

Dealing with dysphagia

A substantial proportion of older people have problems swallowing that can inhibit effective adherence to solid oral treatment regimens. Causes of dysphagia include reductions in gastrointestinal motility with age, consequences of age-related diseases, and side-effects of other treatments. Patients are sometimes advised to open capsules or to crush tablets to aid swallowing, but this practice is contrary to guidelines, largely because interfering with some formulations can alter their pharmacokinetics. Because of these compliance issues and because dysphagia is an alarm symptom, doctors should be aware of and enquire about older patients' ability to swallow as part of the standard consultation.

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Any health-care professional that manages middle-aged and elderly patients needs to contend with the clinical problems arising from dysphagia. In one study, 44% of retired people had problems with swallowing that interfered with their daily life.¹ Other estimates suggest that between 35% and 68% of elderly people have some degree of swallowing dysfunction.² Dysphagia is associated with a plethora of clinical problems, including difficulties swallowing solid dosage forms of many commonly prescribed medications.

Elderly patients receive a growing number and variety of medications—the number of items prescribed to elderly people in a year almost doubled between 1997 and 2007, from an average of 22.3 to 42.4 items per person.³ Medication-related dysphagia is thus an increasingly important factor to consider when deciding which treatment to prescribe to a particular patient.

This article reviews new research showing that dysphagia that hinders patients taking their medication affects around half of elderly people in the general community. It also highlights the contribution made by dysphagia to non-adherence and underscores the need to improve detection of alarm symptoms. Finally, it reveals widespread manipulation of formulations (eg, tablet crushing) by patients, carers, and health-care professionals that could undermine efficacy, exacerbate adverse events, and have important medicolegal implications.

Reasons for dysphagia

Several mutually reinforcing strands interact to make dysphagia a common clinical problem among elderly patients. First, gastrointestinal motility changes as part of normal ageing. In one study of elderly patients who did not present with dysphagia or eating difficulties, only 16% showed

normal swallowing.⁴ However, the clinical significance of such normal age-related changes remains unclear.⁵

Second, age-related diseases can markedly influence the likelihood of developing dysphagia, both directly and by interacting with underlying physiological senescence. For example, up to half of patients with chronic diabetes mellitus may show reduced gastric emptying.⁵ Oesophageal motility declines as duration of type-2 diabetes increases: the amplitude of oesophageal peristaltic waves and the frequency of effective peristalsis decrease with increasing duration of disease.⁶ Against this background, a recently launched liquid formulation of metformin could aid management of type-2 diabetes in patients that have difficulties swallowing solid doses.

Many other diseases can undermine normal physiological swallowing. Depression and hypothyroidism can prolong total gastrointestinal and oro-caecal (ie, from mouth to caecum) transit time, respectively. Chronic renal failure impairs gastric emptying.⁵ Furthermore, stroke increases the risk of dysphagia by 64–69%. The risk of dysphagia is especially high among stroke survivors with hemiplegia (odds ratio 2.19) or aphasia (1.97).⁷

Third, treatment-emergent effects may contribute to dysphagia among elderly patients. For example, elderly patients may receive drugs that influence gastrointestinal motility, including some antidepressants, anticholinergics, opioids, and calcium antagonists.⁵ A study of 600 older Americans found that 33% took at least one medication that could induce xerostomia (dry mouth due to lack of saliva).⁸ Treatment of certain cancers can also contribute to dysphagia. In one study, 18% of patients developed complete dysphagia of solids or were dependent on gastrostomy tubes, or both, after chemoradiation for advanced oropharyngeal cancer. This compared with none of the patients that underwent radiotherapy only.⁹

How common is dysphagia?

Difficulties swallowing solid dosage forms (capsules and tablets) appear to be common among elderly people living in the community. In 2005, Strachan and I published results from a survey¹⁰ showing that almost 60% of patients presenting to community pharmacists reported problems swallowing tablets or capsules. Furthermore, 68% admitted to opening a capsule or crushing a tablet to swallow their medication, and 69% reported non-adherence to treatment because medications were hard to swallow.¹⁰

Since that study in 2005, awareness of the problem posed by medication-related swallowing difficulties has increased, with additional studies¹¹ and consensus guidelines for best practice.¹² Therefore, we conducted a second, broadly similar, survey in 2008. In this new study, 16 community pharmacists in England distributed a questionnaire to customers over the age of 65 years or their carers. Table 1 summarises the results based on 611 usable

questionnaires, which had been completed by 576 patients and 35 carers. The surveys were screened for usability by the pharmacists, who checked that the questions had been answered properly. This new survey confirms the findings of the 2005 analysis (table 2): around half of people older than 65 years of age in the general community have difficulties swallowing tablets or capsules.

