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Can community pharmacy successfully bridge the gap in care for housebound patients in the UK?

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1 **TITLE: Can Community Pharmacy Successfully Bridge the Gap in Care for Housebound Patients in**  
2 **the UK?**

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23 NH were responsible for data entry and data analysis. GF drafted the manuscript. RK co-ordinated  
24 the data analysis and contributed towards the critical revision of all versions of the manuscript. All  
25 authors read and approved the final manuscript.

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32 The Authors have no conflicts of interest to declare

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**Abstract**

**Background:** There are an increasing number of older housebound patients who are not seen by the pharmacists responsible for the provision of their medications. This growing population is increasingly dependent on time-limited carers for their medication support.

**Objectives:** To evaluate the findings of pharmacist led holistic domiciliary medicine use reviews (dMUR) targeted at this group of housebound patients, in terms of required medication support and the identification of unmet social care needs.

**Methods:** Patients were identified in the London Borough of Richmond (UK) who were predominantly housebound and taking multiple medications. Twelve community pharmacists visited patients and carried out interviews as part of a structured holistic dMUR, which included understanding the patients' living conditions.

**Results:** Altogether 133 patients completed the dMUR with the pharmacist. Patients had a mean age of 81.7 years (range 49-98 years) and took an average of 9.4 different medications, 3 of which being high risk. Nearly 40% had difficulties taking their medications, including a lack of dexterity or difficulty swallowing. Over a quarter (26.8%) of diabetic patients lacked monitoring. Patients were identified with a risk of falling (14.3%) and inadequate social care (11.3%). Continence, dehydration, hygiene and nutrition issues were found, often caused by mobility problems or a lack of suitable toilet facilities. A need for home modifications such as hand rails to prevent falls was also identified.

**Conclusions:** This study highlighted the varied difficulties facing housebound patients identified during the pharmacists' visits, including a lack of social care provision and fall hazards. Domiciliary visits by pharmacists may be able to help identify the diverse care needs of isolated housebound patients helping to integrate their care requirements.

1 **Key Words:** Community Pharmacy, Older people, medicine review, pharmaceutical care, domiciliary  
2 care (5 key words)

3 **Abbreviations:**

4 ACEI -Angiotensin Converting Enzyme Inhibitors

5 ADR – Adverse Drug Reaction

6 CCCG – Croydon Clinical Commissioning Group

7 dMUR – Domiciliary Medicine Use Review

8 GP- General Practitioner

9 HCP – Health Care Professional

10 INR - International Normalised Ratio

11 LIMOS- Lewisham Integrated Medicines Optimisation Service

12 MDS- Monitored Dosage System

13 MUR - Medicine Use Review

14 NOACs – New Oral Anti-Coagulant

15 NSAID – Non-Steroidal Anti Inflammatory Drug

16 PDVS- Pharmacist Domiciliary Visiting Services

17 UTI – Urinary Tract Infection

18

19

20

**21 Introduction:**

22 The Medicine Use Review (MUR) scheme introduced in the UK in 2005 [1] enabled community  
23 pharmacists to further support patients in the use of their medications. MUR provides an  
24 opportunity for a pharmacist and patient to discuss any problems and answer questions a patient  
25 may have using their medication. Domiciliary Medicine Use Reviews (dMURs) are a means of  
26 reaching a group of patients who would otherwise be unable to benefit from an MUR at their  
27 community pharmacy or through a telephone review. Although the need for domiciliary reviews  
28 was originally addressed in the early 2000s through the Pharmacist Domiciliary Visiting Services  
29 (PDVS), [2,3], it has been the success of the dMUR pilot in Croydon during 2011/2012 [4,5], that  
30 encouraged the provision of similar services such as those in West Yorkshire [6], North Wales [7],  
31 Exeter [8,9], and the London boroughs of Wandsworth [10] and Lewisham [11]. The latter scheme,  
32 Lewisham Integrated Medicines Optimisation Service (LIMOS), supports high-risk patients with  
33 referrals from both primary and secondary care, encouraging the involvement of all stakeholders in  
34 patient care. Many schemes claim success in saving money, positive patient feedback and  
35 prevention of readmissions through pharmacists resolving problems [4, 7, 9,12]. The 2005 Homer  
36 trial [13] was initiated specifically to study whether domiciliary medicine reviews could reduce  
37 hospital readmissions in older people (>80 years) population. Hospital pharmacists provided post-  
38 discharge education and support to patients in their medical conditions and the use of their  
39 medications. Recently discharged patients received up to 2 visits from the pharmacist within 2  
40 weeks and 8 weeks after discharge and were monitored for 6 months. The study outcomes included  
41 30% of the intervention group being readmitted and requiring 43% more GP visits than the control  
42 group. Explanations for these results included that the discussions with the pharmacist made  
43 patients more aware of the warning signs of deterioration or previously non-adherent patients  
44 started to take their medications causing previously avoided iatrogenic illnesses. A concurrent study  
45 by Salter [14] analysed some of the pharmacists' interactions with patients during the dMUR,  
46 highlighting the lack of spontaneity and joint purpose of the interaction. Pharmacists were keen to

