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Enhancing referral processes within an integrated fall prevention pathway for older people: a mixed-methods study

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ABSTRACT

Objectives Multifactorial interventions, which involve assessing an individual's risk of falling and providing treatment or onward referral, require coordination across settings. Using a mixed-methods design, we aimed to develop a process map to examine onward referral pathways following falls risk assessment in primary care.

Setting Primary care fall risk assessment clinics in the South of Ireland.

Participants Focus groups using participatory mapping techniques with primary care staff (public health nurses (PHNs), physiotherapists (PT), and occupational therapists (OT)) were conducted to plot the processes and onward referral pathways at each clinic (n=5).

Methods Focus groups were analysed in NVivo V.12 using inductive thematic analysis. Routine administrative data from January to March 2018 included details of client referrals, assessments and demographics sourced from referral and assessment forms. Data were analysed in Stata V.12 to estimate the number, origin and focus of onward referrals and whether older adults received follow-up interventions. Quantitative and qualitative data were analysed separately and integrated to produce a map of the service.

Results Nine staff participated in three focus groups and one interview (PHN n=2; OT n=4; PT n=3). 85 assessments were completed at five clinics (female n=69, 81.2%, average age 77). The average number of risk factors was 5.4 out of a maximum of 10. Following assessment, clients received an average of three onward referrals. Only one-third of referrals (n=135/201, 33%) had data available on intervention receipt. Primary care staff identified variations in how formally onward referrals were managed and barriers, including a lack of client information, inappropriate referral and a lack of data management support.

Conclusion Challenges to onward referral manifest early in an integrated care pathway, such as clients with multiple risk factors sent for initial assessment and the lack of an integrated IT system to share information across settings.

BACKGROUND

Falls are a significant public health issue among older adults, and the prevalence of

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ Using process mapping, this study elucidates the coordination and delivery of care following risk assessment, an essential step in understanding how and why multifactorial fall prevention interventions are effective (or not).

⇒ The mixed-methods design using qualitative and quantitative data provides a comprehensive visual representation of the integrated falls prevention pathway elucidating complexities and identifying areas for quality improvement.

⇒ The study was limited to five fall risk assessment clinics in one community health area with limited data available to assess whether those assessed, received follow-on interventions.

⇒ This study is from the perspective of staff involved in multifactorial risk assessment clinics and does not capture the service user perspective.

⇒ Although quantitative data were limited, this study illustrates how administrative data and stakeholder perspectives can be integrated in a process map to identify gaps and opportunities across a care pathway.

falls is increasing internationally.[1] It is estimated that 30% of people aged 65 years and over living in the community will fall each year, and 50% of those who fall do so repeatedly.[2 3] Falls account for significant mortality, morbidity, reduced mobility, loss of confidence and independence, depression, social isolation, reduced quality of life and premature admission to long-term care in older adults.[2–5] Furthermore, falls place considerable demands on healthcare resources such as consultations, treatment and rehabilitation, a burden that, without the implementation of evidence-based prevention and intervention strategies, is expected to increase.[2 5–7]

Clinical guidelines and fall prevention strategies recommend a range of interventions, dependent on the population and setting.

One of these is multifactorial interventions which assess an individual's risk of falling and then carry out treatment or arrange referrals to reduce the identified risks.[8 9] Multifactorial interventions are recommended for older people who present for medical attention because of a fall, or report recurrent falls in the past year, or demonstrate abnormalities of gait and/or balance.[10 11] Several systematic reviews have demonstrated the positive effects of multifactorial interventions in reducing the rate of falls in older people living in the community.[9 12 13] In two Cochrane reviews, multifactorial interventions in which participants receive different combinations of interventions based on identified risks reduced rate of falls[9] with exercise, medication review and psychological interventions commonly applied based on participants' assessment.[12] The most recent of these reviews examined both 'active' multifactorial interventions which actively assessed risk factors and resolve fall-related problems, and 'referral' multifactorial interventions which primarily provide referrals to other services or information.[13] Both active and referral multifactorial interventions reduced fall rates when compared with usual care.[13]

