IMPACT of Chronic Liver Disease on Healthcare Systems

Supported by an educational grant from Mallinckrodt Pharmaceuticals and Grifols, S.A.

CLDF
Chronic Liver Disease Foundation

Chronic Care Management Approaches in Chronic Liver Disease

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Identification of Cirrhosis
Proactive Searching

Population and methods

N = 783
Aged 18-75

6 GP practices in Tayside, Scotland

LFTs checked by GP + clinical data
- BMI
- Alcohol intake
- Metabolic syndrome

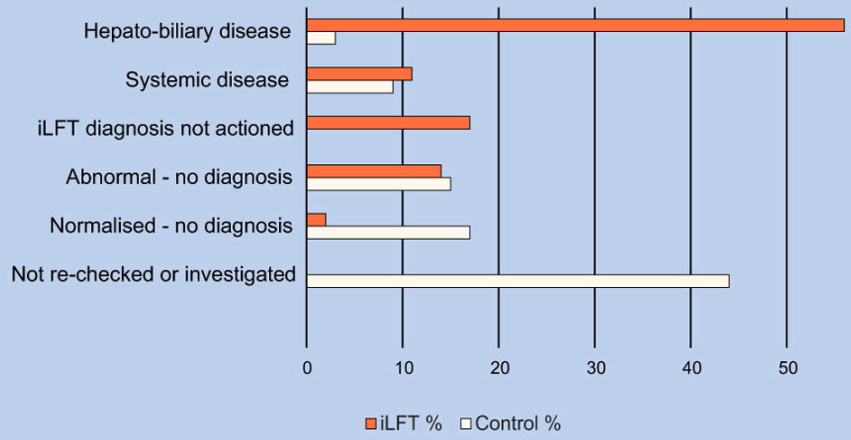
iLFT intervention

Abnormal LFTs in laboratory trigger reflex testing on same sample

Aetiological tests, fibrosis scores and clinical data collated

iLFT diagnosis and management plan sent to GP electronically

Results



Increased liver diagnosis by **43%** ICER **£284** per correct diagnosis

iLFT increases liver diagnosis, improves quality of care, and is highly cost-effective

RESEARCH ARTICLE | VOLUME 71, ISSUE 4, P699-706, OCTOBER 01, 2019

Intelligent liver function testing (iLFT): A trial of automated diagnosis and staging of liver disease in primary care

John F. Dillon • Michael H. Miller • Emma M. Robinson • ... Peter T. Donnan • Kathleen A. Boyd • Ellie Dow • Show all authors

Linkage to Care: Known population Management

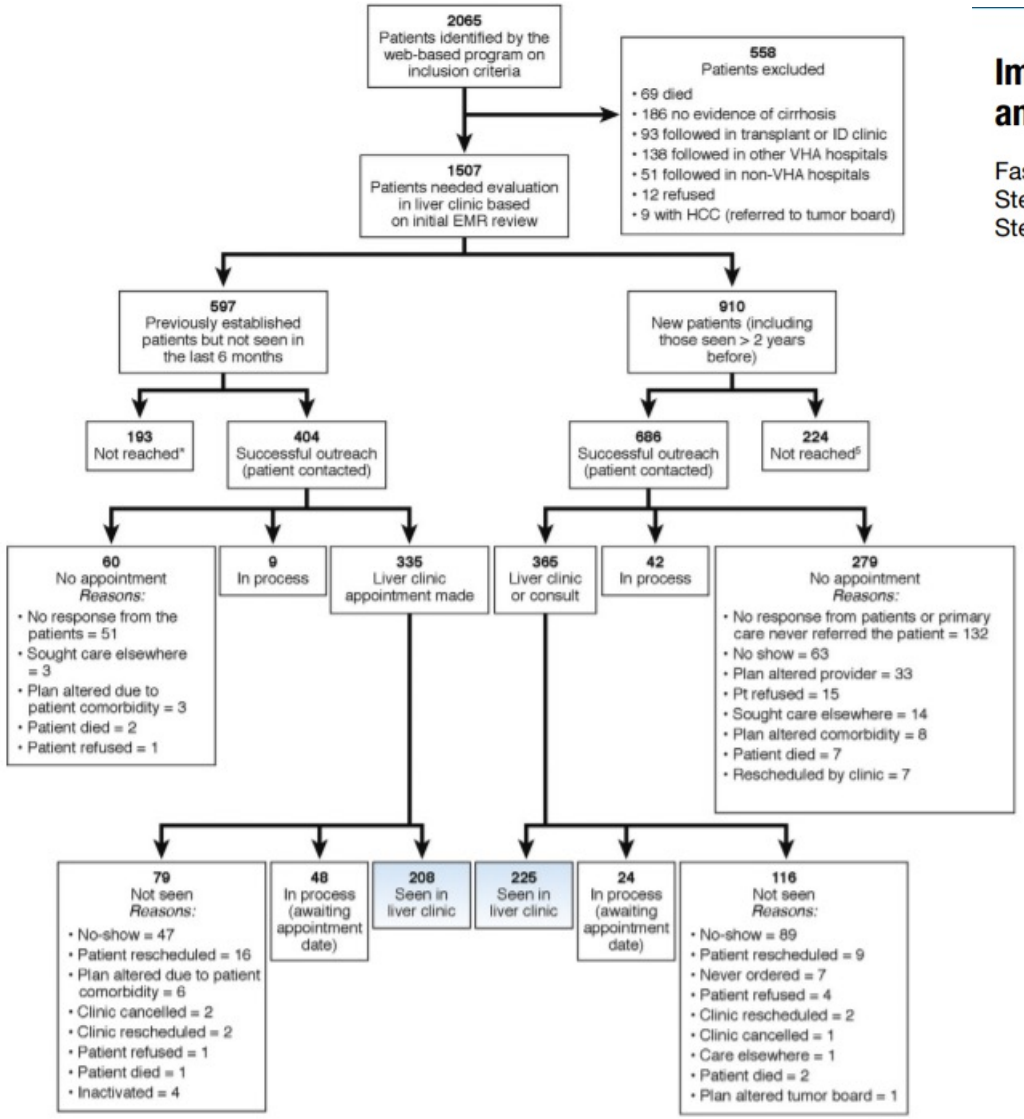


Figure 1. Initial results of P-CIMS implementation. Identification of patients with cirrhosis and their linkage to specialty care. EMR, electronic medical record; HCC, hepatocellular carcinoma.