47 gather precise information from patients who were often defensive against any suggestion that they  
48 could not manage their medicines or were forgetful. The POLYMED study [15] also investigated  
49 whether non-elective hospital admissions could be prevented by a domiciliary pharmacist providing  
50 medicine reviews for older patients. In addition to two visits, the pharmacist also met regularly with  
51 the GP to discuss changes to the patients' medications. Although this intervention resulted in a  
52 decrease in medications prescribed, there was no difference in hospital admissions.

53 A driving force for dMUR is the growth in older people; the number of over 90s in the UK is expected  
54 to triple between 2010 and 2035 [16]. A consequence will be an increase in the number of  
55 housebound patients with chronic conditions, requiring the provision of cost effective services able  
56 to support patients remaining in their own homes and successfully managing their medications. A  
57 growing number of older people are living alone, whilst medication and social support available from  
58 family members is decreasing [17]. Relatives may find it stressful trying to manage the medications,  
59 especially if a patient has dementia and/or difficulty swallowing medication. Adherence issues and  
60 polypharmacy are common in older people, with an estimated 16.3% patients taking between 5-9  
61 different medications [18]. A German study of domiciliary medicine reconciliation of older people  
62 found over a quarter of the medications found in patients' homes were undocumented. [19] It is  
63 estimated that over 5% of hospital admissions are due to adverse drug reactions (ADR) in the UK [20]  
64 and Spain [21]. Medicine optimisation can be achieved by holistically reviewing a patient's  
65 medications and understanding their use based on individual circumstances [22]. Polypharmacy is  
66 also associated with a greater risk of prescribing errors [23] which may be uncovered by such  
67 reviews. Older patients' multiple needs are best addressed by a co-ordinated and integrated  
68 approach to care. Integrated care may be understood as the co-ordination of the delivery of patient  
69 care connecting the clinical aspects of the health care system with other service providing systems  
70 such as social care, working together with the aim of improving patient care [24,25]. Instead of  
71 having a narrow single disease focused view, with each co-morbidity being managed independently,  
72 disregarding social and other underlying causes of ill health [25], the overall wellbeing of a patient

73 should be considered. This patient focused approach is what Valentijn, [25] call the micro level of  
74 clinical integration.

75 The 2011 census showed that 13.5% (25,200) of people in the London borough of Richmond were  $\geq$   
76 65 years, ranking it the joint 6<sup>th</sup> borough out of 32 in London in terms of its older population. Holistic  
77 dMUR were carried out by community pharmacists in Richmond-Upon-Thames and analysed to  
78 understand how patients' complex needs may be supported by community pharmacists and  
79 whether they can help to integrate medical and social care requirements of older housebound  
80 patients. This forms the aim of the study.

## 81 **Method**

82 The design of the dMUR and selection of both pharmacists and patients invited to  
83 participate is summarised in Table 1.