The delivery of or referral to targeted interventions to address individuals' identified risk factors after assessment is a core component of multifactorial interventions. At a health system level, multifactorial interventions require multidisciplinary teams to organise and coordinate care across different professions and settings, and to ensure appropriate staff are available to perform assessments and deliver the interventions.[14] Barriers to implementing an intervention as intended include adaptations of interventions, variations in healthcare professional (HCP) adherence and competence, lack of available training and technical support, and limited resources for supporting the intervention.[15] Thus far, studies have examined whether multifactorial or multicomponent fall prevention interventions have been delivered as intended within hospital, and residential care home settings, with little or no reporting of adherence.[16–18] While research emphasises the importance on whether the interventions took place as intended, reporting across studies are not always consistent.[18] A few studies have examined whether recommended follow-on interventions are delivered or received as intended following an assessment in primary care.[18] Establishing whether follow-on interventions were delivered and delivered as intended is essential to understand the relationship between the intervention and outcomes.[19 20]

Process mapping is a quality improvement tool used in health service planning and evaluation to understand the processes involved in delivering interventions while highlighting variations, gaps and opportunities within a service.[21] Process mapping has been used to elicit and understand current patterns of care in many clinical areas, settings and patient groups. For example, in the process for blood testing and communication of results in primary care,[22 23] mapping the patients process during care transitions between hospital and primary care[24] and
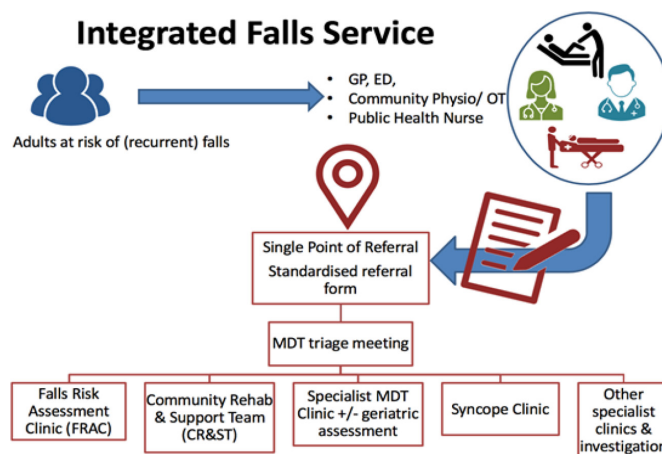

Figure 1 Cork integrated falls prevention service. ED, emergency department; GP, general practitioner; MDT, multidisciplinary team; OT, occupational therapists.

understanding how patients navigate through stroke services.[25]

The aim of this study was to use process mapping to elucidate onward referral pathways following a multifactorial risk assessment, to examine whether follow-on interventions were delivered and to identify variations, barriers and opportunities for improvement in the delivery of this complex intervention.[26]

METHODS
Setting

This study was carried out across primary care-based multifactorial risk assessment clinics in one community health organisation in the South of Ireland. The clinics were part of an Integrated Falls Prevention Pathway established in 2015 to link new and existing acute, rehabilitative, and preventive falls services, accessible through a single point of referral at an assessment and treatment centre within a day hospital (figure 1 and online supplemental table S1).[27] Referrals from emergency departments (EDs), general practitioners (GPs), public health nurses (PHNs) and community physios (PTs)/occupational therapists (OTs) were triaged through the single point of referral and a proportion of the referrals were invited to attend an appointment at their local community-based fall risk assessment clinic.[27] In a previous evaluation,[28] over 350 clients were referred for falls related services over a 3-month period (n=364, January–March 2018), most of whom were female (65%), with an average age of 78 years. Most referrals to the integrated falls prevention pathway were from PHN (28%), GP (18%) and ED (15%), with less than 10% of referrals from PT, OT and hospital consultants. At triage, over one-third of clients were directed to falls multifactorial risk assessment clinics (39%).

The intended target population for the falls multifactorial risk assessment clinics was people aged 65+ living in the catchment area who were at risk of falls. Each

community-based multifactorial risk assessment clinic was delivered in a primary care centre or health centre and was staffed by a team comprising a PT, an OT and a PHN. For each client, a member of the team conducted the assessment using the standardised assessment form, provided education on what clients can do to manage their risk of falls and subsequently made onward referrals for follow-on intervention where necessary. Some clinics were supplemented with intervention clinics whereby the team who conducted risk assessments would also provide follow-on interventions.

