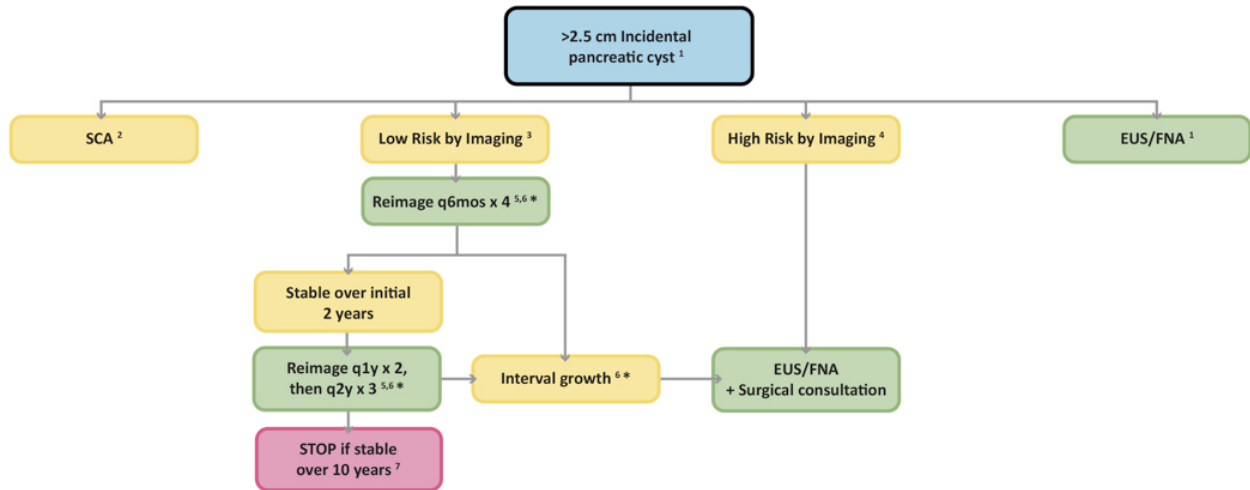
- 1 EUS/FNA can be performed instead of follow-up imaging: 1) at detection; or 2) after entry into chart (from Figure 1). In general, EUS/FNA merits stronger consideration for larger or faster-growing cysts relative to smaller or slower-growing cysts.
- 2 Imaging follow-up with contrast-enhanced MRI or pancreas protocol CT.
- 3 Growth defined as 20% increase in longest axis diameter, as depicted on either axial or coronal image. No growth = stable.
- 4 Following growth, imaging follow-up or EUS/FNA may be performed. In general, EUS/FNA merits stronger consideration for larger or faster-growing cysts relative to smaller or slower-growing cysts. Note that definable growth of any cyst  $\geq 2$ cm at detection (or at entry from Figure 1) will result in a cyst that is at minimum 2.4cm; for such cysts, EUS/FNA is advised.

5 After EUS/FNA, further work-up is result-dependent (see right-hand arm of current chart).

6 Surgical evaluation is advised if growth occurs or if worrisome features or high-risk stigmata develop during the observation period.

7 If the patient reaches 80 years before the end of follow-up, follow-up should generally stop. If the patient is close to – but not yet – 80 years when the cyst is first detected, then when the patient reaches 80 years, Figure 4 can be used to guide further management.

\*Appearance of any mural nodule, wall thickening, dilation of MPD  $\geq 7$ mm, or extrahepatic biliary obstruction/jaundice should prompt immediate EUS/FNA and surgical evaluation regardless of size or amount of growth.



LEGEND

1 Immediate EUS/FNA performed in many centers for all cysts of this size.

2 For SCA>4cm, surgical consultation for consideration of resection is advised.

3 Low-risk features: no mural nodule, no wall thickening, normal caliber MPD, no peripheral Ca<sup>++</sup>. If surgery is contemplated for low-risk cysts, EUS/FNA is strongly advised before the procedure.