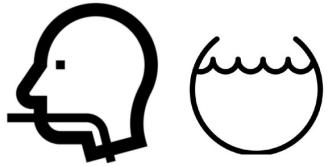
Ziad F. Gellad, Section Editor

Implementation of a Population-Based Cirrhosis Identification and Management System

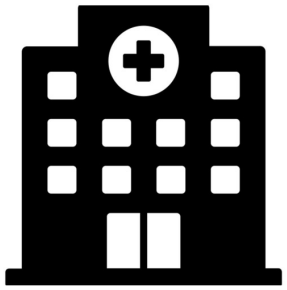
Fasiha Kanwal,[*,‡,§] Srikar Mapaskhi,[‡] Donna Smith,[‡] Tamar Taddei,[‖] Khozema Hussain,[*] Stella Madu,[*] Ngoc Duong,[*] Donna White,[‡,§] Yumei Cao,[‡] Rajni Mehta,[‖] Hashem El-Serag,[*,‡] Steven Asch,[¶,#] and Amanda Midboe[¶,#]

Hotspotting

Skilled Team



On-Demand Procedures



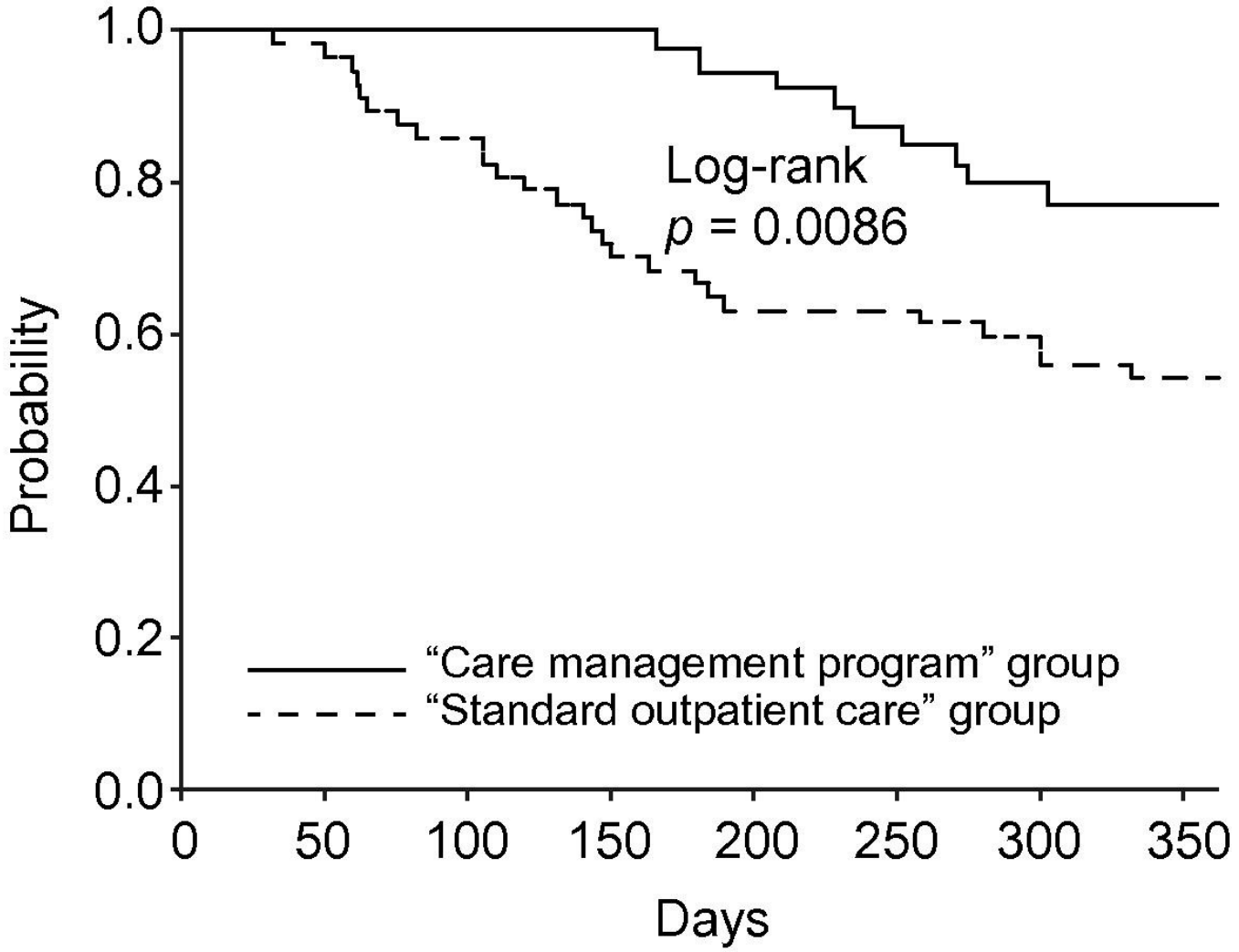
Day Hospital

Cognitive Testing

Relapse Prevention

Morando F. *J Hepatol*. 2013.

Hotspotting
Best Case Scenario



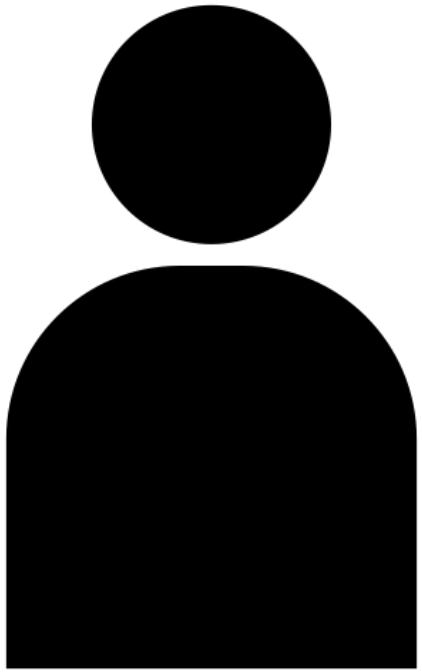
Morando F. *J Hepatol*. 2013.