Study design

Using a mixed-methods design, qualitative and quantitative data were collected and analysed separately and concurrently before integrating using a narrative approach to develop a process map for the service.[29 30] In the qualitative phase, focus groups were carried out with teams at each clinic in which participants engaged in mapping techniques and discussions to plot the processes and onward referral pathways following assessment. In the quantitative phase, routine administrative data were analysed to estimate the number and target service for onward referrals, and whether follow-up interventions were delivered following assessment. Quantitative and qualitative were collected concurrently and so one did not inform the design of the other. The Good Reporting of A Mixed Methods Study checklist for mixed-methods studies was used to inform reporting of the findings[31] (online supplemental file 2).

Patient and public involvement statement

Patients or members of the public were not directly involved in the design or administration of this research.

Phase 1: qualitative mapping referral pathways

Focus groups were conducted to create a map of the service from the perspective of those involved in delivering the multifactorial assessments and onward referrals. Staff (PT, OT and PHN) at each clinic (n=11, n=5 clinics) were eligible to participate in focus groups and/or interviews depending on their availability. A gatekeeper was engaged in the study to recruit participants; invitations to participate along with information sheets and consent forms were sent in August 2019 via email from the falls service cocoordinator, who also sent reminder emails on two occasions (September and November 2019).

Focus groups were facilitated by a social researcher (RD) between October 2019 and January 2020. Written consent was obtained from all participants at the point of data collection. A topic guide was developed by the research team to frame the activity and associated discussion (online supplemental table S2). Participatory mapping techniques[32] were used to enable participants to map the service pathway from referral to their clinics, assessment and onward referral for treatment/intervention. Descriptive information contained in the maps, including how staff were assigned clients for assessment, nature of assessment and types of referrals were tabulated for clarity and comparison (RD and CF). Focus groups were digitally recorded and transcribed verbatim by a professional transcription service. Using inductive thematic analysis,[33] transcripts were open coded in NVivo V.12, with open codes categorised according to each step within the pathway (by CF). Codes and higher order categories were discussed by the research team and synthesised to develop themes relating to similarities and differences between clinics, perceived barriers and opportunity for improvement within the service (CF, RD and SMH). Maps for each clinic were formatted using Microsoft Power-Point (CF) and reviewed by researchers (RD and SMH). From this, a single process map was developed using a sequential flow diagram[22] to display the falls prevention pathway.

Phase 2: quantitative – analysis of routine administrative data

Anonymised administrative data on assessments conducted between January to March 2018 were collated in 2020, providing sufficient time for follow-on interventions to have occurred. Data were analysed retrospectively to examine the delivery of interventions to older adults following attendance at a falls risk assessment clinic. Data were drawn from a variety of sources, including electronic and paper files, and handwritten diaries kept by clinic staff. Audit data from each clinic included number of referrals into the service (date referral received); source of referrals (PHN, GP and ED, hospital consultants, PT and OT); client demographics (gender, age and clinic location); assessments conducted (yes vs no); assessor profession (PHN, falls co-ordinator, OTs and PTs); waiting time for assessment (less than 4 weeks waiting vs waiting 4 or more weeks); client attendance status (attended, could not attend, did not attend and to be confirmed); number of client risk factors (low 0–3; medium 4–6 and high 7–10) and number of onward referrals (no onward referral, one onward referral to four or more referrals). Providers of onward treatment and intervention services collect information on referrals, appointments, waitlists and interventions delivered. These data included the date follow-on intervention was received, or date follow-on intervention is scheduled. In some cases, client files could not be accessed, or the intervention was not received limiting the available data. The level of missing data for each variable was reported. Descriptive analyses were conducted using Stata V.13, using percentages and frequencies for client characteristics, reciept of intervention and missing data.

Integration of qualitative and quantitative results

Quantitative and qualitative data were analysed separately and merged to produce a comprehensive map of the service, indicating variations, barriers and areas for improvement within the fall prevention pathway. The integrated results are presented using a weaving narrative and joint display (process map).[30 34] This was an iterative process, moving back and forth continuously between

Table 1 Participant and clinic characteristics

Clinic	FG/ interview	Profession of participants	Intervention	No of years in operation
A	FG	OT, PT, PHN	PT will bring clients back for dedicated intervention clinic; OT delivers dedicated intervention clinic during a home visit; PHN usually refers to community PHN	3 years
B	FG	OT, PT, PHN	No dedicated intervention clinic, using a personal time management strategy	5 years
C	I	OT	Onward referrals to OT, PHN and PT are prioritised to be seen during dedicated intervention clinic	Unknown
D*	FG	OT, PT	OT generally home visits; PT further assessment; PHN refers to community PHN	Unknown
F*	FG	OT, PT	OT generally home visits; PT further assessment; PHN refers to community PHN	4–5 years