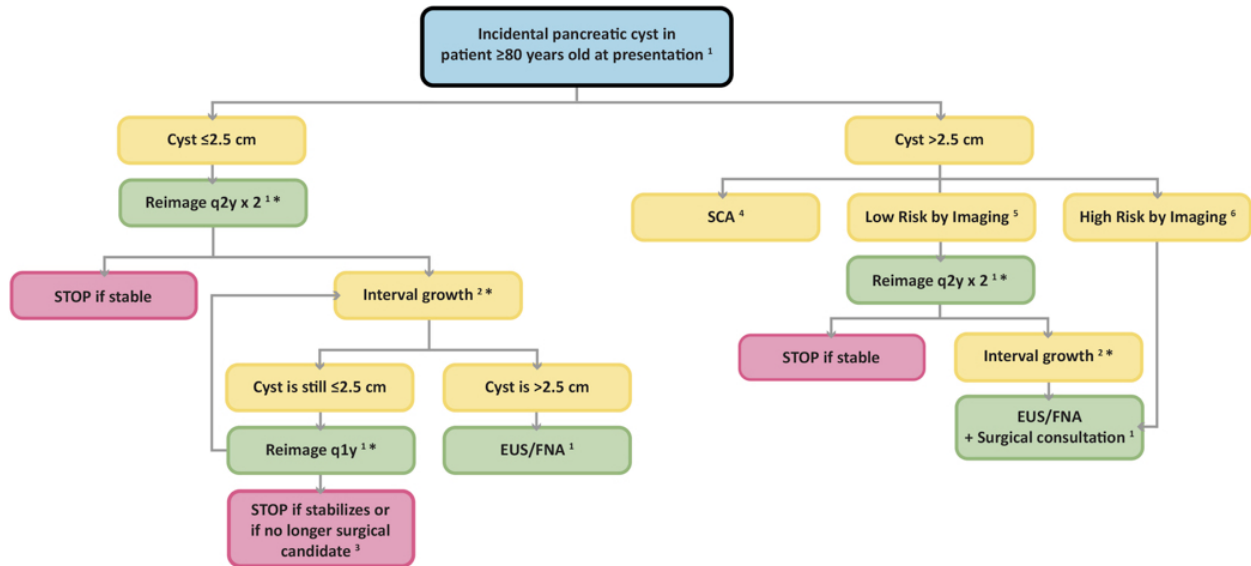
4 High-risk features: mural nodules, wall thickening, MPD ≥7mm maximal diameter, peripheral Ca<sup>++</sup>. All patients with "high risk stigmata" (extrahepatic biliary obstruction/jaundice, enhancing mural nodule, MPD ≥ 10mm) at time of cyst detection should undergo immediate clinical evaluation for surgery.

5 Imaging follow-up with contrast-enhanced MRI or pancreas protocol CT.

6 Growth defined as 20% increase in longest axis diameter, as depicted on either axial or coronal image. No growth = stable.

7 If the patient reaches 80 years before the end of follow-up, follow-up should generally stop. If the patient is close to – but not yet – 80 years when the cyst is first detected, then when the patient reaches 80 years, Figure 4 can be used to guide further management.

\*Appearance of any mural nodule, wall thickening, dilation of MPD ≥7mm, or extrahepatic biliary obstruction/jaundice should prompt immediate EUS/FNA and surgical evaluation regardless of size or amount of growth.



**LEGEND**

1 The decision to pursue imaging follow-up and/or EUS/FNA should be anchored to a patient's overall health and preferences; such work-up is only advised if the patient is a surgical candidate.

2 Growth defined as 100% increase in longest axis diameter (on axial or coronal image) for cysts <5mm, 50% increase for cysts ≥5mm and <15mm, and 20% increase for cysts ≥15mm. No growth = stable.

3 The decision to discontinue imaging follow-up is dependent on a patient's surgical candidacy and preferences, and the duration of the cyst's stability.

