

KNMG/KNMP

**Guidelines for the Practice
of Euthanasia and
Physician-Assisted Suicide**

GUIDELINES

2012

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of Euthanasia and
Physician-Assisted Suicide

PUBLICATION DETAILS

KNMG/KNMP Guidelines for the Practice of Euthanasia and Physician-Assisted Suicide

This publication supersedes the 2007 edition of the KNMP Standards for Euthanasia. The recommendations from the 2007 edition and all earlier editions therefore no longer apply. We kindly request that you delete/destroy any earlier editions.

1st edition: 1987

2nd edition: 1994

3rd edition: 1998

4th edition: 2007

Online

You will find this publication and more English information about euthanasia in the Netherlands at www.knmg.nl/english

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As the umbrella organisation for the professional and sector organisation of pharmacists, the Royal Dutch Pharmacists Association (KNMP) represents the interests of both its members and the pharmacy.

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The doctor's federation KNMG (*Royal Dutch Medical Association*) represents over 53,000 doctors and medical students. KNMG member organisations include Koepel Artsen Maatschappij en Gezondheid (*Umbrella Organisation for Physicians and Health - KAMG*), Landelijke vereniging van Artsen in Dienstverband (*National Society of Employee Physicians - LAD*), Landelijke Huisartsen Vereniging (*National Society of General Practitioners - LHV*), Nederlandse Vereniging voor Arbeids- en Bedrijfsgeneeskunde (*Netherlands Society of Occupational Medicine - NVAB*), Nederlandse Vereniging voor Verzekeringsgeneeskunde (*Netherlands Society of Insurance Medicine - NVVG*), Federatie van Medisch Specialisten (*Federation of Medical Specialists - FMS*), Verenso (*the Dutch Association of Elderly Care Physicians and Social Geriatricians*) and De Geneeskundestudent (*the Medical Student*).

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Foreword

You have in your hands the 'Guidelines for the Practice of Euthanasia and Assisted Suicide'. These guidelines support doctors and pharmacists in the effective and safe practice of euthanasia.

The guidelines were compiled following a collaboration of both doctors and pharmacists. This is a very important factor. First and foremost, the practice of euthanasia and assisted suicide is an extremely serious and emotional event in the lives of the patient and his/her loved ones. However, it also has a significant effect on the doctor and pharmacist. Euthanasia or assisted suicide is not a practice that doctors and pharmacists encounter on a daily basis. Both parties have individual responsibilities in addition to joint responsibilities. It is therefore helpful for the doctor and pharmacist to support each other in this process and to prepare and evaluate the procedure for euthanasia or assisted suicide together.

The guidelines can be effectively applied in practice and offer reference points to doctors and pharmacists during the conduct of their professional duties. The Royal Dutch Medical Association (KNMG) and the Royal Dutch Pharmacists Association (KNMP) are satisfied with these completed collective guidelines, which are available and accessible to all.



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1 Introduction

DUTIES AND COMPOSITION OF THE EXPERT GROUP

In 2010, the KNMG and the KNMP set up an expert group for the purposes of creating a set of guidelines for the effective and safe practice of euthanasia or assisted suicide from the provision request sent to the pharmacy to the return of empty ampoules and/or vials in addition to unused medication. The guidelines encompass the following:

- Choice of medication and dosages.
- Description of the procedure for the doctors and the required resources.
- Description of criteria of due care for pharmacists.
- Evaluation opportunities for doctors and pharmacists.
- Recording of help desks and vade mecums for doctors and pharmacists.
- Agreements regarding possible future adjustments of the guidelines based on the aforementioned evaluations or other developments.
- Recommendations for promoting the distribution and application of the guidelines.

EXPERT GROUP: BASIC PRINCIPLES AND WORKING METHODS

The expert group adopted the KNMP Standards for Euthanasia (Standaard Euthanatica) 2007 as their point of departure. The expert group met on six occasions between November 2010 and August 2011. Discussions were also conducted via e-mail. A draft text was discussed, commented on and determined by the expert group. The draft guidelines were discussed and commented on during an invitational conference by representatives of the KNMG, the KNMP, the NHG (Dutch College of General Practitioners), the NIV (Netherlands Association of Internal Medicine), the NVA (Netherlands Society of Anaesthesiologists), the NVIC (Netherlands Intensive Care Association), the NVVE (Right to Die-NL), the NVZA (Dutch Hospital Pharmacists' Association), Regional Euthanasia Review Committees and Verenso. Subsequently, the expert group discussed the comments and incorporated them into the guidelines wherever necessary. The draft guidelines were then made available on the KNMG and KNMP websites to be viewed and commented on by doctors and pharmacists. The comments from the professional field were then incorporated into the guidelines wherever necessary. Finally, the Federation Board of the KNMG and the Executive Committee of the KNMP adopted the guidelines.

EXPLANATION

The KNMP Standards for Euthanasia (Standaard Euthanatica) 2007, the evaluation forms received by the KNMP between 1998 and mid-2010 and the inventory of problems and suggestions compiled by the KNMG in 2008 following consultation with doctors affiliated with the SCEN (Euthanasia in the Netherlands Support and Assessment) programme were used during

the composition of these guidelines. Furthermore, comments obtained from the institutions and scientific associations consulted during an invitational conference have been incorporated and the reactions from the future users of these guidelines (doctors and pharmacists) have been included in the final version. National and international literature has been consulted in a search for relevant scientific research in this area. However, none was found. These guidelines are therefore expert-based and experience-based.

SIGNIFICANCE OF THE GUIDELINES

The guidelines describe a practically applicable, effective and safe method for the practice of euthanasia and physician-assisted suicide. Other medication, dosages and/or methods can also result in euthanasia or physician-assisted suicide in compliance with the requirements of due care. However, a number of medications, dosages and methods are mentioned explicitly, which should not be used. After all, circumstances in individual situations can make it desirable and/or necessary to deviate from these guidelines. However, any departure from these guidelines requires substantiation and documentation.