Selection of pharmacists for the scheme	Community pharmacy contractors who had completed MUR training in the London Borough of Richmond were invited by the Kingston and Richmond Local Pharmaceutical Committee (K&RLPC), to take part in a new dMUR service.
Training provided to the pharmacists	Information sessions were given by trainers from Croydon Clinical Commissioning Group (CCCG)[4,5].  The comprehensive nature of the dMURs was explained and the areas the pharmacist needed to cover discussed in detail.
Criteria for patient inclusion	The main criteria for patient inclusion were being predominantly housebound and receiving delivery of their medications from the pharmacy. Suspected non-compliant patients were prioritised, together with those prescribed multiple or frequently changing medications and patients with a long-term condition such as a respiratory condition or diabetes. Agreement was established

	with the patients' general practitioner (GP), a few patients were also referred by their GP.
Support for the pharmacists	Pharmacists were supported by GPs and reported any problems or issues back to the patients' GPs.
Design of the dMUR	<p>The comprehensive dMUR form was designed in collaboration with CCG to collect information about many aspects of the patients' medication and home and included a checklist. The dMUR form was comprised of the following sections (see appendix A for the complete dMUR form)</p> <ul style="list-style-type: none"> <li>• List of all medication including herbal and over the counter (OTC) medications and supplements</li> <li>• Access to medications, delivery, running out medication</li> <li>• Physical issues – storage, ability to administer medication</li> <li>• Cognitive issues – Awareness of time, adherence</li> <li>• Clinical issues – Side effects, symptoms</li> <li>• Beliefs about medications – Understanding their condition</li> <li>• General housekeeping – Maintenance, mobility</li> <li>• Social issues – Meals, trip hazards, toilet facilities</li> <li>• Medication for disposal</li> <li>• Carer communication form</li> <li>• Brief feedback</li> </ul>

84 *Table 1 Description of the dMUR scheme*

85 A telephone call was made to prospective participants to explain the purpose of the dMUR and to  
86 arrange a convenient time for the pharmacist to visit the patient's home. The pharmacist asked if a

87 member of the patient's family or carer could be present. During the visit the pharmacist asked to  
 88 see the patient's medications and to look around the house using the checklist to ensure all areas  
 89 were covered as per the dMUR form.

90 After the completion of five dMUR, the forms were monitored for completeness by the pharmacist  
 91 service lead and guidance given where necessary, this helped to ensure the uniformity of the dMUR.  
 92 Pharmacists were then invited to carry out further dMUR to a maximum of fifteen. The pharmacists'  
 93 visits took place between May 2015 and January 2016. At the end of the study the responses were  
 94 anonymised and entered into Microsoft Excel and analysed using descriptive statistics. This study  
 95 was considered a service evaluation and hence there was no need for ethical approval.

96

## 97 **Results**

98 A total of 134 patients were visited by 12 different community pharmacists, with the carer or family  
 99 member contributing to the dMUR when necessary. The numbers of patients visited by each  
 100 pharmacist varied between 5 and 15. All of dMUR forms were completed, with only 1 being  
 101 incomplete and thus not included in the study. Each dMUR visit took between 30 and 45 minutes to  
 102 complete, depending on circumstances of the patient. The majority (67.1%) of the patients visited  
 103 were female (Table 2), with a median age of 83 years. Over a quarter of the patients had a paid carer  
 104 to support them. A total of 401 problems or issues were recorded by the pharmacists, with 83 issues  
 105 identified as social and 318 as medicine related.

106

<b>Demographics</b>	<b>n (%) n =133</b>
Female	82 (61.7)
Male	39 (29.3)
Not reported	12 (9.0)

Mean age	81.7 years
Median age	83 years
Age range	49-98 years
<b>Existing Care Provision</b>	
Paid Carer	34 (25.6)
Partner	16 (12.0)
Other family	24 (18.0)
Other: Neighbour/friend	2(1.5)