*Clinic D and F are delivered by the same staff.
FG, focus group; I, interview; OT, occupational therapist; PHN, public health nurse; PT, physiotherapist.

the two datasets with the findings and interpretations discussed by the research team (CF, RD and SMH)

RESULTS

For the qualitative phase, 11 clinic staff were invited, 9 participated across three focus groups and one interview (PHN n=2; OT n=4; PT n=3). All five active clinics were represented. At one clinic, an interview was conducted with one team member due to limited availability among other staff. Two clinics were delivered by the same staff so only one focus group was conducted with this team. Table 1 shows the number of clinic staff for each focus group and clinic characteristics.

For the quantitative phase, demographic and assessment data were available for 85 clients assessed between January and March 2018 (table 2). Overall, only one-third of onward referrals generated following assessment (n=135/201, 33%) had data available on intervention receipt (online supplemental table S3).

Mapping the referral pathway

Figure 2 presents the process map that illustrates all steps identified in the pathway in chronological order from referrals for falls services received via single point of entry, triage to fall risk assessment clinics, to onward referral options following assessment. Areas of variation (V) between clinics, potential barriers (B) and opportunities for improvements (I) identified by staff are indicated on the process map. While the primary aim was to elucidate onward referral pathways from the risk assessment clinics and examine whether recommended follow-on interventions were received by older people, the clinic staff also identified issues relating to earlier stages of the fall prevention pathway which are presented below (table 3).

Variations identified within the fall prevention pathway

Staff described a similar process within each clinic: assigning a lead assessor, conducting assessment, referring onwards for treatment/intervention for similar reasons and to similar referral options (figure 2).

Table 2 Clients referred to falls risk assessment clinics from January to March 2018 (n=85)

Variable n (%)	Overall
Age	
<65 years	5 (5.9)
≥65 years	80 (94.1)
Gender	
Female	69 (81.2)
Male	16 (18.8)
Assessor	
PT	30 (35.3)
OT	26 (30.6)
Nurse	27 (31.8)
Missing	2 (2.4)
Identified risk	
Low (1–3 risks)	14 (16.5)
Medium (4–6 risks)	46 (54.1)
High (7–10 risk)	25 (29.4)
No of onward referrals	
0	3 (3.5)
1	10 (11.8)
2	19 (22.4)
3	25 (29.4)
≥4	28 (32.9)

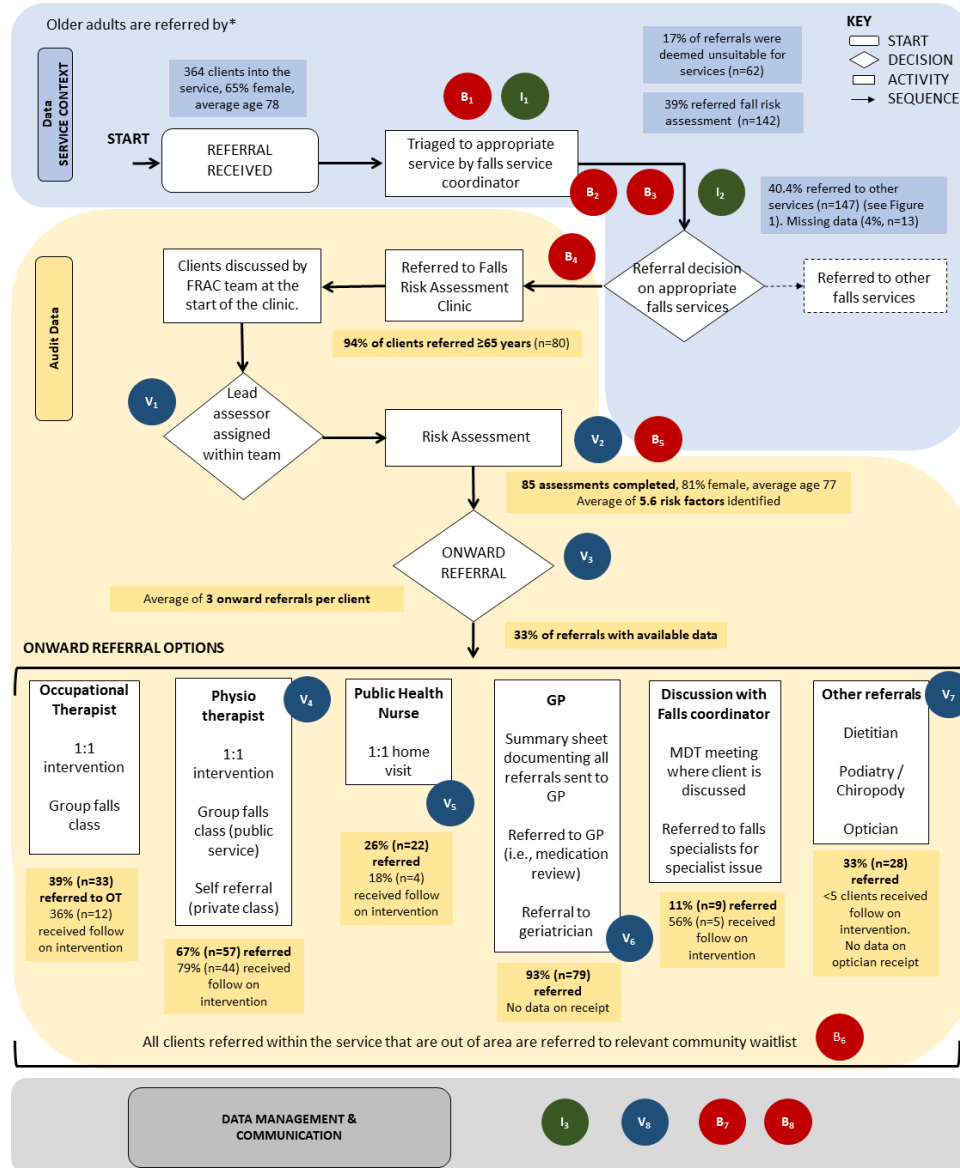OT, occupational therapists; PT, physiotherapists.