The guidelines do not make any judgements regarding the decision-making process prior to the conduct of euthanasia or physician-assisted suicide or regarding other ways to lessen the patient's suffering.

REVIEW PROCEDURE

Every three years, or more frequently if required, the Guidelines for the Practice of Euthanasia and Physician-assisted suicide will be assessed in line with scientific developments and collected evaluations. For this purpose, the expert group will function as the guideline committee.

RESPONSIBILITIES OF THE DOCTOR

The doctor bears final responsibility for the practice of euthanasia or physician-assisted suicide, including the selection of the medication used and the dosages administered. Only the doctor is permitted to administer the of euthanatic agents or assist the patient in taking them.

For information about the requirements of due care for doctors and the procedure prior to the administration of euthanasia, we refer you to the Termination of Life on Request and Physician-assisted suicide (Review Procedures) Act (*Wet toetsing levensbeëindiging op verzoek en hulp bij zelfdoding*), the Federation Board of KNMG's Position Paper on Euthanasia, and the Position Paper on the Role of the Doctor with regard to Elective Death. See also www.knmg.nl.

RESPONSIBILITIES OF THE PHARMACIST

The pharmacist monitors whether the pharmacological matters regarding the termination of life are conducted in a responsible manner using the correct medication and the correct dosages.

The pharmacist is – in the event that he or she prepares the syringes, elastomeric pump, infu-

sion bag or drink – responsible for the preparation and the labelling.

The criteria of due care for pharmacists are described in Appendix IX. Extensive explanation of these criteria can be found via www.knmp.nl.

READER'S GUIDE

These guidelines give doctors and pharmacists advice regarding a practically applicable and effective method for the practice of euthanasia and physician-assisted suicide. The guidelines describe the situation from the moment that the doctor submits a provision request for of euthanatic agents to the pharmacist, up to and including the arrival of the forensic pathologist. Furthermore, the guidelines provide background information regarding the methods and medication used.

For the sake of readability, the salt forms of the medications, if applicable, have not been included in the text. If applicable, the salt forms have been included in the dosage table (Appendix V).

In the advice, only the generic names are stated. The brand names can be found in the dosage table.

QUESTIONS ABOUT THE GUIDELINES

If doctors or pharmacists have any questions about the guidelines, they can consult their professional association.

For pharmacists, this is:

KNMP Drug Information Centre

P.O. Box 30460 - 2500 GL The Hague - 070 3737377 - gic@knmp.nl

For doctors:

KNMG Doctor Info Line

P.O. Box 20051 - 3502 LB Utrecht - 030 2823322 - artseninfolijn@fed.knmg.nl

2 The practice of euthanasia and physician-assisted suicide

The basic principle is that euthanasia must be conducted effectively and safely. The patient must die within a manageable period of time and must not be conscious of his or her death.

2.1 Preparation

TIMELY NOTIFICATION OF THE PHARMACIST

Doctors and pharmacists within a particular catchment area will agree a minimum amount of time between the submission of the provision request and the delivery of euthanatic agents. This period depends on the amount of time the doctor and pharmacist require to prepare the provision of the euthanatic agents. Preferably, the doctor will contact the pharmacist before the presentation or sending of the prescription. Before providing the euthanatic agents upon request from the doctor, the pharmacist will evaluate whether the prescribed method, medication and dosage can be used for the patient in question. Subsequently, the euthanatic agents will be prepared and/or the materials will be ordered and prepared for usage.

NON-PROVISION OF EUTHANATIC AGENTS FOR REASONS OF PRINCIPLE

If a pharmacist refuses any form of cooperation with euthanasia for reasons of principle, then the pharmacist must inform the doctors in his/her catchment area of this fact.

COOPERATIVE PREPARATION

Euthanasia is by no means an everyday occurrence for either doctors or pharmacists. For this reason, the doctor and the pharmacist must carefully examine the entire euthanasia procedure together.

PREPARATION OF EUTHANATIC AGENTS

Some doctors prefer to prepare the euthanatic agents themselves, others prefer for the pharmacist to do it. The preparation of the syringe can take approximately 20 minutes, depending on the doctor's level of experience. The pharmacist will offer to prepare the syringes or infusions for the doctor to use. If the doctor wishes to prepare the syringes him/herself, then the pharmacist will give the doctor preparation instructions.

For the practice of euthanasia, a number of syringes are required. In order to prevent mistakes, in addition to the name of the patient and the name and dosage of the medication

contained in each syringe, all syringes must be labelled with numbers denoting the order in which they must be administered. If the doctor has prepared the syringes him/herself, then he or she must number them at the very least.

EMERGENCY SET

Even for the most experienced doctors, things can sometimes go wrong. For this reason, the doctor must bring an extra set of intravenous euthanatic agents and materials for the preparation and administration of the agents.

In the event that thiopental is being used as a coma induction medication, this emergency set will consist of preparation materials and administration materials as described on page 17. If propofol is being used as a coma induction medication, then see page 23.

STORAGE OF EUTHANATIC AGENTS

The pharmacist will ensure that the doctor is provided with instructions regarding proper storage of euthanatic agents.

Following delivery of the euthanatic agents, the doctor must ensure they are properly stored in order to prevent any accidents at the patient's home or elsewhere.

STANDARD DOSAGE INSTEAD OF DOSAGE BASED ON BODY WEIGHT

In order to eliminate the risk of medication errors that could result in underdoses, the guidelines are based on standard dosages.

The reason for this is twofold. It is well-known that calculation errors are regularly made with regard to dosages of medication. Furthermore, using individual dosages can result in only part of the whole standard container being used rather than the whole container. This can also result in mistakes being made.

Furthermore, the dosage required in order to induce a coma is only dependent on body weight to a limited degree. The peak concentration of euthanatic agents in the bloodstream, and therefore also the peak concentration in the brain, is the decisive factor. In addition to the quantity of medication, this concentration is also dependent on the blood volume. The blood volume correlates to the normal body weight. The normal body weight is the ideal body weight of an individual patient with a normal state of health. The patient's actual body weight often differs from this weight.

