

Do Patients Know How to Use Sublingual Glyceryl Trinitrate?

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Sublingual glyceryl trinitrate provides rapid (within 5 minutes), short-term (duration 20-30 minutes) relief of angina symptoms. Appropriate use of tablets and sprays (as required), e.g. Nitrolingual®, Glytrin® can prevent unnecessary pain and distress to patients.

Glyceryl trinitrate is a nitrate, a potent coronary vasodilator which exerts its principal benefit by reducing venous return, which reduces left ventricular work. Vasodilation is also associated with the undesired effects of flushing, headaches and postural hypotension.

Recent research carried out in the Adelaide and Meath Hospital, Dublin, Incorporating the National Children's Hospital (AMNCH), has shown that crucial messages that patients need to understand regarding their glyceryl trinitrate spray may not always be understood¹.

Survey

Patients were interviewed to assess use, storage and knowledge of glyceryl trinitrate. Dosing and use of spray knowledge scores were calculated by awarding each correct answer one point. The questionnaire and scoring were developed based on a related publication².

14 patients newly admitted to the Coronary Care Unit (CCU) with a cardiac event and 12 patients attending an out-patient Cardiac Rehabilitation programme following a recent chest pain admission were interviewed.

Glyceryl trinitrate was first prescribed more than three years ago for 11 patients and during the last month for two patients. 42% had used glyceryl trinitrate in the last month.

Storage and Sources of Information on Correct Use of Spray

The majority of patients received education on the use of glyceryl trinitrate spray from a nurse or doctor (*figure 1*).

The spray should be stored in the box with the Patient Information Leaflet (PIL), to protect from light and ensure the PIL is available for reference when needed.

However, only 42% kept the spray in the box with PIL as intended (*figure 2*).

11 sprays were examined during the interview, of which six had pharmacy labels. The labelling varied e.g. 'as directed', 'spray one spray as directed', 'max three puffs at a time', 'one puff as required'.

Figure 1: Who showed you how to use glyceryl trinitrate?

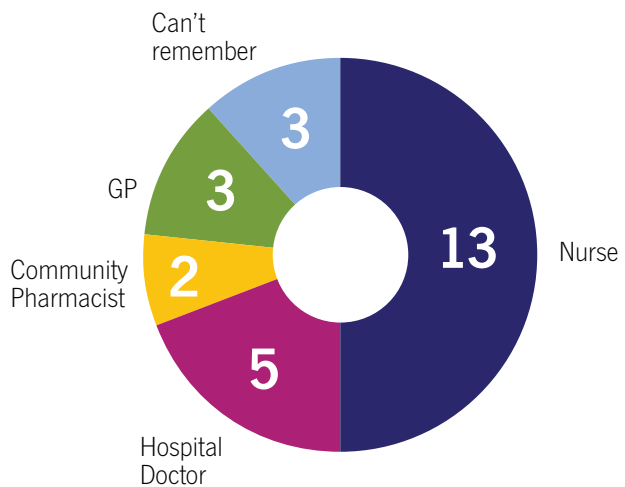
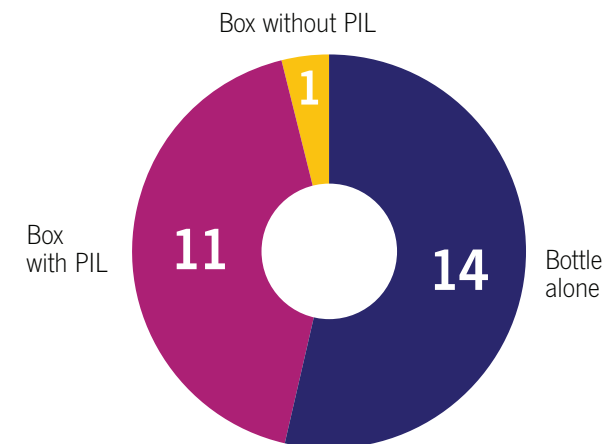
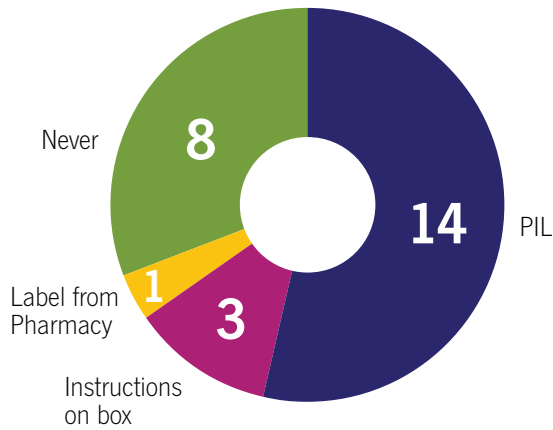


Figure 2: Storage of glyceryl trinitrate spray



Most patients had referred to written guidance on using the glyceryl trinitrate spray, with 14 referring to the patient information leaflet (figure 3).