Hotspotting
Best Case Scenario

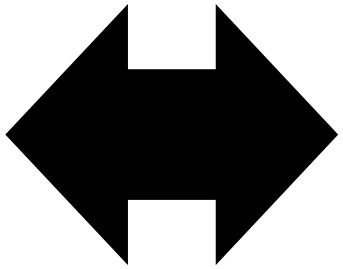
	Care Management	Standard Care	P value
30-day readmissions	15.4%	42.4%	<.01
1-year all-cause mortality	23.1%	45.7%	<0.025
1-year liver-related mortality	15.4%	35.6%	<0.05
Global costs	1479 ± 2184	2816 ± 3893	<0.05

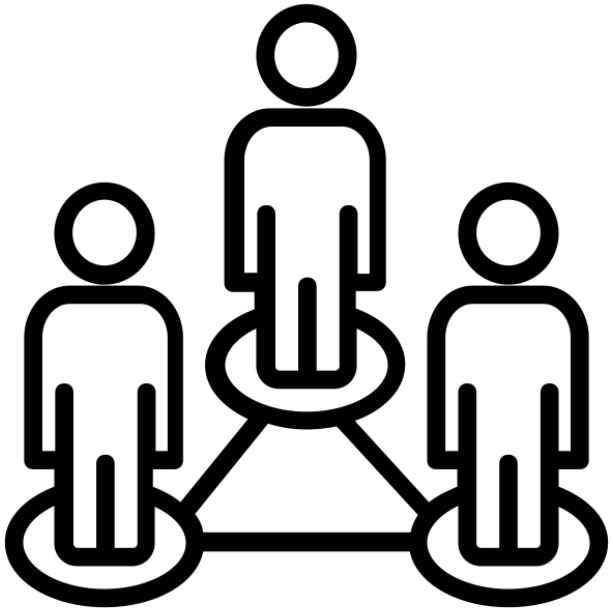
Morando F. *J Hepatol*. 2013. 59:257.

Continuity
Cultivating Community Partnerships



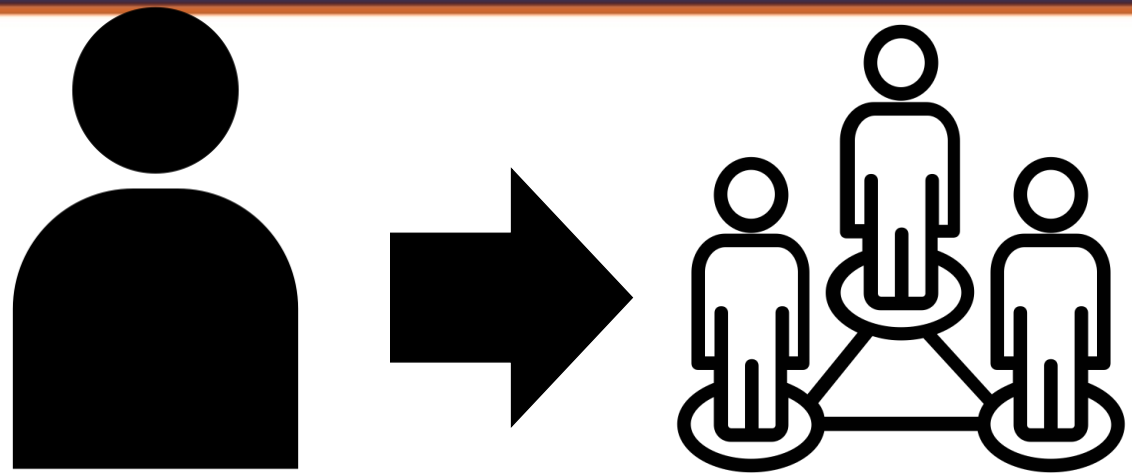
Diabetes
hypertension





Cirrhosis

Cirrhosis is Special: more the merrier



Total 30-day readmissions after any hospitalization during follow up					
	P-value	IRR and 95% CI		P-value	IRR and 95% CI
Continuity of care			**Usual provider of care**		
Lowest 25th percentile	ref	Ref	**Lowest 25th percentile**	ref	ref
25th-50th percentile		1.18 (1.05, 1.33)	**25th-50th percentile**		1.04 (0.91, 1.19)
50th-75th percentile		1.14 (1.01, 1.28)	**50th-75th percentile**		1.11 (1.00, 1.23)
Highest 25th percentile		1.19 (1.06, 1.34)	**Highest 25th percentile**		1.12 (1.00, 1.25)

Clin Gastroenterol Hepatol. 2020 Sep;18(10):2340-2348.

APPs in Hepatology

Mid-Level Providers in Transplant Hepatology: A National Survey

Amanda Chaney, ARNP, FNP-C[1],
Eugene Richie, RN[1] and
Andrew P. Keaveny, MD, FRCPI[1]

