From February 2004, GPs have been able to prescribe sterile maggots of *Lucilia sericata* (the common greenbottle). The Prescription Pricing Authority has confirmed that such prescriptions can be presented to a community pharmacy and dispensed in the normal way. Mair Fear describes how the addition of maggots to the list of reimbursable items means that community clinicians now have the opportunity to use an effective therapy that has so far been largely restricted to the hospital environment. The LarvE product range is described.

Most of these patients were treated in hospital because of problems with funding the treatment in the community. However, some centres managed to obtain budgets for the purchase of maggots from their local primary care trust.

While sterile maggots were not available on prescription, some patients were inevitably denied this form of treatment. The recent addition of sterile maggots to the list of prescription-only items means that patients in the community can now benefit from this unconventional but highly effective therapy.

The tissue viability service in Plymouth Teaching Primary Care Trust (tPCT) has held a budget to provide maggots in the community for the past four years (Fear et al, 2003). This article aims to share information with colleagues who may not have used maggots previously.

Using maggots With the advent of a new dynamic therapy, there is the possibility of inappropriate and uncontrolled use, which can lead to it being withdrawn or not being added to formularies or guidelines.

In the Plymouth tPCT formulary, maggot therapy is identified as for ‘specialist use only’. This means practitioners must ensure they understand the purpose of the treatment and how to apply, maintain and remove the maggots. Established protocols can be found on the Biosurgical Research Unit’s website (www.larve.com).

How many are needed The number of pots of maggots needed for each application depends on the size of the particular wound and the amount of slough present. A calculator is available (Box 1) and can be obtained from the Biosurgical Research Unit, which supplies maggots.

Starting therapy A GP prescription is required to order maggots in the community. The maggots are supplied in sterile pots, each containing about 300. Each pot has a cap with a membrane filter that allows the passage of air but prevents the transmission of micro-organisms.

The ‘free-range’ maggots are retained in the wound with a piece of fine nylon mesh (LarvE Net) that is supplied with each consignment of maggots. For larger wounds on the leg or foot, the net is supplied in the form of a sleeve or boot that covers the entire area of the wound. A half-boot is available for toes and amputation

### BOX 1. CALCULATOR TO ESTABLISH THE NUMBER OF MAGGOTS REQUIRED

<table>
<thead>
<tr>
<th>Maximum wound size (cm)</th>
<th>Percentage of wound covered with slough/necrosis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>20 per cent</td>
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<tr>
<td>Up to 2 x 2</td>
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<tr>
<td>5 x 5</td>
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<td>5 x 10</td>
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<td>25 x 30</td>
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<tr>
<td>30 x 30</td>
<td></td>
</tr>
</tbody>
</table>

**Key words**

Maggots

Prescription

Wound care

**How to use the calculator**

- Measure the dimensions of the wound with a ruler and compare with the sizes indicated on the side of the calculator.
- Move horizontally across the table to the column that most closely corresponds to the percentage of the wound area covered with slough/necrotic tissue.
- Compare the colour of the square indicated with the colour key along the bottom of the calculator. This will indicate the recommended number of pots per application.
- When you have determined the number of pots required, raise an order or prescription.
- Note that the calculator only takes into account the surface area of the wound. However, if the wound has significant depth more maggots may be required to achieve effective debridement.

**Maximum wound size (cm)**

- Up to 2 x 2
- 5 x 5
- 5 x 10
- 10 x 10
- 10 x 15
- 15 x 15
- 15 x 20
- 20 x 20
- 20 x 25
- 25 x 25
- 25 x 30
- 30 x 30

**Percentage of wound covered with slough/necrosis**

- 20 per cent
- 40 per cent
- 60 per cent
- 80 per cent
- 100 per cent

**Number of pots**

- 1
- 2
- 3
- 4
- 5
The use of maggots in wound care is a specialized treatment that requires careful handling and patient education. The use of maggots, like any other used dressing material, is potentially contaminated with bacteria and classified as clinical waste. In the community setting, it is the responsibility of the clinician to ensure that such waste is disposed of in accordance with local health regulations.

**Case study**
Edward Wilson had a below-knee amputation. The wound dehisced (opened) and became colonised with methicillin-resistant Staphylococcus aureus (MRSA). The advice from his surgical team was to have an above-knee amputation and he returned to have an above-knee amputation.

**Disposal**
Used maggots, like any other used dressing material, are potentially contaminated with bacteria and classified as clinical waste. In the community setting, it is the responsibility of the clinician to ensure that such waste is disposed of in accordance with local health regulations.

To transport the maggots without using the approved method or container is in conflict with Statutory Instrument 1996 No. 2092: The Carriage of Dangerous Goods (Classification, Packaging and Labelling) and Use of Transportable Pressure Reception Cylinders Regulations 1996. To avoid this, Plymouth TPT policy insists on the use of the approved method or container.

**Maintenance**
Maggots need moisture, air and food to survive. Enclosed dressings or a lack of moisture in a warm environment can result in the maggots drying out. Patients or relatives are in the best position to ensure survival of the maggots, and achieving concordance and good communication are important factors in fulfilling this objective.

Patients should be told that the therapy entails the use of maggots. Health care professionals should avoid the use of words that will be unfamiliar to patients, such as ‘larval’ or ‘biosurgical’ intervention.

It is important to explain to patients that when maggots are used the exudate from the wound will be red and bloody, and that this is a positive rather than a negative result. Patients need support during therapy and a contact number they can ring if they have any questions is always appreciated.

**REFERENCES**
The application of maggots was discussed with Mr Wilson. With some reservations, he agreed to this. The first application of maggots took place in August 2003 (Fig 2). While there was no adverse reaction to the maggots, there was some discomfort from the hydrocolloid dressing used around the wound. This was addressed by removing the maggots after two days instead of three.

It took three cycles of treatment before a silver impregnated hydrofibre dressing was used (Fig 3). When most of the wound bed had been prepared, healing took place despite the presence of an area of exposed bone. The surgical team reviewed the limb and still recommended further amputation. This was discussed with Mr Wilson, his GP, his family, and the team of nurses caring for him in the community.

It was decided to proceed with conservative treatment and assess how healing progressed. Fig 4 shows the wound in January 2004. Exposed bone was still visible, but the consultant decided that it could be refashioned to preserve the lower part of the limb and facilitate the use of Mr Wilson’s prosthesis. The wound still remained infected with MRSA but continued to heal as the bacterial proliferation had been reduced.

When we asked Mr Wilson for permission to use his photographs and care programme, he said: ‘As patients, we are afraid of things that we are not used to; we get the wrong idea.

‘If they are explained and we are given choices it is far better. I have no doubt that if I hadn’t had the maggots, I would have lost more of my limb. Things have not been plain sailing for me but what I have left of my limb I will keep.’

**Conclusion** Maggot therapy does not simply prove to be of benefit to patients cared for by community and practice nurses but has implications for podiatry and treatment centres.

As practitioners we have to ensure that we have selected the right patient and the right wound for the application of maggots. Currently the tissue viability service within Plymouth Teaching PCT is contacting GPs to offer support, guidance and information if they are asked to prescribe maggots. We want this procedure to be used effectively, efficiently, and appropriately.