107 *Table 2 Demographic data*

108 Polypharmacy was widespread, with an average of 9.4 different drugs taken by each patient (Table  
 109 3), an average of nearly 3 of these drugs were classed as high risk and associated with increased  
 110 hospital admissions (NSAIDs, beta-blockers, diuretics, warfarin and NOACs, ACEI, anti-depressants,  
 111 opiates, digoxin, prednisolone, clopidogrel [20]). Over 60% of patients (n=80) were taking at least  
 112 one analgesic medication and 15% (n= 20) were taking a combination opioid such as co-codamol.  
 113 The number of patients taking medicines for mental health conditions was high (n=52, 39%), with 25  
 114 patients taking anti-depressants and 11 patients taking more than one anti-depressant, "Z" drug  
 115 (zolpidem or zopiclone), or benzodiazepine. Nearly a quarter of patients (n=33, 24.8%) were taking  
 116 an anticholinergic drug or one with anti-cholinergic burden e.g. amitriptyline 9.7% (n= 13). Nearly  
 117 one-third (31.6%) were receiving support with administering at least one medication.

Medication	Number
Mean number of drugs taken	9.4
Number of drugs taken: Range	1 to 23
Mean number of high risk drugs taken	2.9
Number of high risk drugs taken: Range	0-9
<b>Total receiving help taking medications</b>	42 (31.6%)
Family member	9 (6.8%)
Partner	12 (9.0%)
Carer	21 (15.8%)

118 *Table 3 Number of medications taken by patients and support in administration*

119 A wide range of medication related issues were identified (table 4). Nearly 20% (17.3%) of patients  
120 had recently run out of a medication. A significant number of patients had physical difficulties taking  
121 their medication (n=52, 39.1%), with the reasons identified including a lack of dexterity in opening a  
122 blister, applying eyedrops or using inhalers and difficulties in swallowing medications. A patient with  
123 respiratory disease had been without inhaled steroids for several months as she could not use the  
124 prescribed inhaler.

125 Patients' medication regime could sometimes be simplified, for example by advising patients to take  
126 a medication previously taken separately with the rest of their medications. A monitored dosage  
127 system (MDS) was offered when a patient was confused or was struggling to manage their  
128 medications or reminder alarms were also suggested if appropriate.

129 Many clinical issues were identified, over a quarter (27.8%) of patients reported both preventable  
130 and potentially dangerous side effects (table 4). Additionally, over 10% of patients were suffering  
131 from pain, but had not always reported this to their GP. Diabetic patients and those taking warfarin  
132 were not being regularly monitored due to being housebound.

133 Patients were often concerned about taking one or more of their medications (28.6%), especially  
134 when they were taking >10 medications.

135 Two houses were found to be damp and one was cluttered with cables crossing the floor posing a  
136 tripping hazard. Over 10% of patients had unaddressed mobility problems in their homes (n=16,  
137 12.0%), requiring a bath lift to enable them to safely use the bath or extra hand rails on the stairs.

138 One patient was unable to access toilet on the first floor, with problematic access to an outside  
139 ground level toilet with a zimmer frame. Another was unable to use their zimmer frame to reach the  
140 bathroom due to a lack of space. The lack of mobility also caused patients to be unable to look after  
141 themselves and perform housekeeping tasks, which led to poor diet and hygiene.

142 Tripping hazards, such as ill-fixed rugs and cluttered walkways were highlighted to the patient or  
 143 carer. There were safety concerns about a confused patient using their gas hob. Several patients felt  
 144 they were putting on weight or were constipated due to the meals they received which were not  
 145 their choice. Two diabetic patients were advised to cut down on sweet food at the day centre due to  
 146 increasing blood sugar levels.

147 Several cases of unmet social care issues were identified: A patient said they had carer, but they  
 148 stopped coming; one partner caregiver was noted to be “overwhelmed in his role as caregiver”; a  
 149 lack of provision of care meant two patients were only able to receive their eye drops when care  
 150 givers were present; the pharmacist was able to demonstrate to one carer how to administer eye  
 151 drops to the patient. One patient was not eating cooked meals, her daughter left sandwiches in  
 152 fridge which contained uneaten out of date food; three patients were worried about falling on way  
 153 to the toilet, so did not drink enough and suffered from urinary tract infections (UTI). A patient’s  
 154 family and pharmacist were concerned about the lack of adherence, additionally the patient’s  
 155 nutrition was inadequate and ways of improving this was discussed.

