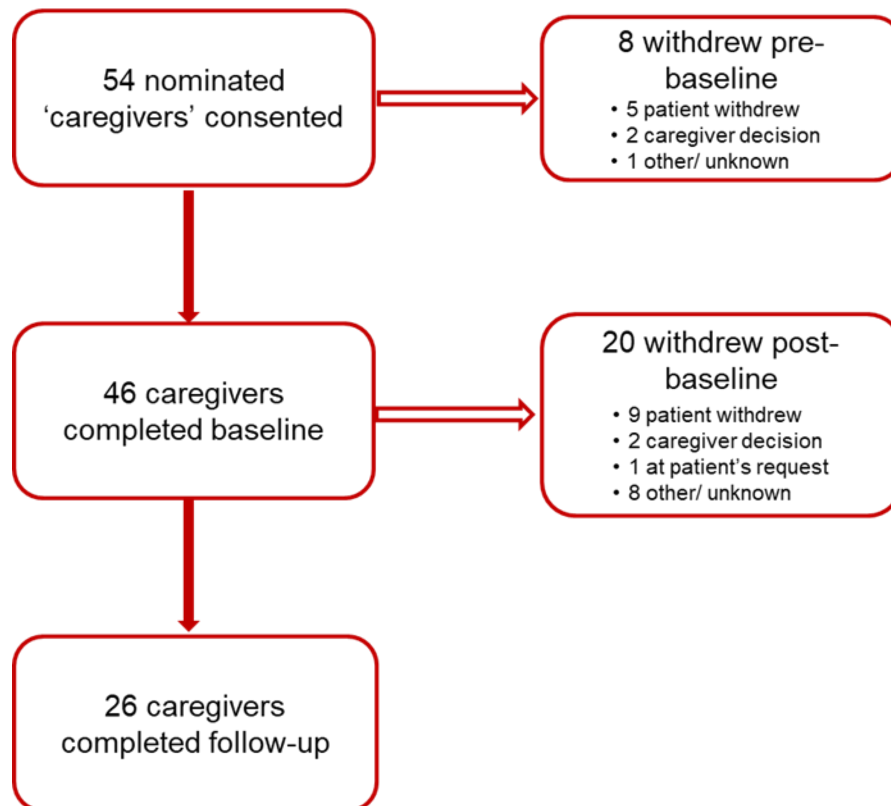
Supplementary File A. Caregiver flow through the study



Supplementary File B. Baseline characteristics of recruited caregivers, n (%) unless otherwise stated

Caregiver characteristics		**N = 46**
Age (years) - mean (SD)		62 (14)
Gender:		
Female		35 (76%)
Male		11 (24%)
Other		0
Relationship to person with HF		
Spouse/partner		30 (65%)
Immediate family		11 (24%)
Other relative		3 (7%)
Friend		2 (4%)
Ethnicity		
White (any)		46 (100%)
Any other		0
Partnership status*		
Married or civil partnership		32 (70%)
Single (never married)		6 (13%)
Divorced		4 (9%)
Widowed		1 (2%)
Live alone		39 (84.8%)
Employment status*		
Employed/self-employed		16 (35%)
Retired		19 (41%)
Unemployed		2 (4%)
Full-time parent/carer		3 (7%)
Student		0
Other		5 (11%)
Education		
Post-minimum school leaving age **		25 (54%)
Degree/equivalent education*		18 (39%)

*3 responses missing; **2 responses missing; ***1 response missing

Supplementary File C. Summary of REACH-HF participant-facilitator contacts

		Facilitator contacts - median (range)					
Site location	**N patients**	**Phone (N)**	**Clinic* (N)**	**Home* (N)**	**Total (N)**	**Non-contact time* (minutes)**	**Total time (minutes)**
Site A	21	3 (0-8)	2 (0-4)	0 (0-3)	6 (4-10)	60.0 (40-95)	162.5 (50-320)
Site B	17	5 (3-7)	0 (0-2)	0 (0-0)	5 (4-7)	140.0 (10-95)	125.0 (120-180)
Site C	33	3 (1-5)	2 (1-7)	0 (0-0)	5 (3-11)	120.0 (90-120)	177.5 (120-270)
Site D	33	1 (0-6)	1 (0-2)	3 (0-5)	4 (4-7)	90.0 (30-470)	242.5 (155-390)
All sites	104	3 (0-8)	1 (0-7)	0 (0-5)	5 (3-11)	90.0 (10-470)	180.0 (50-390)

*Face-to-face contacts between facilitator and participant; **Non-contact time included facilitator preparation/travel time