doi:10.1038/ajg.2010.262

4 in 5 centers

APPs provide excellent, focused complex care

BMJ VOLUME 323 29 SEPTEMBER 2001 bmj.com

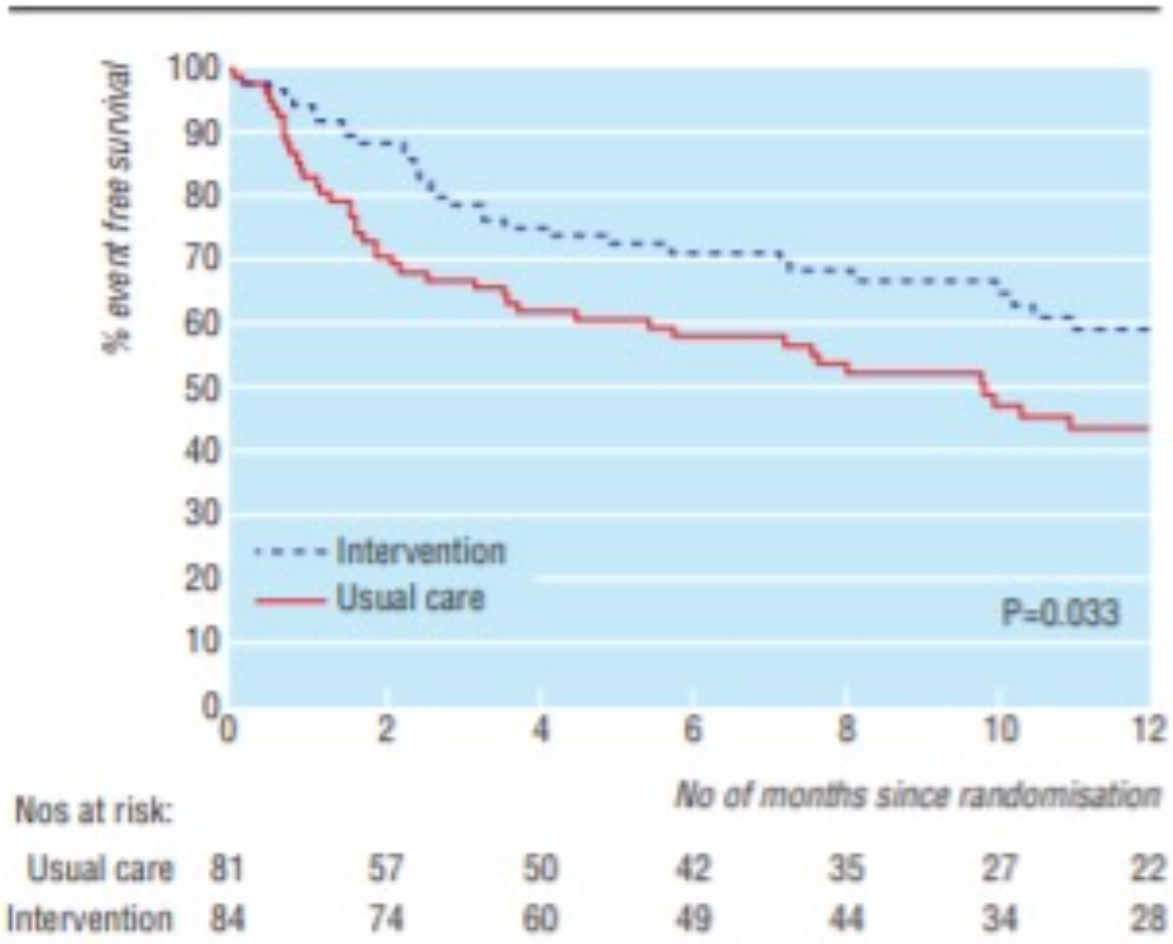
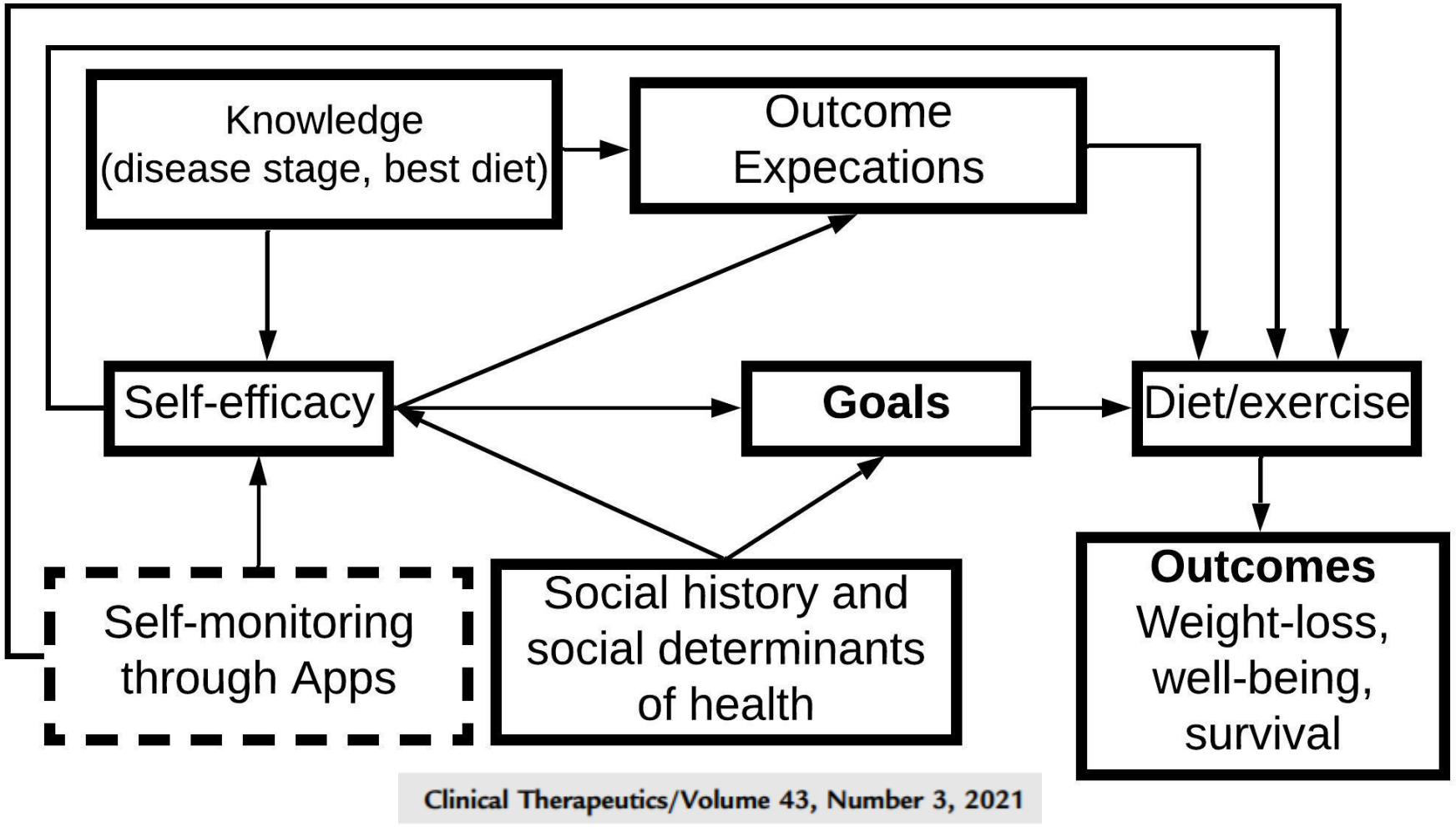


Fig 2 Time to first event (death from any cause or hospital admission for heart failure) in usual care and nurse intervention groups

Randomised controlled trial of specialist nurse intervention in heart failure

Lynda Blue, Elanor Lang, John J V McMurray, Andrew P Davie, Theresa A McDonagh, David R Murdoch, Mark C Petrie, Eugene Connolly, John Norrie, Caroline E Round, Ian Ford, Caroline E Morrison

APPs facilitate behavioural change



Clinical Therapeutics/Volume 43. Number 3. 2021.