Figure 3: Have you used written glyceryl trinitrate guidance?



Patient Understanding of Correct Use of Glyceryl Trinitrate Spray

The average dosing knowledge score was 38% in newly admitted and 73% in cardiac rehabilitation patients. Low scoring questions included the maximum number of sprays to take and in what timeframe and when to seek medical attention (figure 4).

Average use of spray knowledge was 50% in newly admitted and 76% in cardiac rehabilitation patients. Dosing knowledge decreased and use of spray knowledge increased the longer the patient had been prescribed glyceryl trinitrate (figure 5).

Figure 4: Dosing knowledge

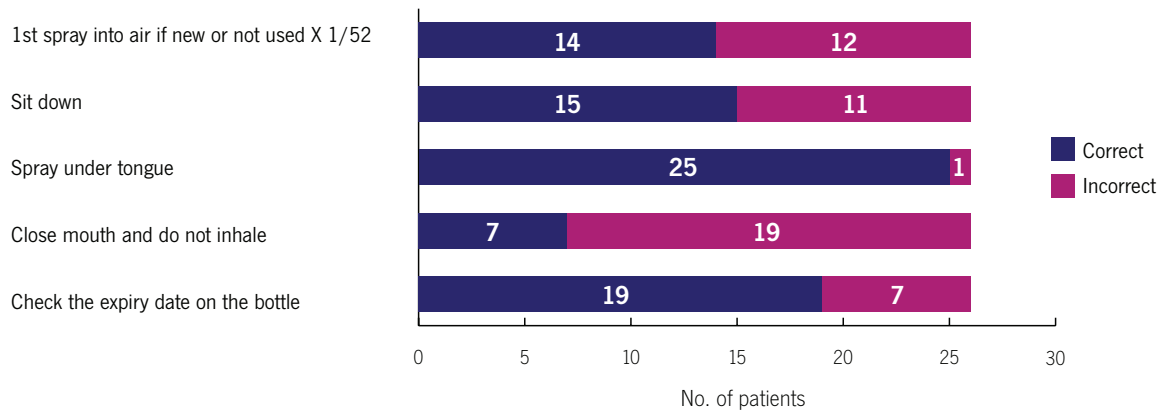
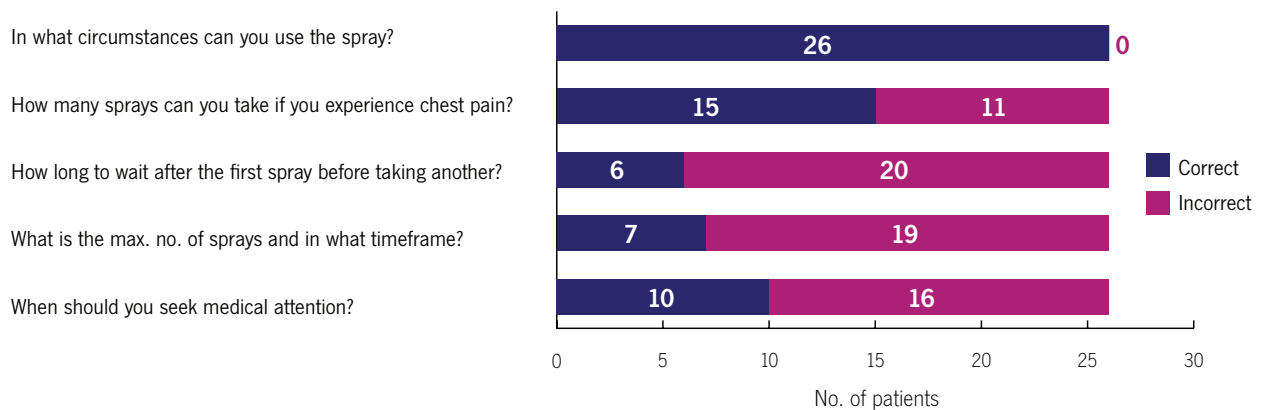


Figure 5: Use of spray knowledge



“Patient knowledge about their glyceryl trinitrate therapy is suboptimal. Patients may be unsure as to how to self-dose in an acute chest pain episode and may not refer promptly for medical attention for uncontrollable chest pain.”

Key Points for Community Pharmacists

1. Patient knowledge

Patient knowledge about their glyceryl trinitrate therapy is suboptimal. Patients may be unsure as to how to self-dose in an acute chest pain episode and may not refer promptly for medical attention for uncontrollable chest pain.