In all cases, the dosages stated in these guidelines are safe to use for patients with a body weight of up to 150 kg. For patients with a body weight in excess of 150 kg, consultation with an anaesthesiologist is required.

DO NOT DISTURB

Any distraction during the preparation or practice of euthanasia or physician-assisted suicide is especially unpleasant for the patient and others present, and is inconvenient to the doctor. For this reason, it is advisable to turn off any telephones, ask others present to do the same and to inform fellow doctors that you will be unavailable for a particular period of time.

PRESENCE OF THE DOCTOR

During the practice of euthanasia or physician-assisted suicide, the doctor must remain present. For the oral method (physician-assisted suicide), this can take several hours.

PREMEDICATION

Intravenous premedication with midazolam can be administered if the patient does not wish to be aware of the moment of coma induction. The aim is to induce the patient into a light sleep and then induce a coma using thiopental or propofol. For premedication, 2.5 mg of midazolam is administered intravenously. Some patients can become restless following the injection of midazolam. In such cases, do not administer an extra dose of midazolam: immediately administer the coma induction medication.

It goes without saying that this form of premedication is only possible if the intravenous method is used.

2.2 Euthanasia

For the practice of euthanasia, the euthanatic agents are administered intravenously. Firstly, a coma is induced. Subsequently, once the patient is determined to be in a medically induced coma, a neuromuscular blocker is administered. This paralyzes all striated muscles, with the exception of the heart. This will cause the patient to die.

THE MEDICATION MUST ONLY BE ADMINISTERED BY THE DOCTOR

Only a doctor is permitted to administer the euthanatic agents. The insertion of an infusion needle and (if applicable) the connection of a waking-state infusion are not defined as administration acts. All activities subsequent to these are defined as administration acts. Only the patient him/herself is permitted to play an active role (for example, opening the infusion stopcock), as long as this does not hinder administration in accordance with the requirements of due care.

DIFFICULTY FINDING VEINS

With some patients, it can be difficult to find an easily accessible vein. For this reason, one day before the administration, it is advisable to examine how easy it is to find a vein and insert an infusion needle. Do not insert the infusion needle more than one day in advance. Use a 20G infusion needle (pink) or even 18G (green).

Thinner needles have the disadvantage that the section of the needle that is inserted into the blood vessel is shorter. As a result, there is a real risk that any movement could result in the needle being dislodged from the vein, causing the euthanatic agents to be unintentionally administered subcutaneously. Furthermore, injection via thinner needles is more difficult due to the higher resistance. The coma induction medication and the neuromuscular blocker should

preferably be administered via a blood vessel that is not too small. Following insertion of the infusion needle, it must be rinsed once a day with 5 ml of sodium chloride solution 0.9% or a waking-state infusion must be attached. Before use, check that the infusion needle is not blocked. For extensive advice on the insertion of an infusion needle, see *Appendix III*.

INCORRECTLY INSERTED INFUSION NEEDLES CAN CAUSE A PAINFUL REACTION

If the infusion needle is incorrectly inserted and the wall of a blood vessel is damaged or pierced, then injection of the coma induction medication can be very painful for the patient. Furthermore, the euthanatic agents will not work properly. If the infusion needle has been inserted properly, blood will come out of the needle if the veins are congested by applying a band around the arm.

2.2.1 Coma induction

It is of the utmost importance that the patient is not conscious of the effects of the neuromuscular blockers administered. Therefore, the patient's consciousness must be diminished to an adequately low level. The previously used term 'coma' regularly caused confusion, mainly due to a lack of clarity regarding how to determine when a patient is in a coma. The expert group uses the term 'medically induced coma'.

The term 'medically induced coma' means that there is sufficient reduction of consciousness that can be determined without performing any major procedures on the patient.

Before the neuromuscular blocker is administered, it must be determined that the patient is in a medically induced coma. This prevents the patient from being conscious of the effects of the neuromuscular blocker. The medication and dosages included in these guidelines ensure that the risk of an insufficiently deep and insufficiently long-term reduction of consciousness is extremely low. However, the possibility exists that the coma induction medication has unknowingly been administered partly perivenously, which will result in a failure to achieve the desired effect.

The characteristics of a medically induced coma are as follows:

- The patient does not respond to verbal stimuli.
- Serious depression of circulation, evidenced by a slow and weak pulse.
- Serious depression of ventilation, evidenced by slow, shallow breathing.
- No protective reflexes, such as the eyelash reflex.

Only once the patient displays all of these characteristics – and is therefore determined to be in a medically induced coma – can the neuromuscular blocker be administered. For more information about the various levels of consciousness up to and including total lack of consciousness, see *Appendix IV*.

For the purposes of readability, these guidelines will regularly use the term 'coma' to refer to a 'medically induced coma'.

MEDICATION FOR COMA INDUCTION

Thiopental (2000 mg) or propofol (1000 mg) is used for the induction of the coma. Both medications can cause pain when injected intravenously. Due to this pain, 2 ml of lidocaine 1% is injected intravenously.

With thiopental, a lethal effect cannot be guaranteed, although it is suitable for inducing a deep coma.

Propofol, as well as respiratory depression and vasodilation, also causes cardiac depression. The deep coma results in respiratory depression, which causes respiratory acidosis. The vasodilation results in a drop in blood pressure, causing relative hypovolaemic shock coupled with metabolic acidosis. The cardiac depression causes a drop in cardiac output, which further increases the acidosis.

METHOD OF ADMINISTRATION

The coma induction medication can be administered by injection, elastomeric pump (not to be used for propofol) or by intravenous infusion. All of the aforementioned methods are equally effective.