HEPATOLOGY

Original Article

The Quality and Outcomes of Care Provided to Patients with Cirrhosis by Advanced Practice Providers

Elliot B. Tapper ✉, Shengchen Hao, Menghan Lin, John N. Mafi, Heather McCurdy, Neehar D. Parikh, Anna S. Lok

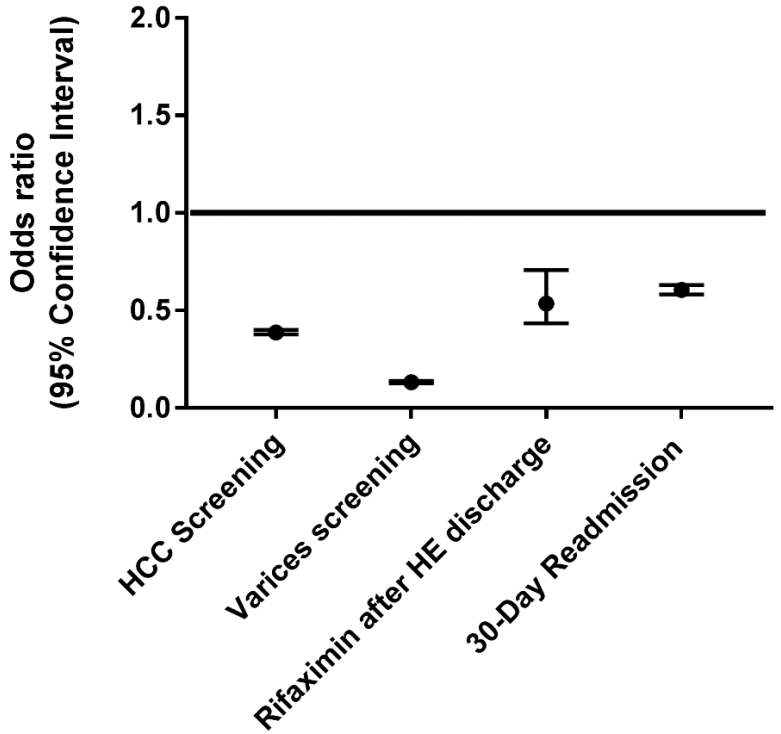
«Natural Experiments» APPs were associated with more HCC/varices screening and rifaximin use after HE discharge

		Screening for HCC	Endoscopy screening for varices	On rifaximin after discharge for HE
Before and after an APP visit	Denominator	97013	84138	5082
	Metric Satisfied Prior to APP visit	26.1%	7.2%	7.9%
	Metric Satisfied After APP visit	30.1%	8.9%	14.8%
	Adjusted OR (95% CI)	1.23 (1.19, 1.27)	1.20 (1.13, 1.27)	2.09 (1.80, 2.43)