Figure 2 Process map of the falls prevention pathway (January to March 2018). * emergency departments, Public Heath Nurse, GP, community physio or occupational therapist. B, barriers; FRAC, fall risk assessment clinics; GP, general practitioner; I, areas for improvement; MDT, multidisciplinary team; V, variation.

Variations identified between the clinics occurred when scheduling assessments, deciding which assessor was assigned to client, and assessment procedures within the pathway.

Most sites implemented a monthly schedule of three assessments and one in-house intervention clinic for those assessed. Of the assessments completed during the 3-month period, and where assessor was recorded (n=83), PTs were the lead assessor for 35.3% (n=30) of clients, with 31.8% of clients (n=27) assessed by a PHN and 30.6% assessed by OTs (n=26). While assessors used their own 'clinical judgement', in one clinic, they extended the assessment process to get input, where all client's saw a PT for a BERG (Balance test and rating scale) (V_1) with another including an additional step where they reconvened as a team to discuss clients' assessment outcomes and onward referral options (V_2).

Over the 3-month period, 85 assessments were completed. The average age of those assessed was 77 (SD 8.8, range 54–95 years) and 81.2% were female (n=69) (table 2). The average number of risk factors identified during assessment was 5.4 out of a maximum of 10. Overall, 16.5% of clients (n=14) were identified as low risk, 54.1% of clients (n=46) were identified as medium risk and 29.4% (n=25) were high-risk clients. Of 83 clients with information on their assessor, 61.5% (n=16) of those assessed by an OT were deemed high risk (ie, 7–10 risk factors) compared with 55.6% (n=15) of those assessed by a nurse, and 50.0% (n=15) of those assessed by a PT.

Variations arouse because of how the clinic staff chose to operate and how onward referrals for treatment/intervention were managed by the team or the target service. Following assessment, clients received an average of 3 onward referrals. Overall, of the 85 clients,

Table 3 Areas of variation between clinics, barriers and opportunities for improvements identified by staff