156 Over one-third of patients (n=52, 39.1%,) had unwanted medications for disposal, ranging from 1 to  
 157 20 different types of medications. One pharmacist reported on a dMUR “There were meds  
 158 everywhere”. Some patients had stockpiled a drug, others were no longer taking a medication, but  
 159 had not informed the pharmacy. A patient was prescribed a Clenil inhaler but was unable to use  
 160 them, as she could only use nebulas, resulting in 3 wasted unused inhalers.

161 Over one-third (n=47, 35.3%), of dMUR visits resulted in contact with the patient’s GP, this varied  
 162 from referral for potential medication change to advising the GP a patient is no longer taking a  
 163 medication.

<b>Issues Found by Pharmacists Grouped by Section of dMUR</b>	<b>n (%)</b>
<b>Access to medication Issues</b>	<b>23</b>
Patients recently run out of a medication Examples: After hospital discharge, a patient was halving their dose of metformin, so they did not run out. Drugs which are not supplied in MDS.	23 (17.3)

<b>Physical Issues</b>	<b>96</b>
Difficulty opening their medications	15 (11.3)
Difficulty administering drug/ inhaler/eye drops	52 (39.1)
Difficulty reading labels -large print labels provided	13 (10)
Medications not stored properly e.g. Medications stored in box near window in direct sunlight	8 (6.0)
Patient having problems instilling eye drops due to shaky hands. Example: A patient only received eye drops when carer was present	8 (6.0)
<b>Cognitive Issues</b>	<b>58</b>
Timing issues: Examples: Patient was forgetting to take lansoprazole as it was labelled to be taken separately from the rest of the medications at breakfast. A patient was forgetting to take atorvastatin at night as it was the only medication taken in the evening.	31 (23.3)
New MDS suggested (Patients with existing MDS 36.1% n=48)	27 (20.3)
<b>Clinical Issues</b>	<b>98</b>
Side Effect Management	37 (27.8)
Examples: Swollen ankles from taking calcium channel blockers. Opioid induced constipation. A patient experiencing nose bleeds and bruising who was taking both aspirin and venlafaxine, Patient with diarrhoea taking a milk-based food supplement	
Pain control issues	18 (13.5)
Examples: Co-codamol was not controlling pain from a recent fall. Patient suffering severe shoulder pain for over a week and not reporting it.	
Patients with old or dirty spacers requiring replacing	3 (2.3)
Taking the medication in the wrong way	14 (10.5)
Examples: Patient taking isosorbide mononitrate at 12 hourly intervals which could cause tolerance. Patient taking simvastatin at lunch time	
Inadequate Monitoring	13 (9.8)
Examples: Glucose not checked in patients with diabetes (n=8/30), patient taking digoxin not monitored for a long time (n=1/12), International Normalised Ratio(INR) not recently checked in patients taking warfarin (n=4/56)	
Patient no longer needs medication or needs dose reduction	13 (10.0)
Example: Patients did not need carbocysteine or omeprazole anymore.	
<b>Beliefs about medications</b>	<b>43</b>
Worried about medication or condition. Examples: Patients concerned about aspirin causing a bleed, patients worried about running out of medicines, Patients were worried they were taking too many tablets.	38 (28.6)
Patient does not think their medication(s) are working	5 (3.8)
<b>General Housekeeping / Social Care Issues</b>	<b>83</b>
Damp unmaintained housing issues	2 (1.5)
Patients were recommended to be reassessed by an occupational therapist due to concerns with their zimmer frame use.	3 (2.3)
Patient bedridden or struggling to move around home	11 (8.3)
Pharmacist concerned about patient falling – often with unfixed carpets and rugs being identified as trip hazards. Example: Patient had suffered a fall during the 3 months prior to the dMUR. The flat was dirty, cluttered with an unlevel floor, increasing a risk of more falls. Nothing was done to tidy the flat or level the floor to	19 (14.3)

decrease the risk of falls.	
Hand rails/ bathroom aid required	16 (12.0)
Concern about nutrition – Example some patients did not have access to hot food.	9 (6.8)
Concern about inadequate hydration	8 (6.0)
New carer need identified - for example patients unable to wash without help	15 (11.3)
<b>Medication for disposal</b> Examples: 400 co-codamaol: Patient stockpiling 45 temazepam: Expired 1 patient had 20 different medications: Expired and no longer used	<b>52 (39.1)</b>
<b>Patients or carers finding the dMUR helpful</b>	<b>133 (100%)</b>