ELASTOMERIC PUMP

In addition to injection or infusion, a third administration method is now possible. The elastomeric pump, like Easypump® and Intermate®, is a pump system with a self-draining reservoir. The elastomeric pump's pump action can administer a volume of 20 ml of thiopental in 5 minutes. Bear in mind that the draining of an elastomeric pump does not occur in a linear manner. The 5-minute period only applies to this particular volume (20 ml) and use of the specific elastomeric pump as stated in Appendix VII. A major advantage of the elastomeric pump is that it reduces the commotion of the euthanasia process, giving the patient greater peace and quiet. Another advantage is that it puts the patient in control, as he/she can turn on the pump him/herself.

The pharmacist will deliver a full elastomeric pump. The doctor must listen carefully to the pharmacist's instructions regarding the elastomeric pump.

The elastomeric pump CANNOT be used for propofol, as the large volume means that the elastomeric pump takes too long to drain. The elastomeric pump also cannot be used for the administration of the neuromuscular blocker.

SPEED OF ADMINISTRATION

It is important that the coma induction medication is administered within no more than 5 minutes. If the infusion is administered too slowly, then the coma induction medication can redistribute itself within the body – like into the fatty tissues – presenting a risk that the desired coma depth or coma duration will not be achieved.

The (high) standard dosage can result in an abrupt completion of the dying process, with the patient dying during the administration of the coma induction medication. In such cases, it is vital that you inform the persons present of the accelerated dying process. For a less abrupt completion of the dying process, the decision can be made to administer a premedication

and/or more gradual administration of the coma induction medication over a time period of 5 minutes at most.

2.2.2 Neuromuscular blocker

When administered intravenously, a sufficiently high dose of neuromuscular blocker will cause complete paralysis of all striated muscles with the exception of the heart. This will result in respiratory arrest and death by anoxaemia. Of course, the neuromuscular blocker must only be administered to the patient if he/she is in a coma. If there is even the slightest doubt regarding whether or not the patient is in a coma, then a coma must be induced by administering coma induction medication.

Rocuronium (150 mg) is the neuromuscular blocker of choice as it is the most commonly used medication in the Netherlands for this purpose, and hence it is the neuromuscular blocker that medical professionals are most experienced with. Atracurium (100 mg) or cisatracurium (30 mg) are good alternatives.

Due to its short duration of effect, we advise against using the neuromuscular blocker mivacurium.

METHOD AND SPEED OF ADMINISTRATION

Upon administration of the coma induction medication, 10 ml of Sodium chloride solution 0.9% is administered in order to ensure that the entire dose has been administered. If thiopental is used, then this will also prevent the formation of precipitation with the neuromuscular blocker. Immediately subsequent to this, the neuromuscular blocker will be administered as a bolus.

ALWAYS ADMINISTER THE NEUROMUSCULAR BLOCKER

The neuromuscular blocker is always administered, even if the patient appears to have died following administration of the coma induction medication. Following administration of the neuromuscular blocker, there can no longer be any doubt that the patient has died.

PROCESS AND DURATION UNTIL DEATH

In most cases, the time between the intravenous administration of the neuromuscular blocker and death is short. In a few cases, the administration of only thiopental or propofol leads directly to respiratory arrest and possible cardiac arrest. This is inherent to the method. In all other cases, the neuromuscular blocker will result in total respiratory arrest within a few minutes, followed by cardiac arrest. However, the heart can sometimes continue to beat for some time, extending the period between respiratory arrest and cardiac arrest by as much as 20 minutes. This can cause some patients to become cyanotic.

Prior to the practice of euthanasia, it must be clearly explained to those present that death may occur quickly, but that the heart can also continue to beat for a long time.

2.3 Physician-assisted suicide

With physician-assisted suicide, the patient takes the of euthanatic agents him/herself (orally). A sufficiently high dose of an orally administered barbiturate results in depression of the respiratory system, causing respiratory acidosis. This, coupled with vascular and or cardiogenic shock, results in death.

For oral administration, a lipophilic barbiturate is used such as pentobarbital or secobarbital. These barbiturates pass through the blood-brain barrier relatively quickly and therefore have a quick effect. If this method is used, the patient must be capable of swallowing the sufficient volume, and he/she must not be nauseous or dehydrated and/or have any gastrointestinal transit disorders. Patients that have been using opioids for a period of time have slower gastrointestinal transit, which lengthens the period of time required before the patient lapses into a coma and dies.

The patient must be sitting up and in bed when he/she takes the barbiturate – this prevents a situation in which he/she is unable to make it back to the bed in time.

ADMINISTRATION METHOD

Induction of a coma followed by death is conducted by taking 15 grams of barbiturate (pentobarbital or secobarbital) in the form of a drink (mixture of non-therapeutics, see Appendix VI for the formula).

The possibility that the drink tastes bad cannot be ruled out.

USING ANTI-EMETICS BEFOREHAND IS ESSENTIAL

It is essential that the administration of metoclopramide is started one day (twelve hours) in advance in order to minimise the likelihood of the patient vomiting up the of euthanatic agents. Metoclopramide is the anti-emetic of choice as in addition to its anti-emetic effect, it also speeds up gastrointestinal transit.

PROCESS AND DURATION UNTIL DEATH

Once the patient drinks the drink, the barbiturate is resorbed by the gastrointestinal tract. The faster the resorption, the higher the peak level. If the resorption rate is too slow, then a redistribution of the barbiturate will take place, resulting in an insufficient peak level. As a result, the patient fails to lapse into a coma or can come out of a deep coma.

Even when anti-emetics are administered, the foul taste of the drink can sometimes cause vomiting. As a result, the whole dose is not taken. Another possible problem is that many patients use opioids at the end of their lives. Opioids result in slower gastrointestinal transit, which can mean it takes the patient longer to lapse into a coma.

Due to the aforementioned unpredictability, this method is not the preferred method.

The period of time between administration and the time of death varies from person to person, but in the vast majority of cases, it takes less than 30 minutes. However, sometimes it can take longer (2-3 hours). Long periods such as these can result in uncomfortable situations.

It is advisable to agree a maximum period of 2 hours with the patient and any next of kin. If the patient has not died by this time, then euthanasia should be administered (intravenously). Beforehand, it is not possible to predict which patients will or will not die within 2 hours. An infusion needle should be inserted in advance as standard for every patient.