Areas of variation between clinics

Subtheme	Variation	Clinic staff excerpts
Scheduling assessments		"…I suppose it's probably a random [assignment), you have got one [client] already you [someone else] takes the next one, just so that we are all getting an equal share of work. And then sometimes I suppose it depends on if it [client] comes from the hospital, they usually give you an explanation of how the fall happened…"
Assessment	(V_1)	"You use your own clinical judgement to an extent, yeah. But I suppose you would always err on the side of caution as well and do what the paper [assessment form] tells you to do."
		"…so we would always do a Berg score which is a balance score…, because resources are so limited in Turners Cross and there is no point in having someone seen here and then they are on a waiting list for possibly another month or 6 weeks just to get a Berg"
		"So we'd have a meeting then at the start of every kind of FRAC morning….come back then to discuss [summary sheets]"
	(V_2)	
Onward referrals and follow-up interventions	(V_3)	"I suppose when we were all here together, we kept the referrals in-house, we just have our own list here, our intervention list. Yeah, it was easier for us to manage it that way rather than generating all these referrals [for other services)"
	(V_4)	"extra time [for the follow on intervention] with the intention being that we were stopping a huge referral from risk assessment clinic into the community. So, she [manager] was giving me intervention time, but it was also to eliminate the kind of extra waiting times on the community side of things."

Barriers and opportunities for improvements

Subtheme	Barrier and area for improvement	Clinic staff excerpts
Referral process	(B_1)	"…The vast majority of referrals that come through its just falls, history of fall, there is so little given to us…often with the referrals you would get little to no information …"
		"There is meant to be a level 1 screening form that everyone is meant to fill out [for referral into fall risk assessment clinic), and that was meant to come into play, nearly three years ago, and they are still tweaking it, and it has not been used. I only read it for the first time the other day when I was over in the office, and, if you read that [referral eligibility criteria] and if that was the gold standard of a referral [into fall risk assessment clinic] then you would get appropriate referrals…"
		"I think it goes back to the referrals maybe aren't filled out adequately, it's difficult to pinpoint where that goes wrong. I think the referrals and the triage probably that's where the information needs to be improved a little bit yeah…"
	(I_1)	
Inappropriate referrals to the fall risk assessment clinics	(B_2)	"…we get a few inappropriate referrals which didn't meet the falls risk criteria or may have never had any falls in the past but have managed to come to us anyway, we would usually contact her (falls coordinator) to see what we need to do next…. We have tried to nip it in the bud, and the nurse that we had on the team was quite good with that because she was good at saying no, that's not an appropriate referral. But that is what our fear is…"
		"I think at the beginning when the fall risk assessment clinics started that was my impression that the focus was to prevent the falls, to get at this at an early stage… It tends to be older, more debilitated people, I suppose. We wouldn't get that many, as I say 65-year-old or younger…We don't seem to be capturing those"
Scatter referrals	(B_4)	"…it can be frustrating then if you see people referring to the fall risk assessment clinic, with falls not be their primary concern. But they are using the clinic to get to physio or OT quicker…"
Assessments skills	(B_5)	"there is confusion at the moment with the cognition tests because obviously, you need the training in the one we would have done all the time, so that is a bit up in the air at the moment."
Onward referrals 'out of area'	(B_6)	"… if the patient is out of area, they can do an intervention… But they cannot take them on their caseload if the patient requires continuous [specialised] care…then I need to give that to the OT in the(client's)area."
Administrative support and data management	(B_7)	"…there is a huge amount of duplication in everything…I suppose then we do see the same people or they will be on a different list for other things you just wonder how much duplication is there and I suppose it all comes back to a lack of proper data."
		"we have an excel sheet, and basically after each session, I email XXX the outcome of what the chosen pathway was for the patient, was it physio, was it OT, will they be getting OT in the intervention group, will they have nursing needs in the intervention group. We have a section in the excel sheet for each one."
	(I_3)	"you are wondering at the end of it all, how do you know if the patient has been seen or treated or who has taken ownership of the patient. That was a huge issue, is that basically they come, and then; unfortunately, we feedback to the office, and we don't really know what is to come. The big issue is that there is no, unfortunately, there is no communication with falls risk assessment clinics and community services" (Clinic F, ?)
	(B_7)	

B, Barriers; I, Improvements; V, Variation.

3.5% (n=3) received education only and no referral for onward treatment/interview, 11.8% of clients received one referral (n=10), 22.4% of clients received two referrals (n=19), 29.4% received three referrals (n=25) and 32.9% of clients received four or more referrals (n=28) with most clients being referred to PT for one-to-one or group exercise classes (online supplemental table S3). All clinics had similar onward referral options (figure 2), but the process of referring to these services varied from formal using explicit referral pathways to informal, using personal networks and 'in-house' referral pathways to manage/minimise waiting lists (V_{3-7}).