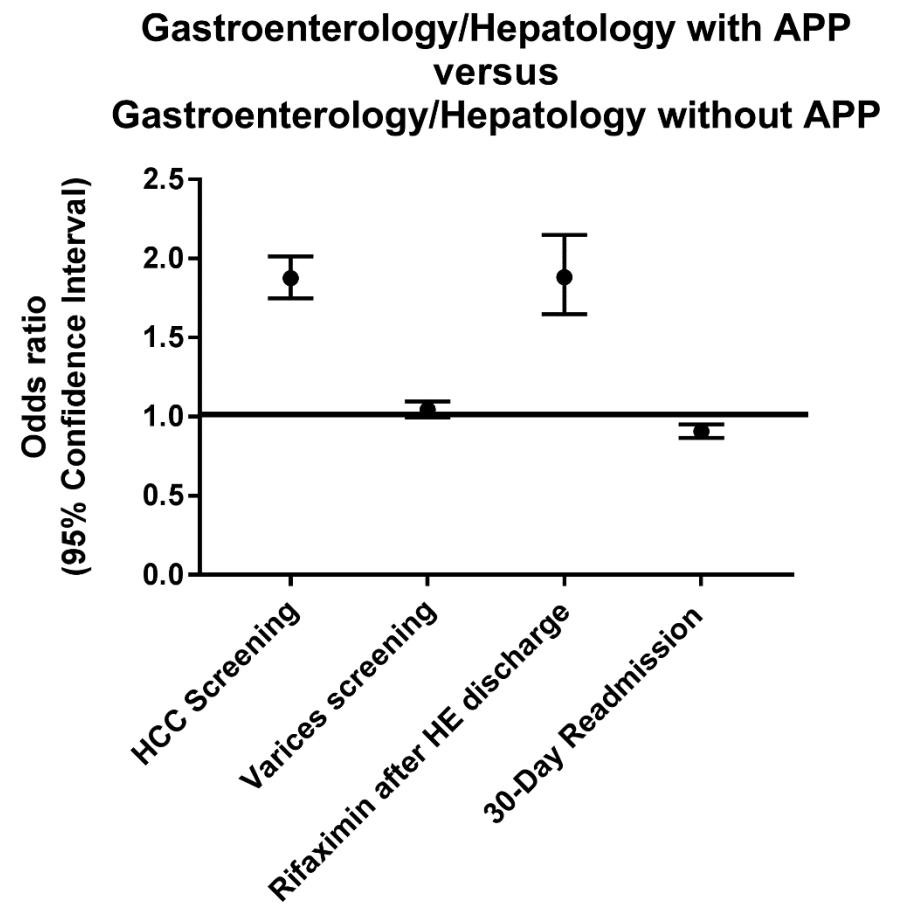
Headline: GI still important

Headline: 1 + 1 = 3

A



B



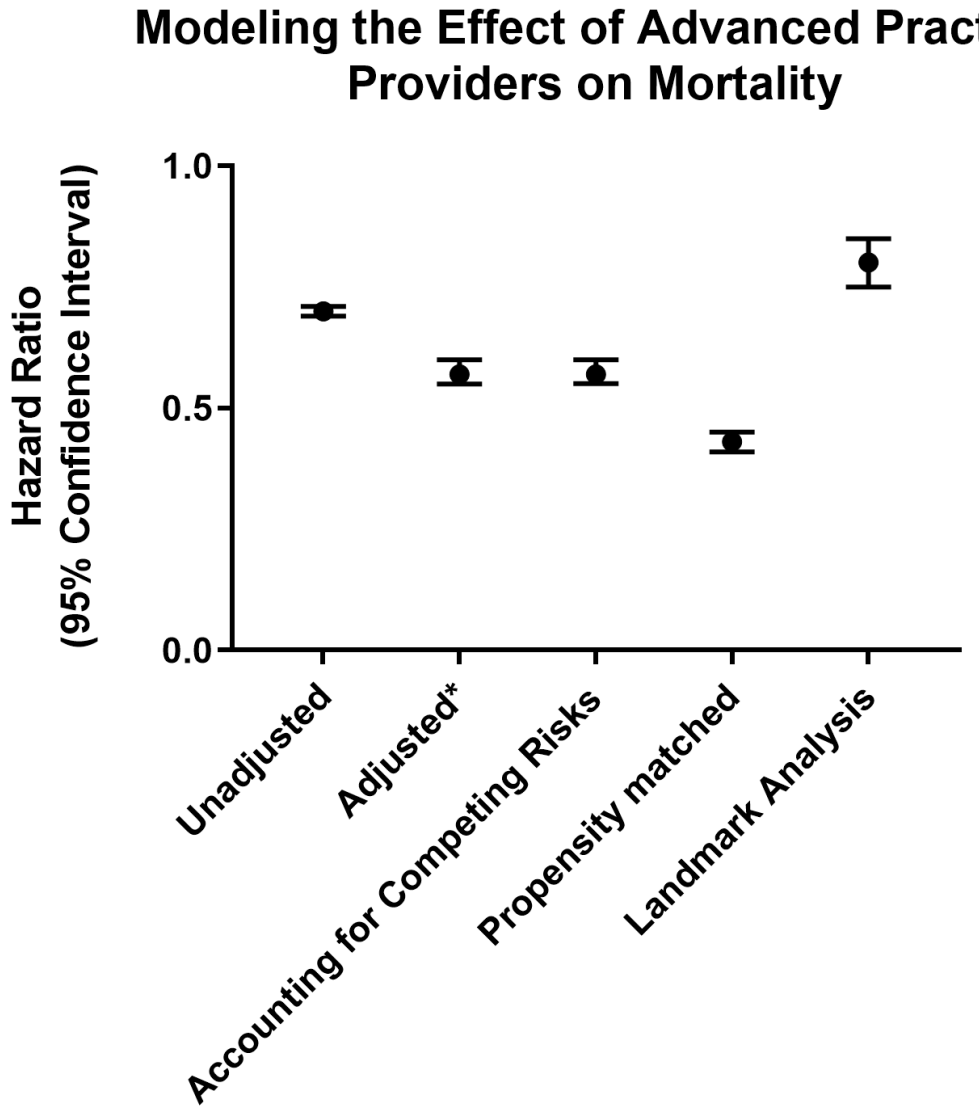
C

D

«Dose Effects»
Longitudinal Impact of APP Care

	Screening for HCC (screens per person year)	Screening for varices (endoscopy per person year)	30-day readmissions per discharge
Number of events in patients seen by APP per person year, median (IQR)	0.75	0.35	
Number of events in patients never seen by APP per person year, median (IQR)	0.45	0.24	
Adjusted incidence rate ratio (95% Confidence Interval)	1.61 [1.60, 1.63]	1.51 [1.49, 1.54]	0.88 [0.87, 0.90]

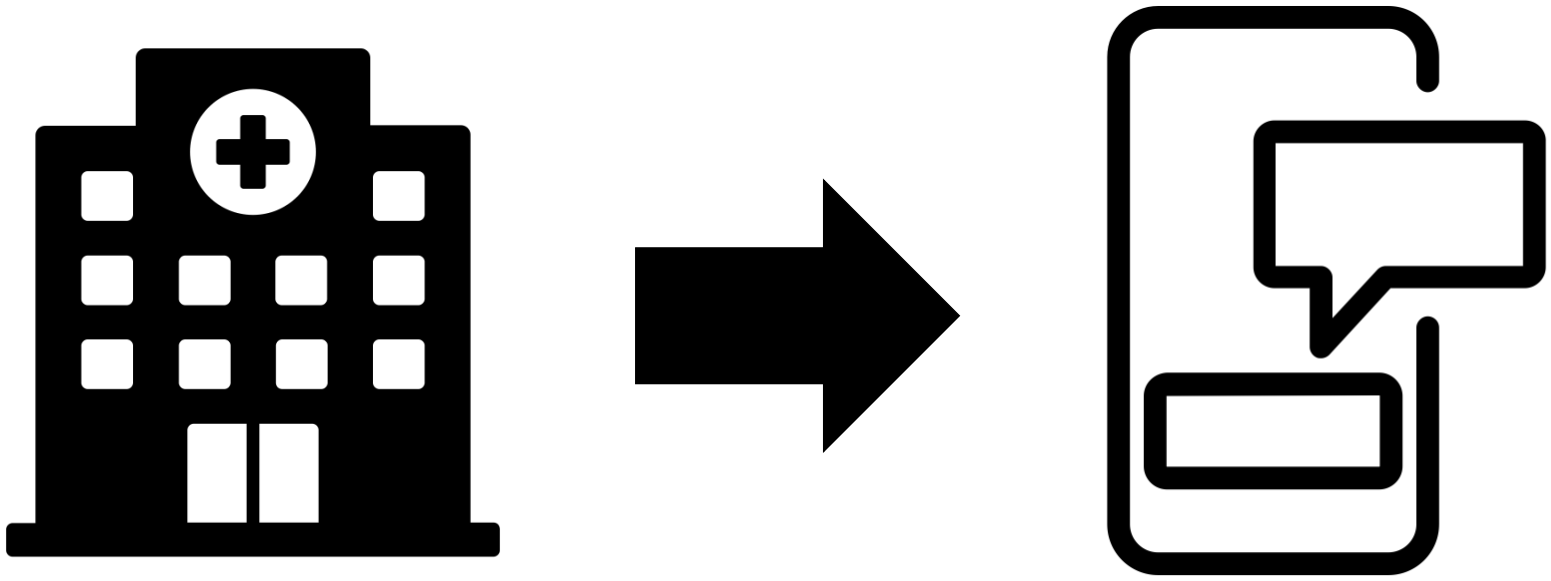
Mortality Benefit?
APP Associated With Reduced Mortality