ADMINISTRATION VIA A TUBE

Some cases have been reported in which administration of the drink via a tube worked well. It is essential to thoroughly rinse out the tube to prevent it from becoming blocked before the barbiturate reaches the stomach or intestines.

ONLY THE DOCTOR IS PERMITTED TO HELP THE PATIENT

With the oral method, it is the patient him/herself that takes the euthanatic agents (possibly with the aid of a tube). The doctor is permitted to assist the patient. By law, no other people are permitted to do so. If the doctor administers the euthanatic agents via the tube, then legally, this is classed as euthanasia and not physician-assisted suicide.

2.4 After the procedure

STORAGE OF THE ORIGINAL PACKAGING AND/OR IN THE FORM OF ADMINISTRATION PROVIDED BY THE PHARMACIST

The municipal forensic pathologist must be able to verify how and using which medications the patient's life was ended. If the doctor prepared the euthanatic agents him/herself, then he/she must store the vials and/or ampoules. If the pharmacist prepared the of euthanatic agents, the doctor must store the labelled syringes.

RETURNING THE MATERIALS

The pharmacist and the doctor will arrange the return of all remaining materials in the euthanasia set and the emergency set to the pharmacist once the forensic pathologist has completed his/her visit. The return of the materials has two purposes: firstly the appropriate disposal of unused euthanatic agents, and secondly to prevent the euthanatic agents from being used for purposes other than the intended euthanasia. Furthermore, this offers the doctor and pharmacist an opportunity to evaluate the euthanasia process. For example, unexpected problems may have occurred during the procedure. These problems can be taken into account in later euthanasia procedures.

QUESTIONNAIRE

Both the doctor and the pharmacist are asked to complete the questionnaire and return it to the KNMP Drug Information Centre. The questionnaire is only used to assess the advice in the guidelines in the light of practical experiences. The form is NOT used to check whether or not the procedure has been carried out properly. This task is performed by the Regional Euthanasia Review Committees.

The doctor fills in the doctor's form and the pharmacist fills in the pharmacist's form. These forms are included in Appendix XIII (doctor) and Appendix XIV (pharmacist).

The completed forms can be sent carriage forward to:

KNMP Drug Information Centre

Freepost Number 1774 - 2501 VB - The Hague

3 Administration

Based on the preceding information, a number of administration methods have been established.

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PHYSICIAN-ASSISTED SUICIDE:	
F Oral consumption of a barbiturate drink	32

A Thiopental as coma induction medication – injection via syringe

MEDICATION

- 1 ampoule of lidocaine (10 mg/ml, 10 ml)
- 4 vials of thiopental à 500 mg
- 2 ampoules of water for injections (à 10 ml) or 1 ampoule of water for injections (à 20 ml)
- 2 ampoules of sodium chloride solution 0.9% (à 10 ml)
- 3 vials of rocuronium 50 mg (10mg/ml, 5 ml)

PREPARATION MATERIALS

Injection materials, preferably a Luer lock (see Appendix VII for relevant needle sizes)

- 1 disposable syringe 2 ml or 5 ml (for lidocaine)
- 1 disposable syringe 20 ml or 2 disposable syringes 10 ml (for thiopental)
- 2 disposable syringes 10 ml (for sodium chloride solution 0.9%)
- 1 disposable syringe 20 ml (for rocuronium)
- 4 standard suction needles
- 1 infusion needle
- caps
- labels stating the name of the medication and numbered in the order in which they must be administered

ADMINISTRATION MATERIALS

- 1 three-way stopcock with tube (Luer lock)
- 2 pieces of gauze (10 x 10 cm)
- transparent dressing material/tape

EMERGENCY SET

Even for the most experienced doctors, things can sometimes go wrong. For this reason, the doctor must bring an extra set of intravenous euthanatic agents and materials for the preparation and administration of the agents, as stated above. This emergency set does not need to be ready for use straight away.

POINTS FOR ATTENTION

Precipitation

Thiopental forms precipitation in combination with rocuronium. You must therefore rinse the infusion system with 10 ml of sodium chloride solution 0.9% after administering thiopental.

Dissolution volume of thiopental solution for the injection method

Always dissolve thiopental in 20 ml of water for injections.

Volume of the syringes for the injection method

Using 20 ml syringes requires the necessary force to empty the syringe. It is possible to divide the thiopental between two 10 ml syringes.

Pain and foul tastes and/or odours upon administration

Intravenous administration of thiopental can cause pain. For this reason, before the thiopental is administered, 2 ml of lidocaine 1% is injected. However, administration of lidocaine beforehand does not guarantee pain-free administration of thiopental. It is therefore important that the patient and the other people present are informed that the patient may feel pain. Furthermore, the larger the selected blood vessel, the lower the chance of pain.

On a number of occasions, it has been reported that the patient experienced a strange taste or foul odour following administration.

Shelf life

For this application, thiopental solution and rocuronium can be stored in the syringe for 24 hours at room temperature.

ONE DAY IN ADVANCE

- If possible, insert an infusion needle one day beforehand. In appendix III, you can find advice on the insertion of an infusion needle.

PREPARATION

- Dissolve the thiopental by injecting 5 ml of water for injections into a 500 mg vial of thiopental.
- Dissolve by shaking the vial thoroughly.
- Repeat for the other three vials.
- Subsequently, draw the thiopental solution into one 20 ml syringe or two 10 ml syringes.
- Label the syringe(s).
- Prepare the lidocaine syringe and label it.
- Prepare two syringes with 10 ml of sodium chloride solution 0.9% for rinsing in between the administration of thiopental and rocuronium, and after the administration of rocuronium. If you do not rinse with sodium chloride solution 0.9% then you run the risk of precipitation forming. Label the syringes.
- Prepare the rocuronium syringe and label it.