Supplementary File D. Caregiver baseline and 4-month follow-up outcome scores

	Baseline N, Mean (SD)	4-months N, Mean (SD)	Within group baseline vs. 4-month difference Mean (95% CI), P-value
EQ-5D-5L			
Visual analogue score (VAS)	46, 72.7 (18.3)	25, 80 (14.1)	2.6 (-2.6, 7.8) 0.31
Utility score	46, 0.73 (0.2)	25, 0.81 (0.2)	0.04 (-0.001, 0.1), 0.06
HADS			
HADS-Anxiety			
HADS-Depression	46, 8.1 (4.8)	26, 6.5 (5.4)	-0.5 (-2.0, 1.1), 0.52
	46, 4.8 (4.2)	26, 3.5 (4.3)	-0.04 (-1.3, 1.2), 0.95
FamQol			
Physical	46, 15.6 (2.6)	26, 15.9 (3.7)	0.2 (-1.4, 1.7), 0.84
Psychological	46, 12.87 (4.4)	26, 13.6 (4.6)	0.3 (-1.3, 1.9), 0.69
Social	46, 14.7 (3.4)	26, 15.2 (4.1)	-0.4 (-2.3, 1.6), 0.72
General QoL	46, 56.3 (10.4)	26, 58.5 (12.5)	1.4 (-3.0, 5.7), 0.53
CBQ-HF			
Physical	46, 4.02 (4.7)	26, 3.2 (4.9)	0 (-1.2, 1.2), 1.00
Emotional/psychological	46, 18.7 (13.2)	26, 17.3 (13.1)	0.19 (-4.7, 5.1), 0.94
Social	46, 1.2 (1.7)	26, 1.5 (2.3)	0.46 (-0.5, 1.4), 0.32

Lifestyle	46, 3.65 (4.6)	26, 3.2 (4.5)	0.12 (-1.4, 1.6), 0.87
Caregiver Contribution to SCHFI (CC-SCHFI)			
Maintenance	46, 42.7 (24.2)	26, 44.5 (27.6)	1.8 (-9.0, 12.6), 0.73
Symptom perception	45, 33.1 (18.7)	26, 46.5 (16.3)	11.4 (3.5, 19.2), <0.01
Management	46, 40.7 (16.3)	26, 49.5 (18.2)	9.3 (2.2, 16.4), <0.01

N: number of caregivers

Supplementary File E. Qualitative data extracts

Overall views on the REACH-HF Intervention	
Positive	"It definitely has been worthwhile. It's been worthwhile for the patients and the difference I've seen in the majority of the patients. There's been the odd one that it hasn't changed significantly, but again I think if you look back at their questionnaires, they've probably improved more than I've maybe expected…I've maybe thought they have. And I think it's been worthwhile for me as well just again from my knowledge, my heart failure knowledge." *(Facilitator/ CR physiotherapist, Site D)* "I think the majority of patients have benefited from it. Okay, definitely. I think most…in fact all of them loved the manual. I'll say that with confidence. They all enjoyed the manual. They all enjoyed reading the information. They loved the breathing techniques. They loved the tips. It gave them things to think about that we hadn't actually touched on before." *(Facilitator/HF specialist nurse, Site A)* "We can see that we're being able to offer something to a group that were probably missed before, you know. The ones that the heart failure nurses, they wouldn't even have referred them to cardiac rehab, because they'd think, oh well it's too much for them. And then the travel, you know, the ones that are in [rural village], or the ones that are away out in [rural district], you know, those ones, and you think, oh they're not going to come along to a class in [town 25 miles away]. So those patients are not getting discriminated against. So […] I'm offering something to patients that would have been missed before." *(Facilitator/CR physiotherapist, Site B)*
Mixed	"I hadn't even seen patients [due to starting new role during COVID-19] when I was doing the training. So I found a lot of it went over my head a little bit. And what I could have got out of it maybe wasn't there, because there was a huge amount of experience on the course, and they probably didn't need things broken down as much as what I did. Which, in result, made me a bit…I didn't want to ask questions. Because I didn't know anybody, you know, I just felt it was a bit overwhelming, to be honest with you." *(Facilitator/HF specialist nurse, Site A)* "Really, it's [about] trying to get as many patients with heart failure into cardiac rehab as possible. Does that need to be with the Heart [Failure] Manual input? I'm not sure. […] I mean, home exercise? Absolutely, without a shadow of a doubt. And I think for a lot of the heart failure patients previously – even prior to the pandemic – we would have concentrated on [that]. But equally, a lot of them got on really well in the classes and they were quite happy to attend classes. So again it goes back to that initial assessment and what does the patient want. But could it be part of that menu of choice? Yes, I don't see any reason why not." *(Stakeholder 2)*
Barriers to implementation	
Online format of facilitator training	"It was because it was online - it was good, I did enjoy it - but I don't know, I just felt as if that one-to-one communication [when] you are all sitting in a room. it's much better in that sense, isn't it?" *(Facilitator/Cardiology specialist nurse, Site C)*