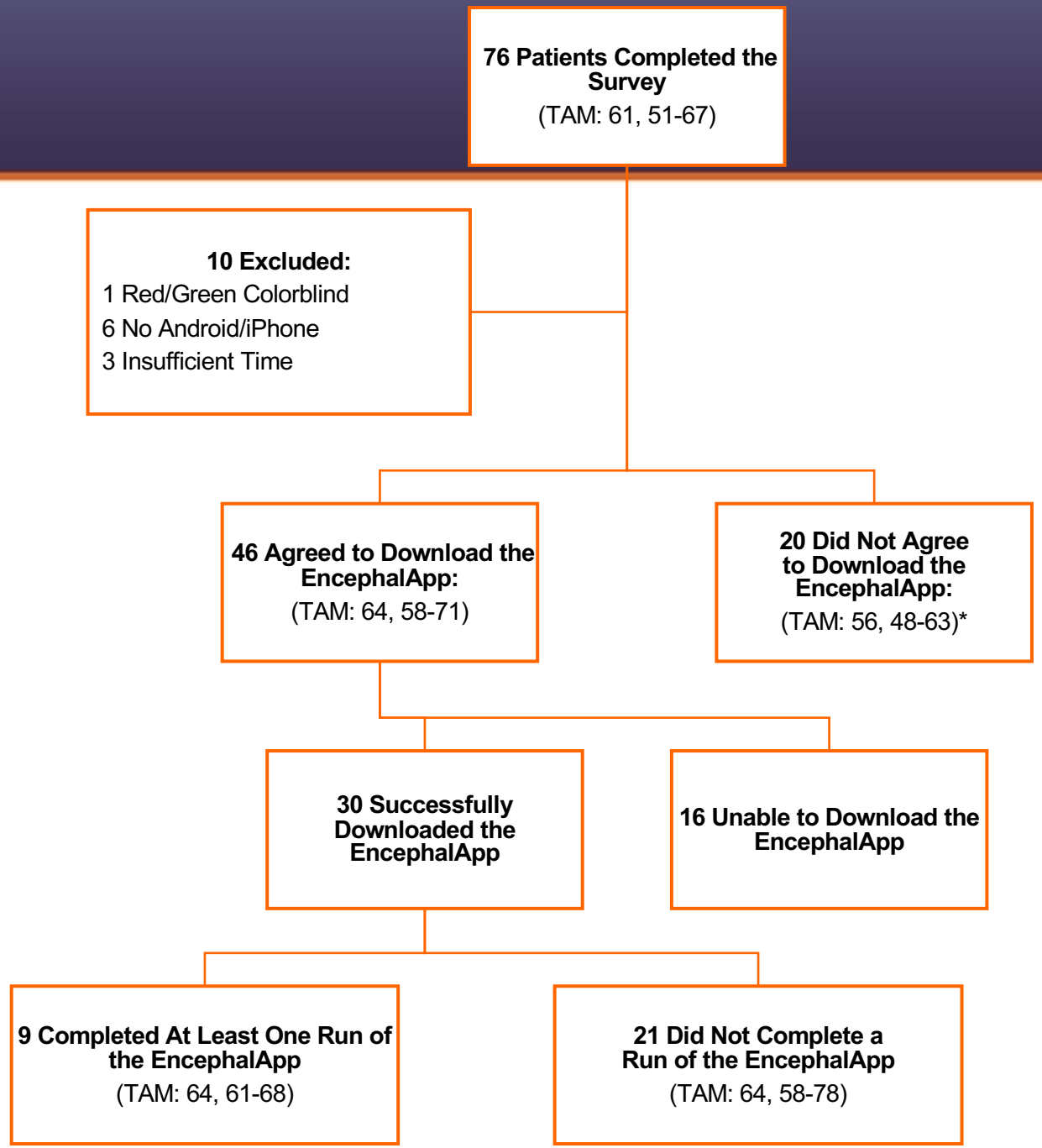
Price Tag?

	Crude Charges, 2015 USD (Median, IQR)		Incidence Rate Ratios (95% CI)	
	APP	Non-APP	APP	APP
			Unadjusted	Adjusted
Total Charges	$9,619 (5,041-18,183)	$4,450 (2,143-9,033)	1.40 (1.39, 1.41)	1.79 (1.77, 1.90)