ADMINISTRATION

- Warn the patient and the other people present that the administration can be painful.
- Inject 2 ml of lidocaine within 30 seconds.
- Inject thiopental solution within a maximum of 5 minutes.
- Rinse the infusion system with 10 ml of sodium chloride solution 0.9% (this ensures that the entire dose is administered and prevents precipitation with the neuromuscular blocker).
- Check whether the patient is in a medically induced coma.
- Subsequently, inject rocuronium as a bolus.
- Rinse the infusion system with 10 ml of sodium chloride solution 0.9% (this ensures that the entire dose is administered).

B Thiopental as coma induction medication – administered via elastomeric pump

MEDICATION

- 1 ampoule of lidocaine (10mg/ml, 10 ml)
- 4 vials of thiopental à 500 mg
- 2 ampoules of water for injections(à 10 ml)
- 2 ampoules of sodium chloride solution 0.9% (à 10 ml)
- 3 vials of rocuronium 50 mg (10mg/ml, 5 ml)

PREPARATION MATERIALS

Injection materials, preferably a Luer lock (see Appendix VII for relevant needle sizes).

- 1 disposable syringe 2 ml or 5 ml (for lidocaine)
- elastomeric pump (for thiopental)
- 2 disposable syringes 10 ml (for sodium chloride solution 0.9%)
- 1 disposable syringe 20 ml (for rocuronium)
- 3 standard suction needles
- 1 infusion needle
- caps
- labels stating the names of the medications and numbered in the order in which they must be administered

ADMINISTRATION MATERIALS

- 1 three-way stopcock with tube (Luer lock)
- 2 pieces of gauze (10 x 10 cm)
- transparent dressing material/tape

EMERGENCY SET

Even for the most experienced doctors, things can sometimes go wrong. For this reason, the doctor must bring an extra set of intravenous of euthanatic agents and materials for the preparation and administration of the agents. This emergency set does not need to be ready for use straight away. For the contents of the emergency set, see *page 14*.

POINTS FOR ATTENTION

Precipitation

thiopental forms precipitation in combination with rocuronium. You must therefore rinse the infusion system with 10 ml of sodium chloride solution 0.9% after administering thiopental.

Pain and foul tastes and/or odours upon administration

administration of thiopental can cause pain. For this reason, before the Thiopental is administered, 2ml of lidocaine 1% is injected. However, administration of lidocaine beforehand does not guarantee pain-free administration of thiopental. It is therefore important that the patient and the other people present are informed that the patient may feel pain. On a number of occasions, it has been reported that the patient experienced a strange taste or foul odour following administration.

Shelf life

for this application, thiopental solution in the elastomeric pump and rocuronium in the syringe can be stored for 24 hours at room temperature.

ONE DAY IN ADVANCE

- If possible, insert an infusion needle one day in advance. In appendix III you can find advice on the insertion of an infusion needle.

PREPARATION

- Allow the pharmacy to prepare and label the elastomeric pump containing thiopental (2000 mg of thiopental in 20 ml of water for injections).
- Prepare the lidocaine syringe and label it.
- Prepare two syringes with 10 ml of sodium chloride solution 0.9% for rinsing in between the administration of thiopental and rocuronium, and after the administration of rocuronium. If you do not rinse with sodium chloride solution 0.9% then you run the risk of precipitation forming. Label the syringes.
- Prepare the rocuronium syringe and label it.

ADMINISTRATION

- Warn the patient and the other people present that the administration can be painful.
- Inject 2 ml of lidocaine within 30 seconds.
- Connect the tube to the elastomeric pump.
- Adhere the limiter – not the filter – to the skin using tape.
- Begin the infusion by opening the elastomeric pump's tube clamp: the administration of thiopental will start immediately. The tube can also be opened by the patient. The stopcock on the three-way stopcock must also be turned open.

If the tube is bent, roll the bent section back and forth between your fingers until the tube returns to its original shape, improving the flow.

- The administration of thiopental is complete when the elastomer membrane is no longer round. For a volume of 20 ml, this takes about 5 minutes when using the recommended type of elastomeric pump (see Appendix VII).
- Close the clamp and disconnect the elastomeric pump.
- Rinse the infusion system with 10 ml of sodium chloride solution 0.9% (this ensures that the entire dose is administered and prevents precipitation with the neuromuscular blocker).
- Check whether the patient is in a medically induced coma.
- Subsequently, inject rocuronium as a bolus.
- Rinse the infusion system with 10 ml of sodium chloride solution 0.9% (this ensures that the entire dose is administered).

C Thiopental as coma induction medication – administered via infusion

MEDICATION

- 1 ampoule of lidocaine (10mg/ml, 10 ml)
- 4 vials of thiopental à 500 mg
- 2 ampoules of water for injections à 10 ml
- 1 infusion bag of sodium chloride solution 0.9% (à 100 ml)
- 2 ampoules of sodium chloride solution 0.9% (à 10 ml)
- 3 vials of rocuronium 50 mg (10mg/ml, 5 ml)

PREPARATION MATERIALS

Injection materials, preferably a Luer lock (see Appendix VII for relevant needle sizes).

- 1 disposable syringe 2 ml or 5 ml (for lidocaine)
- infusion bag (max. 100 ml) and infusion system (for thiopental)
- 2 disposable syringes 10 ml (for sodium chloride solution 0.9%)
- 1 disposable syringe 20 ml (for rocuronium)
- 3 standard suction needles
- 1 infusion needle
- caps
- labels stating the names of the medications and numbered in the order in which they must be administered

ADMINISTRATION MATERIALS

- 1 three-way stopcock with tube (Luer lock)
- 2 pieces of gauze (10 x 10 cm)
- transparent dressing material/tape

EMERGENCY SET

- Even for the most experienced doctors, things can sometimes go wrong. For this reason, the doctor must bring an extra set of intravenous of euthanatic agents and materials for the preparation and administration

of the agents. This emergency set does not need to be ready for use straight away. For the contents of the emergency set, see *page 14*.