	“I think you can’t really beat face to face a lot of the time can you and… it’s easier to speak to people and quite often, you know, in the workshops and stuff some people were quite quiet whereas maybe they wouldn’t have been as much face to face, so maybe more blended is better going forward.” *(Facilitator/Cardiology specialist nurse, Site C)*
Resources to support implementation	“I’m keen to definitely explore [using REACH-HF] in the future, and I do see it being very beneficial to us locally, but as I say, I would just need to make sure I had the right staff in place to help to deliver it and support it, for it to be a success.” *(Facilitator/Cardiology specialist nurse, Site A)* “The only ‘con’ I can see is the time factor, you know, just the amount of time that you’re spending with one person compared to an hour with 15 or 20 people, you know? But, in some ways, that’s not a con because you’re really helping that individual, and you’re really hoping you’re making a difference for them and their family members, that they get help if they need it when they need it” *(Facilitator/CR physiotherapist, Site D)* “If we were thinking about upscaling the provision of cardiac rehab we'd have to try and think about who would deliver that and what staff and resources we'd need to enable us to do that. There's also a lot of pressure on the heart failure nurse service at the moment. There's very high caseloads and we're already trying to address those staffing needs in other ways. So [we are] trying to train and recruit more heart failure nurses and trying to widen our team to include people like prescribing pharmacists. So there isn't necessarily a ready pool of staff twiddling their thumbs to do more work. And if we were going to try and provide cardiac rehab to a lot more patients it would need a longer-term plan to… or a piece of work around workforce planning, to see how we're going to deliver it.” *(Stakeholder 3)*
Limitations to the existing programme for some groups	“The reason the patient pulled out is he felt – he was very educated in his condition, as was his partner – but he felt the exercises were for patients who maybe were in a nursing home. Although he’s in his 70s… he felt that they were a bit…wasn’t for them. He ‘didn’t feel he was there yet’, was what he said […] The patients I had onboard were the sort of patients I had done a bit of work with about educating about their condition. [So I think] the patient selection wasn’t right, I think this would be better for newly diagnosed patients who are coming to the clinic. Maybe not in their initial visit because it’s overwhelming… but I think a couple of weeks down the line would be the appropriate time to introduce the REACH-HF manual” *(Facilitator/HF specialist nurse, Site A)*
Timing of the offer of [PROGRAMME]	“…I got a wee bit lost in when I should actually be introducing this as an option. That has come with experience of me doing it and even just me having more experience and you know that has come for me. I suppose that is the thing, folk maybe know because of doing the job already about the folk that this would be for. Whereas for me it was like very, so who do I give this to? When it is appropriate to present it? Not so much who should I give it to, when should I plant the seed.” *(Facilitator/HF specialist nurse, Site A)*
Digital literacy / availability of technology	“…a lot of people didn’t have DVDs, but then the older generation wasn’t very comfortable at using computers and things, so… but a lot of people

	don't have DVDs now, so that was a bit of an issue." *(Facilitator/CR physiotherapist Site B)* "Any talk of computers, it puts them off. There was one lady that did the chair-based exercises. […] She didn't have a DVD player, so it had to be done online. That took a couple of attempts to get this going. She did more walking than chair-based exercises, I think it was because it involved the computer." *(Facilitator/HF specialist nurse, Site A)*
Perceptions/understanding of the programme's overall intention (not just about exercise)	"…we had quite a push trying to educate the nurses in terms of them signing up, because they were very much selling it as an exercise programme. (Right.) Which it's not just an exercise programme. And yeah, to be honest, I think that's been the focus of it the whole time for [others in the service], right from the beginning. But, you know, it's not. It's a self-management programme, and exercise is part of it. So that was putting some people off" *(Facilitator/CR physiotherapist, Site B)*
Facilitators of implementation	
Clear lines of support and collaboration	"I think [other Site B facilitator] and I have had a good rapport so that's helped and also, we've had you as well that could ask all our questions if we were unsure of anything, so we never felt alone, you know, there's always support and anything we weren't sure about there was… we always had support to go to" *(Facilitator/Cardiology specialist nurse, Site B)*
Familiarity with self-management	"I didn't find it very difficult once I really felt comfortable in myself in doing it because I do deliver the actual Heart Manual. And because when you go through it once, you're keeping enough in it, I found it really quite, you know, quite easy to do." *(Facilitator/Cardiology specialist nurse, Site C)* "I think, as a facilitator, I knew, yeah, because I had a bit of experience of doing something like this [self-management programme] before, I felt more confident. Whereas I'm not sure, I think maybe, possibly [other facilitator] felt a wee bit less confident, just because she didn't have the experience of that?" *(Facilitator, CR physiotherapist, Site B)*
Value of face-to-face interaction with patients	"I think they will open up more to you when they're sitting with you 'cause they see that you're listening and you're engaged with them. Over the 'phone a patient will tell you they're fine – and fine means a lot of things – and I can't see that patient, I can't see if they're a bit clammy, I can't feel their heart rate…so for me, for a cardiac patient, I definitely think you have to see them face-to-face." *(Facilitator/HF specialist nurse, Site A)* "I think what's been of most benefit though, is bringing them back in. I think, those that have been able to come in and do the exercise together, and go through stuff face to face, or go for a walk if they're doing the walking programme, I really think has been helpful. In terms of just getting a bit more of an understanding of what pace they're doing, reassuring them about pace." *(Facilitator, CR physiotherapist, Site B)*
Perceptions of the programme as adding value	"I was new, so it was almost like good networking for me too. I got in touch and our meetings [with research team] that we all attended about [site A]. They were really good again for networking because I was meeting people that are a support to me, but I had never met before. So that was really good, and it was good learning from other people." *(Facilitator/HF specialist nurse, Site A)*