There is a worrying lack of knowledge regarding:

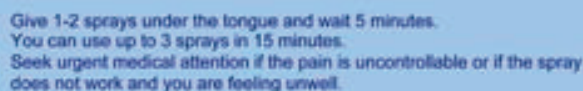
- how many sprays may be taken at once;
- what time interval to leave between sprays;
- what the maximum dosage is and over what interval; and
- when to seek medical attention.

Dosing knowledge is lower in patients prescribed glyceryl trinitrate for a longer time and in newly admitted chest pain patients who have not yet received hospital education. These findings are in line with other research on the subject²⁻⁷.

2. Availability of written information

Over half of patients carry the glyceryl trinitrate bottle without the box or PIL. Hence these patients will only have access to the information on the glyceryl trinitrate bottle rather than the more complete information in the PIL. The current labeling of glyceryl trinitrate products is suboptimal. The following is considered by the authors to be the key information which patients need to use their spray safely and effectively.

Figure 6. Sample minimum label information



Give 1-2 sprays under the tongue and wait 5 minutes. You can use up to 3 sprays in 15 minutes. Seek urgent medical attention if the pain is uncontrollable or if the spray does not work and you are feeling unwell.

The results of this study have been shared with manufacturers of glyceryl trinitrate sprays.

3. Need for repeated patient counselling

Research on the subject²⁻⁷ identifies that verbal information is preferred by patients and that information needs to be repeated at intervals for optimum patient understanding. This study confirms this, as dosing knowledge was found to be lower in patients on glyceryl trinitrate for a longer time.

There is a clear need and opportunity for community pharmacists to review patient understanding of their glyceryl trinitrate spray in line with the counselling recommendations below.

Acknowledgements

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References

1. Naddy H. Audit of glyceryl trinitrate spray knowledge. Project in part fulfilment of BSc(Pharm), Trinity College Dublin, 2010
2. Kimble L, Kunik C. Knowledge and use of sublingual nitroglycerin and cardiac related quality of life in patients with chronic stable angina. *Journal of Pain and Symptom Management*. February 2000;19(2):109-117.
3. Bailie G, Kay E. Patients' knowledge of sublingual glyceryl trinitrate, *British Medical Journal* 1998; 297:32

Counselling

The glyceryl trinitrate spray may be used for angina pain, chest tightness or breathlessness (where these are the patient's symptoms of angina). The spray may also be used to prevent symptoms of angina, e.g. before exercise or exertion.

Seek urgent medical attention if you have uncontrollable pain, think you may be having a heart attack (chest pain, upper body pain in the jaw, back, neck or arms, shortness of breath, sweating, nausea, light-headedness, loss of consciousness, weakness, tiredness)⁹ or if the spray does not work and you are feeling unwell.

You should also seek medical attention if you need to use the glyceryl trinitrate spray frequently or with increasing frequency.

You should store your spray in the box with the patient information leaflet, to protect it from light and ensure that you have written information if you need it. It is usually helpful to have more than one spray to ensure you always have it with you. Check the expiry date regularly and get a new spray if your old one is out of date.

- Sit down (as you may become light-headed when using the spray).
- If new pump being used or pump not in use for a week or more, spray one puff into the air to get the pump working properly.
- Spray 1-2 sprays under the tongue.
- Close mouth, do not inhale.
- Wait 5 minutes.
- If pain persists, spray 1 further spray under the tongue, close mouth, wait 5 minutes.
- The maximum dose is 3 sprays over 15 minutes.
- Seek urgent medical attention if pain is uncontrollable or the spray does not work and you feel unwell.
- After using the spray, rest. When you first stand up after using the spray, do so slowly and be aware you may feel faint.

4. Kelly J. Sublingual nitroglycerin: improving patient compliance with a demonstration dose. *Journal of the American Board of Family Practice* 1988 Oct-Dec; 1(4):251-4.
5. Ingram S, Love J. Cardiac patients' perceived education and use of sub-lingual glyceryl trinitrate on commencement of outpatient cardiac rehabilitation. *Coronary Health Care* 1999;3:128-134
6. Kimble L, Kunik C. Knowledge and Use of Sublingual Nitroglycerin and Cardiac -Related Quality of Life in Patients with Chronic Stable Angina. *Journal of Pain and Symptom Management* February 2000;19(2):109-117
7. McGovern E, Mackay C, Hair A, Lindsay H, Bryson S. Pharmaceutical care needs of patients with angina *Pharmacy World and Science*. 2001 Oct;23(5):175-6
8. Fan M, Mitchell M, Cooke M. Cardiac patients' knowledge and use of sublingual glyceryl trinitrate (SLGTN). *Australian Journal of Advanced Nursing* March-May 2009;26(3):32-38
9. Irish Heart Foundation website. Cited 2011-09-30. Available from <http://www.irishheart.ie>