Other studies confirm that problems swallowing medicines are common, with estimates ranging from 11% to 26%.² Differences in assessment methods and in the populations of patients studied might contribute to the variations in these estimates, especially as no validated screening questionnaire exists for dysphagia affecting patients' ability to take medication. Patient's perception could also influence the results: a patient might be more willing to admit to a problem swallowing on an anonymous questionnaire in a pharmacy rather than "bothering the doctor" in their surgery. Although this is speculation, studies show that some patients, even those with severe dysphagia, may be reluctant to admit to difficulties swallowing.²

	Number of "yes" responses	Proportion of "yes" responses
Have you (or the person taking the medication) experienced any difficulties swallowing any tablets or capsules over the last year?	301	49%
Have you (or the person taking the medication) needed to open a capsule or crush a tablet to swallow it over the last year?	158	53%
Did your doctor, pharmacist, or nurse tell you to open the capsule or crush the tablet to swallow it?	55	35%
Do you think that breaking a tablet or opening a capsule makes any difference to how effective the medicine is or the risk of suffering side-effects?	104	33%
Have you (or the person taking the medication) not taken a tablet or capsule in the last year because you (they) find it hard to swallow?	167	56%
Do you (or the person taking the medication) let your doctor or pharmacist know if you have to miss a tablet or a capsule because you (they) are unable to swallow it?	97	58%
Has your doctor (or the nurse if a prescriber) asked you (or the person taking the medication) if you have difficulties swallowing tablets or capsules before giving you a prescription in the last year?	174	33%

Table 1: Responses to survey

To crush or not to crush

The consensus guidelines¹² for best practice note that many patients open a capsule or crush a tablet to aid administration, although such manipulations can alter the pharmacokinetics of some formulations. The guidelines also warn that health-care professionals who advise that a tablet should be crushed or a capsule opened to assist with swallowing difficulties could be legally liable (due to negligence) for any resulting harm.¹² In our recent survey, 35% of patients or carers reported that their health-care professional advised them to open the capsule or crush the tablet to make the formulation easier to swallow. Although this figure may be prone to recall bias, further investigation, perhaps as part of a local audit, could determine whether such instructions were consistent with best practice.

According to our survey, two-thirds of patients and carers thought that opening a capsule or breaking a tablet would not make a difference to the tolerability or efficacy of the treatment. This finding suggests that health-care workers should educate patients that manipulating formulations potentially undermines outcomes.

The potential clinical and medicolegal problems associated with manipulating solid dosage formulations are not confined to the community and non-professionals. A study in two long-stay psychiatric wards for elderly people found that crushing tablets without authorisation was the most common medication administration error, accounting for 28.7% of mistakes. Nurses crushed tablets, without authorisation, when administering 7.4% of doses. Opening a capsule without authorisation accounted for 1.4% of errors and occurred in 0.4% of doses.¹³

In another study, the same investigators reported that tablets were crushed or capsules opened to administer 25.5% of solid oral doses. The prescriber had authorised tablet crushing in only 56% of these cases. Indeed, in 4.5% of cases, crushing was specifically contraindicated. The authors estimated that using alternative formulations would avoid 57.5% of instances of tablet crushing.¹¹ The growing selection of liquid formulations could help to mitigate the need for inappropriate tablet crushing and other manipulations.

A wake-up call on alarm symptoms

Enquiring about swallowing difficulties should be a standard part of the assessment of older people. Dysphasia is a well-established alarm symptom for some cancers (eg, mouth, throat, or oesophagus) and for other gastrointestinal disorders. The prevalence of such problems increases with age. For example, compared with younger people, those older than 55 years are 9.5 times more likely to develop gastrointestinal cancer.¹⁴ Dysphagia also increases the risk of aspiration pneumonia.¹⁵ Nevertheless, a third of patients and carers reported that their doctor never asks if the patient has difficulties swallowing before issuing a prescription. Although this finding is prone to recall bias, the figure is high enough to suggest that health-care professionals do not make such enquires regularly. Local audits could help to improve the enquiry rate for alarm symptoms.