	"…if we think about it in the context of the wider heart failure team then I think it's an opportunity to work more collaboratively with cardiac rehab and I think that there may well be opportunity to have that kind of transference of skills between professionals." *(Stakeholder 04)* "Well at the moment I would say that we will likely use it as a part of our service. I'm not quite sure how big it'll be because there's lots of…a lot to be thought about in terms of resource. But we'll certainly not dismiss using it as part of the service, so just have to work on what we can afford. So I'm not averse to actually using it as…well it's quite a reasonable part of the service. So I'll have to balance the books." *(Senior clinician, Site D)*
Perceptions of the programme's fit / ethos of services	I think if there are good outcomes and they see that having a benefit to their patients, they would want to have it as a tool in their box. For me personally, obviously, there's a lot of money put into medication; we need more for the service delivery. I think in [Site B], we've been quite cognisant of that. If you were to look at…you know, our team, we've got quite a large multi-disciplinary team, as opposed to everything going towards drugs and consultants. I think we're quite open-minded when it comes to looking at the wider care options for our patients. *(Senior clinician, Site B)*
'Background noise'	
COVID-19: a challenge to centre-based provision	"I suppose the main barrier [to providing CR], certainly since COVID, has been space. […] Every available space is being utilised for a variety of reasons. And obviously when other things become prioritised then [CR] does get slightly moved to the back. Access to space appropriate for rehab has been a bit of a challenge" *(Senior clinician, Site B)* "Firstly, there was redeployment of staff, so people were pulled. I think at the start of COVID there was a real fear of actual frontline services crumbling and not being able to cope and there was lots of anxiety, driven mostly by the press and what happened in Italy with a lot of sick healthcare people. […] So there was definitely a pulling away from cardiac rehab, which was seen as a, sort of, soft target if you like. […] And use of our rehab facility was stopped as well […] it was used as a PPE store. So the whole gym was just full of gloves and masks, it was just nonsense." *(Senior clinician, Site A)*
Impact of COVID-19 on people with HF	"I think the pandemic has had a negative effect on a lot of our patients' mental health. There's a fear and it's horrible because they know they have a chronic condition, and they know if they caught COVID it could have a significant impact on them. Obviously, we're down the line now, all of our patients – or most of them – are double-jagged and/or had their booster. So they feel a wee bit safer then. But a lot of them didn't want to come into hospital. Patients who needed to be seen […] weren't phoning the [HF] service because they did not want to come into hospital which they didn't feel was a safe environment because of COVID." *(Facilitator/HF nurse, Site A)*
REACH-HF addressed an unmet need	"Particularly with COVID, when we weren't having any traditional cardiac rehab classes, you know, I think it's been a brilliant thing to come at this time. Because it was actually something quite comprehensive, well, extremely comprehensive, that patients could engage with, that our traditional cardiac rehab patients weren't getting. So I could really it did

	actually come at, I guess, the perfect time." *(Facilitator/CR physiotherapist, Site B)* "[It] filled a gap that the rehab programme wasn't able to do because of COVID. But in normal non-COVID times, appreciating the fact that this patient group can struggle to get in for face-to-face group exercise sessions or even face to face assessment, that is a good alternative." (Facilitator/Cardiac physiotherapist, Site D)
COVID aftermath as an opportunity to re-imagine HF services	"I think what, in a more kind of broad perspective, the pandemic taught us that we can adapt to change very, very, quickly. That remote management of patients isn't out with our capabilities. […] I think we have got better at giving them advice on self-care over the phone, because we need them to buy into their own management of their heart failure" *(Stakeholder 1)*