POINTS FOR ATTENTION

Precipitation

Thiopental forms precipitation in combination with rocuronium. You must therefore rinse the infusion system with 10 ml of sodium chloride solution 0.9% after administering thiopental.

Pain and foul tastes and/or odours upon administration

Administration of thiopental can cause pain. For this reason, before the thiopental is administered, 2 ml of lidocaine 1% is injected. However, administration of lidocaine beforehand does not guarantee pain-free administration of thiopental. It is therefore important that the patient and the other people present are informed that the patient may feel pain.

On a number of occasions, it has been reported that the patient experienced a strange taste or foul odour following administration.

Shelf life

For this application, thiopental solution can be stored in the infusion bag and rocuronium in the syringe for 24 hours at room temperature.

ONE DAY IN ADVANCE

- If possible, insert an infusion needle one day in advance. In appendix III you can find advice on the insertion of an infusion needle.

PREPARATION

- You should preferably ask the pharmacy to prepare and label the thiopental infusion bag.
- Prepare the lidocaine syringe and label it.
- Prepare two syringes with 10ml of sodium chloride solution 0.9% for rinsing in between the administration of thiopental and rocuronium, and after the administration of rocuronium. If you do not rinse with sodium chloride solution 0.9% then you run the risk of precipitation forming. Label the syringes.
- Prepare the rocuronium syringe. Label the syringe.

ADMINISTRATION

- Warn the patient and the other people present that the administration can be painful.
- Inject 2 ml of lidocaine within 30 seconds.
- Connect the infusion line to the infusion needle via the three-way stopcock.
- Open the clip at the bottom of the infusion bag and open the roller clamp on the infusion tube. If a stopcock has been placed in between these, then open it.
- Allow the thiopental solution to be administered to the patient within 5 minutes. If the infusion bag drains too slowly, squeeze it.
- Rinse the infusion system with 10 ml of sodium chloride solution 0.9% (this ensures that the entire dose is administered and prevents precipitation with the neuromuscular blocker).
- Check whether the patient is in a medically induced coma.
- Subsequently, inject rocuronium as a bolus.
- Rinse the infusion system with 10 ml of sodium chloride solution 0.9% (this ensures that the entire dose is administered).

D Propofol as coma induction medication – injection via syringe

MEDICATION

- 1 ampoule of lidocaine (10mg/ml, 10 ml)
- 1 vial of propofol emulsion (20mg/ml, 50 ml)
- 2 ampoules of sodium chloride solution 0.9% (à 10 ml)
- 3 vials of rocuronium 50 mg (10mg/ml, 5 ml)

PREPARATION MATERIALS

Injection materials, preferably a Luer lock (see Appendix VII for relevant needle sizes).

- 1 disposable syringe 2 ml or 5 ml (for lidocaine)
- 1 disposable syringe 60 ml or 3 disposable syringes 20ml (for propofol)
- 2 disposable syringes 10 ml (for sodium chloride solution 0.9%)
- 1 disposable syringe 20 ml (for rocuronium)
- 4 standard suction needles
- 1 infusion needle
- caps
- labels stating the names of the medications and numbered in the order in which they must be administered

ADMINISTRATION MATERIALS

- 1 three-way stopcock with tube (Luer lock)
- 2 pieces of gauze (10 x 10 cm)
- transparent dressing material/tape

EMERGENCY SET

Even for the most experienced doctors, things can sometimes go wrong. For this reason, the doctor must bring an extra set of intravenous of euthanatic agents and materials for the administration of the agents, as stated above. This emergency set does not need to be ready for use straight away.

POINTS FOR ATTENTION

Pain

In contrast to the other propofol preparations, Propofol-Lipuro emulsion and Propofol Fresenius emulsion contain medium-chain triglycerides. This causes less pain compared to other propofol preparations. For this reason, it has been decided to use propofol preparations with medium-chain triglycerides. Despite this, 10% of patients report pain during administration of these propofol emulsions. For this reason, before the propofol is administered, 2 ml of lidocaine is administered. However, administration of lidocaine beforehand does not guarantee pain-free administration of propofol. It is therefore important that the patient and the other people present are informed that the patient may feel pain during the administration of the propofol.

Allergies are not relevant

propofol is formulated in a soybean-oil emulsion. For this reason, propofol normally cannot be administered as an anaesthetic to people who are allergic to soy. However, for use as a coma induction medication during the practice of euthanasia, this allergy is not relevant.

Propofol vials

propofol vials are ready to use.

Shelf life

propofol emulsion contains no preservatives. For this application, propofol can be stored in the syringe(s) at room temperature for 24 hours following preparation. For this application, rocuronium can also be stored in a syringe for 24 hours at room temperature.

ONE DAY IN ADVANCE

- If possible, insert an infusion needle one day in advance. On page 28 (Appendix III), you can find advice on the insertion of an infusion needle.

PREPARATION

- Prepare the propofol syringe(s) and label it/them.
- Prepare the lidocaine syringe and label it.
- Prepare two syringes with 10 ml of sodium chloride solution 0.9% for rinsing in between the administration of propofol and rocuronium, and after the administration of rocuronium. Label the syringes.
- Prepare the rocuronium syringe and label it.

ADMINISTRATION

- Warn the patient and the other people present that the administration can be painful.
- Inject 2ml of lidocaine within 30 seconds.
- Inject the propofol solution within a maximum of 5 minutes.
- Rinse the infusion system with 10 ml of sodium chloride 0.9% (this ensures that the entire dose is administered).
- Check whether the patient is in a medically induced coma.
- Subsequently, inject rocuronium as a bolus.
- Rinse the infusion system with 10 ml of sodium chloride 0.9% (this ensures that the entire dose is administered).

E Propofol as coma induction medication – administered via infusion

MEDICATION

- 1 ampoule of lidocaine (10mg/ml, 10 ml)
- 1 vial of propofol emulsion (20mg/ml, 50 ml)
- 1 infusion bag of sodium chloride 0.9% (à 100 ml)
- 2 ampoules of sodium chloride 0.9% (à 10 ml)
- 3 vials of rocuronium 50 mg (10mg/ml, 5 ml)

PREPARATION MATERIALS

Injection materials, preferably a Luer lock (see Appendix VII for relevant needle sizes).