Apps/Wearables
Proactive Monitoring

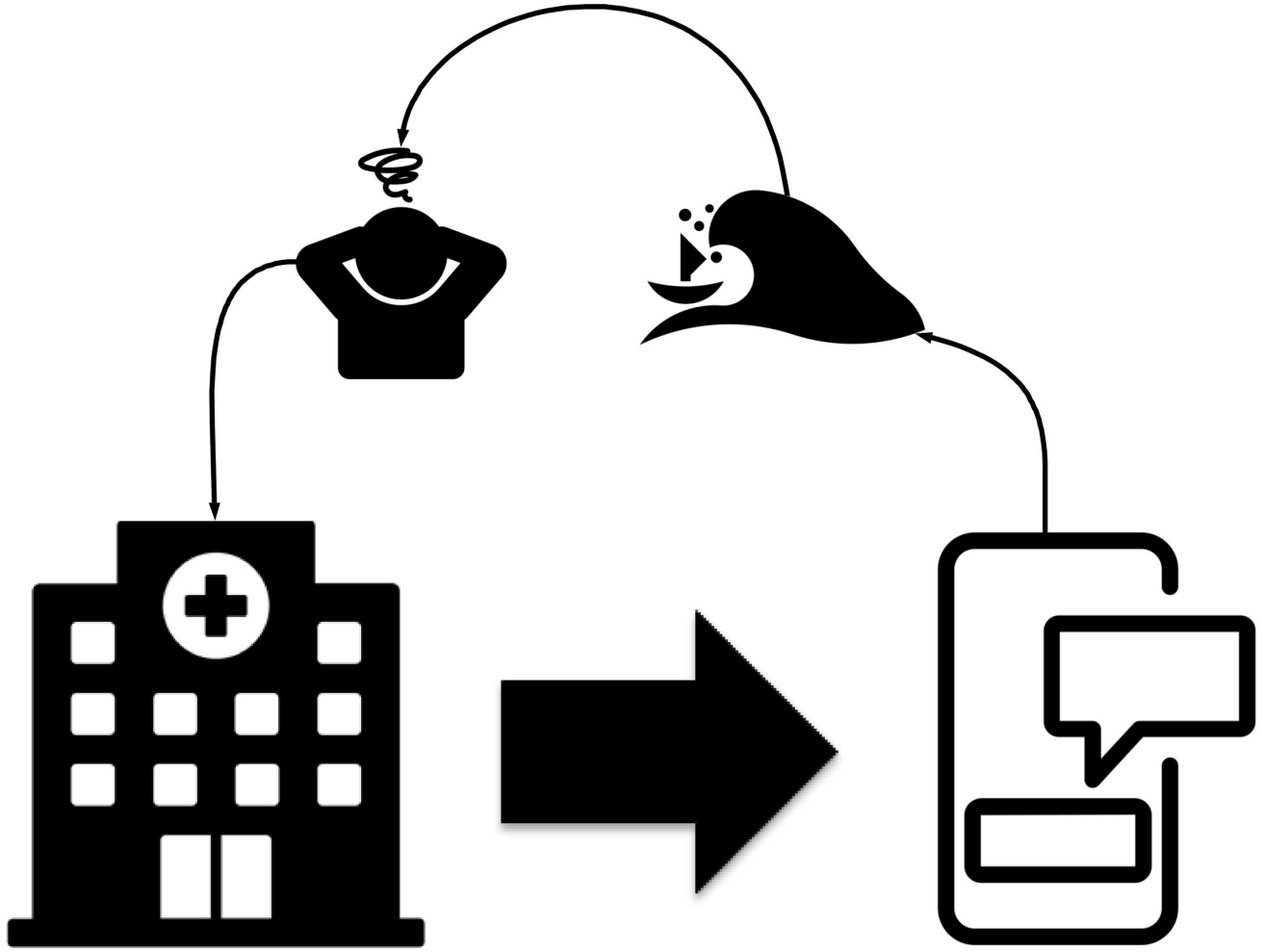


12%



Liver Int. 2020 Jul;40(7):1556-1563.

Apps/Wearables
Tsunami of Noise



Ganapathy. *Liver Int*. 2017;37(12):1843-185.

Remote monitoring: Video visits as case study

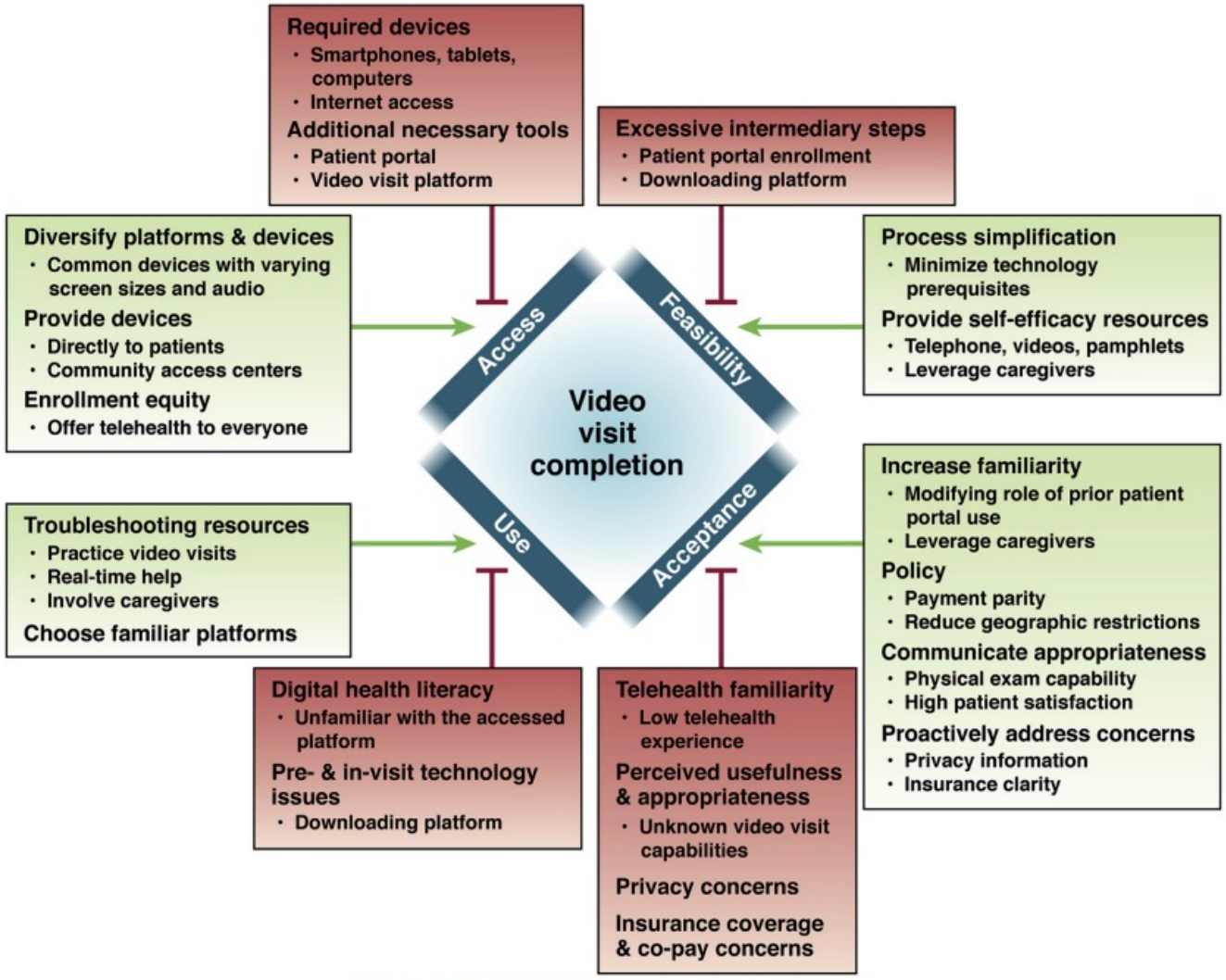


Figure 1. Barriers to and facilitators of video visit use.

COMMENTARIES | VOLUME 161, ISSUE 4, P1080-1084.E2, OCTOBER 01, 2021

Summary

Early identification

Hot spotting

Collaboration