Sequential Screening Algorithm for Advanced Liver Fibrosis

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Abstract

Chen et al. (2024) (M4/M5) (M3)

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1. (PPV)

2.

3.

1.2

- **M3 (Echo-Net+All)**:
- **M4 (Clinical-A)**: AFIB-4
- **M5 (Clinical-Base)**:

1.3

1. **stepwise1 (M4→M3)**: AM3
2. **stepwise2 (M5→M3)**: M3

Youden's J

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2.1 (Internal Test, n=51)

Table 1:

	Sensitivity	Specificity	PPV	NPV	Accuracy
Two-step (M4→M3)	0.636	**0.862**	**0.778**	0.758	0.765
Two-step (M5→M3)	0.682	**0.897**	**0.833**	0.788	**0.804**
Single (M4)	0.773	0.759	0.682	0.759	0.707
Single (M5)	0.682	0.552	0.567	0.762	0.646
Single (M3)	**0.909**	0.897	0.842	**0.920**	**0.823**

2.2 (Prospective Test, n=100)

Table 2:

	Sensitivity	Specificity	PPV	NPV	Accuracy
Two-step (M4→M3)	0.692	**0.852**	**0.750**	0.812	**0.790**
Two-step (M5→M3)	0.692	**0.852**	**0.750**	0.812	**0.790**
Single (M4)	0.744	0.590	0.561	0.837	0.680
Single (M5)	0.744	0.541	0.533	0.825	0.659
Single (M3)	**0.821**	0.820	0.725	0.845	0.810

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3.1 (M4/M5)

Table 3: vs M4/M5 (Prospective Test)

	Two-step	Single M4	Single M5	
Specificity	0.852	0.590	0.541	+26.2%~31.1%
PPV	0.750	0.561	0.533	+18.9%~21.7%
Accuracy	0.790	0.680	0.659	+11.0%~13.1%
	36%	~57%	~59%	21%~23%

- **44%** (0.590 → 0.852)
- **PPV 34%** (0.561 → 0.750)
- **37%** (57% → 36%)

3.2 (M3)

Table 4: vs M3 (Prospective Test)

	Two-step (M4→M3)	Single M3	
Sensitivity	0.692	0.821	-12.9%
Specificity	0.852	0.820	+3.2%
PPV	0.750	0.725	+2.5%
NPV	0.812	0.845	-3.3%
Accuracy	0.790	0.810	-2.0%
M3	**57%**	**100%**	**43%**

- (-12.9%) 69.2%
- PPV
- **57%**
- 43%

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4.1 （Prospective Test, M4→M3)

	100 （100%)
Step1 （)	43 （43%)
Step1 （Step2)	57 （57%)
()	36 （36%)
	64 （64%)

Figure 1:

4.2

Table 5: （Prospective Test, Two-step M4→M3)

TP = 27	FN = 12
FP = 9	TN = 52

4.3

1. 43%

2.

3. 70%

4. 75%

5

1. (+26%)PPV (+19%) （+11%)

2. 2% 43%

3.
   - Two-step (M4→M3) (M5→M3)
   - M3
   - Two-step

4.

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1. Chen LD, Huang ZR, Yang H, et al. US-based Sequential Algorithm Integrating an AI Model for Advanced Liver Fibrosis Screening. *Radiology*. 2024;311(1):e231461.