4 For SCA>4cm, surgical consultation for consideration of resection is advised.

5 Low-risk features: no mural nodule, no wall thickening, normal caliber MPD, no peripheral Ca<sup>++</sup>. If surgery is contemplated for low-risk cysts, EUS/FNA is strongly advised before the procedure.

6 High-risk features: mural nodules, wall thickening, MPD ≥7mm maximal diameter, peripheral Ca<sup>++</sup>. All patients with "high risk stigmata" (extrahepatic biliary obstruction/jaundice, enhancing mural nodule, MPD ≥ 10mm) at time of cyst detection should undergo immediate clinical evaluation for surgery if they are surgical candidates.

\*Appearance of any mural nodule, wall thickening, dilation of MPD ≥7mm, or extrahepatic biliary obstruction/jaundice should prompt consideration of immediate EUS/FNA and surgical evaluation regardless of size or amount of growth.

**Table 1. Worrisome features and high-risk stigmata\***

Worrisome Features
Cyst ≥3 cm
Thickened/enhancing cyst wall
Nonenhancing mural nodule
Main pancreatic duct caliber ≥7 mm <sup>†</sup>
High-Risk Stigmata
Obstructive jaundice with cyst in head of pancreas
Enhancing solid component within cyst
Main pancreatic duct caliber ≥10 mm in absence of obstruction

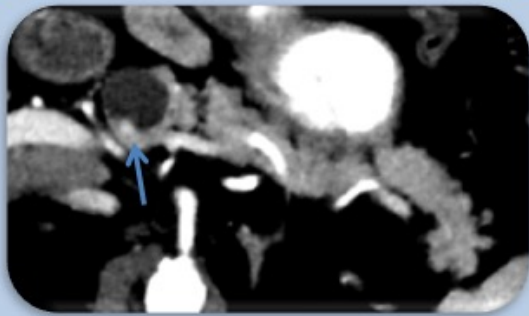
\*From Tanaka et al [48].

<sup>†</sup>Based on Kang et al [59].

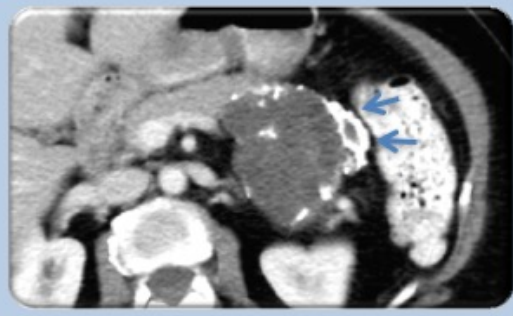


Using the longest axis diameter on axial or coronal images,  
**Significant growth** in cysts from baseline is defined as:

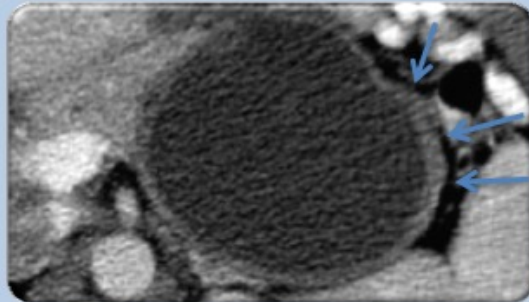
For <0.5 cm:	100% increase
For ≥0.5 cm and <1.5 cm:	50% increase
For ≥1.5 cm:	20% increase
No growth = stable	



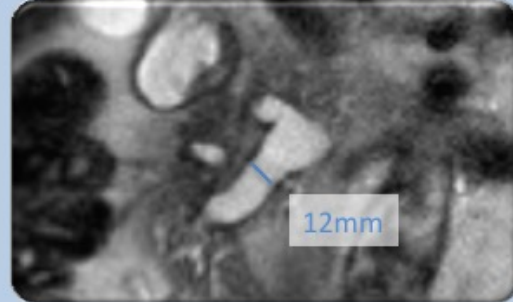
Enhancing mural nodule



Peripheral calcium



Thickened/enhancing wall



MPD ≥7mm

Absence of high-risk features

Obstructive jaundice from cyst