Recording and monitoring of follow-on interventions: Limited audit data were available on whether recommended follow-on interventions were received by older people following an assessment (n=135/201, 33%), reflecting the variation in systems used for recording activity and tracking referrals across community services in the pathway (V_8). Across variables, missingness on receipt of intervention is included in online supplemental table S4. Date of intervention receipt had similar levels of missingness, which meant both receipt of intervention and waiting time could not be reliably reported.

Barriers and opportunities for improvements

Across clinics, staff experienced similar barriers within the steps of the assessment and onward referral process. These included a lack of relevant client information on initial referral to the falls risk assessment clinic (B_1) and perceived inappropriate referrals to primary care based non-specialist falls risk assessments clinics. Clinic staff were concerned about the perceived 'appropriateness' of the referrals into the fall risk assessment clinics, saying 'it's always been a frustration on the ground' (B_2). Staff believed this was partly due to the lack of 'level 1 screening', which is recommended to determine eligibility for referral to the fall risk assessment clinics (B_3). Clients were on average aged 77 years, with an average of 5.6 risk factors (n=11, 9.4%) with the fall risk assessment clinics capturing the 'wrong population' according to staff, considering the service was originally intended to prevent falls.

Clinic staff described 'scatter referrals' as a barrier in the pathway, where clients are referred into the fall risk assessment clinic but are also on a separate waiting list for community therapy services such as OT and PT (B_4). Scatter referrals were used to gain access to any service for a client. Clinic staff also stressed that the fall risk assessments take time with confusion around some aspects of the assessment (B_5). In terms of onward referrals, one clinic described the 'out of [catchment] area' referrals as a 'stumbling block' (B_6), where they could provide one-off follow-on intervention for client resident outside the catchment area for the service, but if that client required continuous or more specialist treatment, the client was sent to follow-on services in their own catchment area.

Administrative support and data management: A lack of key processes and infrastructure to support teamwork and integrated care was identified including a lack of data recording and monitoring resources and no central information system resulting in duplication, with some clients receiving more than one risk assessment (B_7). Furthermore, communication, collaboration and interpersonal relationships between staff were identified as vital for the effective delivery of the falls prevention pathway. This was particularly important once onward referrals were made, as some clinic staff were left not knowing if their client had been seen or treated as there was a lack of communication between falls risk assessment clinics and community services (B_8).

Overall, clinic staff identified the triage point as a location within the falls prevention service where eligibility screening and information sharing could be improved (I_1). Furthermore, additional instruction was needed to manage clients that did not meet the criteria for assessment (I_2). For staff across the clinics, a central/shared record system was urgently needed to allow them to access client information, including previous treatment the client had received, previous hospital admissions and the client's consultant. A centralised system would 'save so much time' and 'eliminate duplicate assessments' (I_3).

DISCUSSION

The aim of this study was to use process mapping to elucidate onward referral pathways following multifactorial risk assessment to examine whether follow-on interventions were delivered as intended and to identify variations, barriers and opportunities for improvement in the delivery of this complex intervention. Clinic staff identified variations in the pathway including differences in how clinics operated and how onward referrals were managed. They report a lack of relevant client information to inform assessments and perceived inappropriate referrals to falls risk assessment clinics. Following assessment most clients received three or more referrals for intervention. However, due to the variation in data systems and monitoring across professions and sites, there was limited information available on whether recommended follow-on interventions were received.

Overall, staff operated clinics using the same steps but adapted how they managed their time, input from colleagues and onward referral process. Staff modified or added steps to suit their clinic, practice needs and resources. It is recognised that variation and adaptation is common,[19 35 36] however, there is debate in the literature about adapting to key contextual factors and to what extent such variation is acceptable.[37] Researchers are now questioning to what extent modifications to interventions, will affect whether the intervention is delivered as intended.[38] Therefore, identifying elements of an intervention that are essential to maintain its intended effects is crucial.[38] In this study, the concept of function vs form is very much evident as all clinics fulfilled the same function (risk assessment) but making minor adaptions to form (how it was organised and implemented).[39]

For complex interventions such as multifactorial fall risk assessment clinics to be effective in reducing falls among older people in the community, it is essential that the referral criteria focus on the patient cohort that will benefit.[40] In this study, clinic staff emphasised the issue of inappropriate referrals into the service. Numerous studies have highlighted how inappropriate referrals can impact the service such as in unnecessary appointments and have made suggestions as to how to improve referral patterns across various specialities.[41 42] Previous studies identified solutions for reducing inappropriate referrals such as telephone triage in accident and EDs,[43] refined

guidelines around appropriate indications for referral for paediatric surgical patients[44] and decision aids and financial penalties for inappropriate referrals for lumbar MRIs.[45] In this study, the triage point within the integrated falls prevention pathway was identified by clinic staff as an opportunity for improving information sharing so that younger, less frail clients could enter the service to prevent falls earlier.