164 *Table 4: Issues highlighted by the dMURs*

165

166 *Table 4: Issues highlighted by the dMURs*

## 167 Discussion

168 This study using dMUR led by community pharmacists gave an insight into patients' lives, allowing a  
 169 comprehensive understanding of the home environment, care, and medication taken by mostly  
 170 older and housebound people in the London Borough of Richmond. A wide range of issues were  
 171 highlighted including new social care needs, potential safety hazards, inadequate hydration and  
 172 nutrition and difficulties administering medication.

173 Polypharmacy was common, and it was apparent from the medication lists that many patients had  
 174 multiple-morbidities. Medication was not optimised with patients suffering from side effects,  
 175 inadequate analgesia and adherence problems, the latter often due to physical problems resulting  
 176 from loss of dexterity or lack of carer support. Patients taking warfarin and patients with diabetes  
 177 were not always monitored appropriately. NOACs may be considered, removing the need for INR  
 178 checking[26]; however, with no INR checking, any non-adherence may go unnoticed for longer.

179 Nearly a quarter of patients were taking anticholinergic drugs or drugs with anticholinergic burden,  
 180 with their increased side effects of confusion and postural hypotension in the older people [27]

181 contributing to frailty and increasing the risk of falls [28]. The use of anticholinergics should be  
182 questioned and monitored in older people [27].

183 Over 10% of patients were dependent on their partners for support in medicines administration.  
184 Partners may find this role stressful, often being of similar age to the patient, unwell themselves,  
185 and therefore incapable of safely performing this task [29]. Over 25% of patients received help from  
186 a paid carer, who often helped in medication administration. It is recognised that paid carers will  
187 play an increasing role in all aspects of patients' medications [29]; however, there is a lack of  
188 information concerning the safe administration of medications in a domiciliary setting [30], carers  
189 may not have the necessary skills nor time to perform these tasks. Pharmacists are well placed to  
190 advise and support carers on all medication issues [8] and the dMUR provided an opportunity for the  
191 pharmacists to do this. There may be pressure from social care agencies for patients to use MDS  
192 [11,31]. Although the appropriateness of MDS was not assessed in this study, other adherence  
193 support may be more appropriate, and the pharmacists were able to suggest alternative solutions,  
194 such as simplifying the medication regime, explaining the importance of taking medications or  
195 suggesting the use of reminder alarm and large print labels. Nearly 40% of patients had unused  
196 medicines removed, this was higher than some studies [33], [34] .

197 Although over 40% of patients had existing mobility problems, the dMUR highlighted that these  
198 were not always adequately addressed, patients had problems with zimmer frames, lack of hand  
199 rails, tripping hazards such as clutter and unfixed rugs were pointed out to carers. Over 10% of  
200 patients required more care than they were receiving. The interwoven nature of some patients'  
201 problems was highlighted in this study by patients with continence and mobility issues with a fear of  
202 falling when mobilising to the bathroom. These patients were avoiding drinking, causing recurrent  
203 UTI and the need for antibiotics. An integrated solution is required which provides mobility  
204 incontinence and social care assessment. The need for integrated care was emphasised in The King's  
205 Fund report [32] with reference to the growing numbers of patients with co-morbidities and