Regularly enquiring about swallowing difficulties could also help to address poor adherence. Our 2008 survey shows that dysphagia contributes to non-compliance: almost three in every five patients with dysphagia did not take a tablet or capsule in the last year because of difficulties swallowing. In other words, a quarter of all elderly patients do not comply because of dysphagia. Our survey also suggested that health-care professionals may be largely unaware of the scale of the problem: 42% of patients said that they do not inform a health-care professional if they do not adhere because of dysphagia.

Addressing swallowing difficulties (and other mutually reinforcing factors that underlie poor compliance) should improve adherence. Guidelines¹² recommend that health-care workers should always ask if the patient has difficulties swallowing solid medication, attempt to ascertain the reasons, and tailor the formulation appropriately. For example, when patients have difficulties swallowing a solid oral drug, the prescriber should check with a pharmacist, a Medicines Information Centre, or both to ascertain whether alternative formulations are available. Liquid formulations, for example, might be appropriate for some patients.¹²

Implementing change

Our two surveys, the guidelines, and other publications paint a consistent picture: difficulties swallowing are common and potentially undermine outcomes in middle-aged and geriatric patients. So why does, as our survey suggests, the problem remain so widespread?

A focus group of ten health-care professionals caring for people with swallowing difficulties identified three main

	2005	2008
The percentage of patients who experience difficulties swallowing any tablets or capsules	60%	49%
The percentage of patients who need to open a capsule or crush a tablet to swallow it	68%	53%
The percentage of patients who think that breaking a tablet or opening a capsule makes a difference to the way in which the medicine works	29%	33%
The percentage of patients that have not taken a tablet or capsule because they find it hard to swallow	69%	56%
The percentage of patients who have notified their doctor or pharmacist if they have to miss a tablet or capsule because they are unable to swallow it	40%	42%
Percentage of patients who reported that their doctor (or nurse if a prescriber) ever ask the carer of person taking the medication if they have difficulties taking tablets or capsules before giving a prescription	29%	33%

Table 2: Comparison of the results of the two surveys

themes that hinder effective management: the spectrum of dysphagia (as a symptom of many diseases); issues with formulations; problems with the correct information being with the right person at the right time, in the right place.²

As the guidelines¹² note, simply asking whether a patient experiences swallowing difficulties should identify patients with medication-related dysphagia irrespective of cause. The growing number of liquid and alternative formulations should also help to tailor treatment to the patient.¹² Addressing the final problem may require structural innovation. For example, process changes such as including recommendations made by a speech-language pathologist on the medication administration record and creating a dysphagia alert on the pharmacy computer system helped prevent inadvertent prescribing, dispensing or crushing of sustained-release medications in patients with dysphagia.¹⁶

The focus group identified several minor themes associated with the administration of medicines to patients with dysphagia including the social and anthropological importance of eating and drinking. For instance, medication can potentially block the feeding tube or interact with feeds. As a result, feeds may need to cease, which compromises nutrition. Moreover, multiple therapies can disrupt the feeding pattern: nurses may need to stop feeding two hours before giving certain drugs, such as warfarin or phenytoin.² The cost of medicines and therapeutic dilemmas such as covert administrations (eg, by hiding in food) also emerged as issues.² Clinicians need to address such issues for patients individually.

Nevertheless, when evaluating the cost of treatment and implementing best practice, it is worth considering the price of inaction. As discussed in the recent issue of *GM2: heart and diabetes*,¹⁷ adherence with oral drugs for type-2 diabetes is lower than that seen for many other conditions: between 40% and 75% of elderly patients do not adhere to their prescribed medication for diabetes.¹⁸ Even a 10% improvement in compliance potentially reduces the risk of microvascular complications by 3.7%. Increasing compliance by 10% could save the NHS up to an estimated £1.5 billion. Taking the wider costs into context is, therefore, important when considering the relative price of liquid and solid dosage formulations.¹⁷

Conclusion

Based on the results from two similar studies, around half of elderly people in the community may have dysphagia affecting their ability to swallow solid oral medications. One in four elderly patients will open a capsule or crush a tablet to aid administration. A similar proportion will not adhere to treatment because of swallowing difficulties.

Therefore, health-care professionals need to: (1) enquire about, and remain vigilant for, swallowing problems in elderly individuals; (2) educate patients and carers about the inherent dangers of manipulating medicines; (3) consider liquid and other alternative formulations for patients experiencing medication-related dysphagia; and (4) consider implementing mechanisms and audit processes that encourage the appropriate management of this increasingly common condition.

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