Scatter referrals and 'out of area' referrals may reflect the growing demand for community services and changes in administrative catchment areas for different services in the Irish health service. With lengthy waiting lists for intervention, health professionals may be anxious to provide some level of service to individuals.

In this study, limited data were available on whether older people received recommended follow-on interventions following assessment. Of 201 onward referrals generated following assessment over a 3-month period, only one-third had information available on whether that intervention was received. Thus, it was impossible to draw conclusions about the extent or timeliness of intervention following multifactorial risk assessment in the community. The lack of information was due to an absence of integrated information and communication technology (ICT) to facilitate sharing of information and monitoring of activity across HCPs and settings. Several studies have shown that the use of electronic patient records and ICT provides more complete and accurate patient documentation,[46] timely information exchange, improved work efficiency and reduced duplication.[47] Furthermore, the use of these technologies can provide HCPs with a more holistic view of the patient, facilitating better healthcare decision making.[47] Previous studies have shown that having infrastructure such as this in place creates an efficient environment for integrative practices.[48 49] This study provides valuable lessons for the planned ambulatory care hubs in Ireland which will be staffed with specialist teams.[50]

Strengths and limitations

Participatory, process mapping enabled staff to share ideas and experiences of barriers they encounter and opportunities for improvement in the service. Using qualitative and quantitative data in the process map provides an innovative approach to developing a visual representation of the integrated fall prevention pathway elucidating complexities and identifying areas for quality improvement. Although quantitative data were limited, administrative data corroborates staff concerns about the complexity of cases referred to the service. As staff from only five community-based falls risk assessment clinics in the south of Ireland are included in this study, the findings reported herein may not be generalisable to all healthcare delivery systems. While, in some cases some of the community teams/HCPs who took part in the interviews conducted the risk assessment and received the onward referral for intervention, not all community HCPs were included, in particular GPs. Due to staff availability, an interview was conducted with one participant from one clinic which may not represent the views and perspectives of the team. Better monitoring and reporting of care processes and outcomes are needed to assess whether follow-on interventions were delivered as intentned.

Research and practice implications

While variation/adaptation to an intervention when implemented into practice is inevitable, variation can affect whether the intervention is delivered as intended.[38] Furthermore, changes to structure and management driven by personal preferences and priorities can be an issue. Therefore, future research should monitor and analyse variation in how the integrated falls prevention pathway is implemented in practice to assist in ensuring quality of care[36 51–53] and to examine its effectiveness. While multifactorial interventions focus on the prevention of falls, as HCPs perceived clients to be inappropriate referrals, future research could examine whether older, frail clients benefit from this type of intervention.

Lack of consensus on 'who are appropriate clients' undermines the consistency of the integrated fall prevention service. All staff involved need to have a shared vision for and an understanding of the purpose of the pathway. Clinic staff perceived they were capturing the wrong population, emphasising the issue of inappropriate referrals of older 'frail' clients into the service. Training HCPs to effectively use the screening tool is needed with key players identified across the clinics to promote its use. Implementing an integrated infrastructure to support integrated care would encourage care coordination, allow for information sharing and communication between multidisciplinary teams, while also reducing duplicate patient records, assessments and referrals. This study highlights the need for investment ICT infrastructure and resources to support communication, quality assurance and care coordination across professions and settings.

CONCLUSION

One of the many challenges within the integrated fall prevention service is making the best use of limited resources while ensuring the delivery of evidence-based care. Therefore, understanding the process within the integrated fall prevention pathway was essential to clarify the referral pathways within the service and examine whether older people received recommended follow-on interventions. Process mapping was a powerful, innovative tool to illustrate the fall prevention pathway, bringing together clinic staff to identify variations and barriers such as inappropriate referrals, a lack of data on intervention receipt, and limited resources for data management and administrative support. Multidisciplinary working and integrated care require integrated ICT systems. Such systems are essential to monitor and evaluate the delivery of core intervention components across the falls prevention pathway. To mitigate these challenges, certain needs

must be met which will ultimately improve the flow of the pathway, fostering continuous quality improvement.[54]

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