206 polypharmacy. Patients' concerns and treatment aims need to be listened to, understood and  
207 placed at the centre of decision making [25]. Especially when considering very old patients, decisions  
208 concerning their medications should involve discovering what is important to them, rather than  
209 simply trying to encourage all medication adherence. A compromise is needed between the desire  
210 for the best clinical solutions and the personal choices of patients who need to cope with the drug  
211 regime [32]. Good clinical and interpersonal skills are required to successfully achieve this. The  
212 LIMOS service, involves hospital pharmacists who have developed excellent communications, not  
213 only with patients but with other HCP, charities and care providers [11]. There may be a lack of  
214 awareness of the services and advice which community pharmacists can provide and increasing  
215 collaboration with social care would benefit all parties. Additionally, it is essential to increase  
216 pharmacists' local knowledge to refer to voluntary services or other supporting services. However,  
217 establishing such links can take time to develop [11]. The dMUR role could improve and evolve to  
218 bridge the gaps in care as highlighted by this study. However, for this to happen, key areas such as  
219 increased collaboration with social care, improved communication skills and enhanced clinical  
220 knowledge need to be addressed.

#### 221 *Study Strengths and Limitations*

222 The study would have benefited from an independent evaluation of patients' satisfaction. Although  
223 It was not part of the remit for the dMUR to investigate the patient's social connections, this would  
224 have provided an important understanding of patients' family and social support networks and may  
225 have enabled signposting to relevant organisations. Access to patients' full medical records would  
226 have provided a more complete understanding of their medical situation. Consented recordings of  
227 the dMUR may have allowed improvement of the patient/pharmacist interactions. Service referrals  
228 were predominantly made through doctors, with more time and training the pharmacists could have  
229 performed this task themselves.

230 A strength of this study was its comprehensive nature which was able to provide an understanding  
231 of the difficulties faced by this increasingly large sector of the population. Community pharmacists  
232 are known for their medication knowledge, but this study showed pharmacists may be capable of  
233 integrating different aspects of patient care and needs.

#### 234 **Conclusion**

235 Community pharmacists may never know whether medications are being taken as intended or are  
236 effective for home delivery patients. The dMUR study highlighted some of the varied difficulties  
237 facing older housebound patients often with multiple chronic conditions and unmet social care  
238 requirements. Some patients had limited contact with HCPs and did not receive the necessary care.  
239 The study showed how community pharmacists may be a link in the care pathway to help integrate  
240 many aspects of care for older, isolated, housebound patients with multiple-morbidities. This may  
241 consist of understanding the patient's medication and care needs in the context of their home  
242 environment, providing missing medication support to carers and family members, helping to  
243 optimise patients' medication and making referrals as appropriate. No single service can maintain  
244 patient independence alone, therefore, the establishment of relationships with all local  
245 stakeholders, including pharmacists to promote collaborative working is in the interest of the  
246 wellbeing of patients.

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## 350 Appendix A

### 351 Domiciliary Medicine Support Service

352

Patient NHS number:	Pharmacist completing the review:	
Date of review:	Pharmacy name and address:	
GP practice		
Please list all current medication and form, include over the counter medications, herbal remedies. Note who is responsible for administrating the medication		
Name of medication and form	Dose	Person responsible for administration

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353 **ACCESS ISSUES**

CRITERIA	RESPONSE	OBSERVATION/SOLUTION
How does the person order / collect prescriptions?		
Do they remember to order their medications?		
Have they recently run out of any medications?		
Do they order all medications together or at different times?		

354 ***Solution suggestions: Prescription ordering, collection, delivery services, prescription***  
 355 ***synchronisation***

356 **PHYSICAL ISSUES**

CRITERIA	RESPONSE	OBSERVATION/SOLUTION
Can the person read all the labels?		
Can they open and close all containers?		
Dexterity – able to push tablets out of blisters, pick up small tablets, halve tablets?		

Can they measure any liquid medicines?		
Inhalers / eyedrops – check technique / able to administer correctly?		
Are they able to swallow all their medicines?		
Is the medication stored appropriately?		

357 **Solution suggestions:** *Large labels/symbols/colour coding, large bottles, easy open lids, pop*  
 358 *blistered tablets into bottle, halve tablets, spacer, Haleraid, eyedrop dispenser, measuring cup,*  
 359 *oral syringe, different formulation, advice on storage.*

360 **COGNITIVE ISSUES**

CRITERIA	RESPONSE	OBSERVATION/SOLUTION
Is the person aware of time and place?		
Does the person sometimes forget to take medicines?		
What systems do they use to remind them to take their medicines?		
Does someone help them to take their medicines? Who?		
Does this person prompt or actually administer?		
Are they able to help with all does on all days? Check weekends/evenings?		
Does the person have a compliance aid already? Who fills it?		
Who initiated it?		
What condition is it in? (Clean, labelled, legible?)		

What about 'prn' medicines or medicines unstable in compliance aid?		

361 ***Solution suggestions: Reminder chart, MAR chart, link medicines to daily routine,***  
 362 ***multicompartment compliance aid***

363

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368 **CLINICAL ISSUES**

<b>CRITERIA</b>	<b>RESPONSE</b>	<b>OBSERVATION/SOLUTION</b>
Is the person experiencing side effects?		
Are the medicines effective, does the patient still experience symptoms?		
Is the patient taking the right does?		
Check the OTC / herbal supplement/ medications- interactions. Duplications?		

369 ***Solution suggestions: Advise how to reduce side effects with timing, food. Discuss possible dose***  
 370 ***alterations with GP, advise about OTC medications***

371

372 **BELIEFS ABOUT MEDICATIONS**

CRITERIA	RESPONSE	OBSERVATION/SOLUTION
What does the person know about their medicine and condition?		
What worries them about their medicine?		
What would they like their medicine to do for them?		
What have they decided to do about taking their medicine?		

373 ***Solution suggestions: Educate the person about medicines and condition, get person to decide how***  
 374 ***to fit their medicines into their daily routine and how to monitor the benefits***

375 **GENERAL HOUSEKEEPING**

CRITERIA	RESPONSE	OBSERVATION/SOLUTION
Has the house/residence been maintained?		
Is the patient mobile enough to use the premises?		
In general housekeeping within reasonable standards?		
Who does the housekeeping?		
Who cooks the meals?		
Has any of these any impact on the medical condition of the patient?		

Has any of these any impact on the medication or compliance of the patient?		

376 *Look for clues which may inhibit compliance, e.g. person immobile and toilet upstairs, fridge in use*  
 377 *but food kept outside, are the feeds /insulin / fridge items in the fridge once opened....*

378

State of Health	Notes	Action	Comment
Dementia			
Any other condition?			

379 **SOCIAL ISSUES**

	Notes	Action	Comment
General Environment			
Clutter- preventing falls			
General hygiene- preventing infection			
Meals- regular- helping nutrition			
Food storage			

Bathroom, toilet and washing facilities – any difficulty in using these facilities – how could they be improved?			
Any other observation?			

380 **MEDICINES FOR DISPOSAL**

381 Persons NHS number.....

382

383 Name of pharmacy.....

384

385 **Please list medications taken for disposal**

Name of medication	Approximate quantity	Reason disposal


386

387 I agree to the above medication being removed for safe disposal by the pharmacist

388

389 Signature of the patient.....

390 Signature of the pharmacist .....

391 Date.....

392 **COMMUNITY PHARMACY DOMICILIARY MEDICINE SUPPORT SERVICE REVIEW**  
393 **CARER COMMUNICATION FORM**

394

395 Dear Carer,

396 Following a medicines use review, some issues have been identified. Here is a  
397 summary of the things I have put in place to address them. Please contact me  
398 on the telephone below if you wish to discuss anything further.

Pharmacy Name and Address:	Pharmacist completing the review:
Date of review:	Pharmacy telephone number:
Persons name:	
Issue Identified	Intervention made


399 **COMMUNITY PHARMACY DOMICILIARY MEDICINE SUPPORT SERVICE**  
400 **FEEDBACK**

401

402 **Date of visit:**

403

404 **The visit by the pharmacist was useful** **Yes / No**

405 **I am more informed about my medicines** **Yes / No**

406 **I would recommend this service to other people** **Yes / No**

407 **Please add any other additional comments below**

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416 **Thank you for your feedback**

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ACCEPTED MANUSCRIPT