- 1 disposable syringe 2 ml or 5 ml (for lidocaine)
- infusion bag (max. 100 ml) and infusion system (for propofol)
- 2 disposable syringes 10 ml (for sodium chloride solution 0.9%)
- 1 disposable syringe 20 ml (for rocuronium)
- 3 standard suction needles
- 1 infusion needle
- caps
- labels stating the names of the medications and numbered in the order in which they must be administered

ADMINISTRATION MATERIALS

- 1 three-way stopcock with tube (Luer lock)
- 2 pieces of gauze (10 x 10 cm)
- transparent dressing material/tape

EMERGENCY SET

Even for the most experienced doctors, things can sometimes go wrong. For this reason, the doctor must bring an extra set of intravenous of euthanatic agents and materials for the administration of the agents. This emergency set does not need to be ready for use straight away. For the contents of the emergency set, see *page 20*.

POINTS FOR ATTENTION

Pain

in contrast to the other propofol preparations, Propofol-Lipuro emulsion and Propofol Fresenius emulsion contain medium-chain triglycerides. This causes less pain compared to other propofol preparations. For this reason, it has been decided to use propofol preparations with medium-chain triglycerides. Despite this, 10% of patients report pain during administration of these propofol emulsions. For this reason, before the propofol is administered, 2ml of lidocaine 1% is administered. However, administration of lidocaine beforehand does not guarantee pain-free administration. It is therefore important that the patient and the other people present are informed that the patient may feel pain during the administration of the propofol.

Allergies are not relevant

propofol is dissolved in a soybean-oil emulsion. For this reason, propofol normally cannot be administered as an anaesthetic to people who are allergic to soy. However, for use as a coma induction medication during the practice of euthanasia, this allergy is not relevant.

Propofol vials

propofol vials are ready to use.

Shelf life

propofol emulsion contains no preservatives. For this application, propofol can be stored in the infusion bag at room temperature for 24 hours following preparation. For this application, rocuronium can also be stored in a syringe for 24 hours at room temperature.

ONE DAY IN ADVANCE

- If possible, insert an infusion needle one day in advance. In appendix III you can find advice on the insertion of an infusion needle.

PREPARATION

- You should preferably ask the pharmacy to prepare and label the propofol infusion bag.
- Prepare the lidocaine syringe and label it.
- Prepare two syringes with 10 ml of sodium chloride solution 0.9% for rinsing in between the administration of the propofol and the rocuronium, and after the administration of the rocuronium. Label the syringes.
- Prepare the rocuronium syringe and label it.

ADMINISTRATION

- Connect the infusion line to the infusion needle via the three-way stopcock.
- Inject 2 ml of lidocaine within 30 seconds.
- Warn the patient and the other people present that the administration can be painful.
- Open the clip at the bottom of the infusion bag and open the roller clamp on the infusion tube. If a stopcock has been placed in between these, then open it.
- Allow propofol to be administered to the patient within 5 minutes. If the infusion bag drains too slowly, squeeze it.
- Rinse the line with 10 ml of sodium chloride 0.9% (this ensures that the entire dose is administered).
- Check whether the patient is in a medically induced coma.
- Subsequently, inject rocuronium as a bolus.
- Rinse the infusion needle with 10 ml of sodium chloride 0.9% (this ensures that the entire dose is administered).

F Oral consumption of a barbiturate drink

MEDICATION

- 3 suppositories of metoclopramide 20 mg or 3 tablets of metoclopramide 10 mg
- 100 ml mixtura nontherapeutica (for the formula, see Appendix VI)

PREPARATION

- Beforehand, discuss with the patient and possibly also his/her next of kin that if the patient has not died within 2 hours, the intravenous method will be applied.
- Begin administering metoclopramide one day (twelve hours) in advance. Preferably, it should be administered according to the following schedule: 12 hours, 6 hours and 1 hour before the euthanasia procedure.
- Insert an infusion needle, preferably one day in advance. For advice on this matter, see appendix III.
- Ensure that you have all the materials and medication required for intravenous administration. For information on this matter, see the emergency set on page 14 (thiopental) or page 20 (propofol).

ADMINISTRATION

- Prepare the patient for a foul taste.
- When drinking the drink, make sure the patient is sitting up straight in bed. The entire drink must be consumed.
- Don't allow the patient to consume the drink through a straw. With a straw, there is a risk that the medication will start to take effect before the patient has imbibed the whole dose.
- Some cases have been reported in which administration of the drink via a tube worked well. It is essential to thoroughly rinse out the tube to prevent it from becoming blocked before the barbiturate reaches the stomach or intestines.
- If the patient vomits up the drink, then the likelihood is high that any second dose will also be vomited up. In such cases, it is advisable to apply the intravenous method.
- Following consumption of the drink, the chances are very high that the patient will lapse into a deep coma and die.

If the patient does not die within the agreed time, then a coma induction medication must be administered intravenously followed by a neuromuscular blocker (euthanasia).

Appendices to the guidelines for the practice of euthanasia and physician-assisted suicide

Appendix I Routes of administration, not to be used

RECTAL ADMINISTRATION

The coma induction medication must not be administered rectally.

The availability of suppositories is heavily dependent on the patient's ability to keep the suppository in. Suppositories can have a laxative effect and there is also the risk that the active ingredient will only be released slowly. Furthermore, the lethal dose of barbiturates cannot be contained in a single suppository, so multiple suppositories are required. Furthermore, the patient's body temperature can drop, preventing the suppositories from melting.

When administering the medication in one go, the absorption rate is unpredictable and the large dose of medication causes extreme irritation, making it likely that the patient will not be able to keep in the suppository. Repeated administration has the psychological disadvantage of having to administer suppositories to an already comatose patient.

Due to the position the patient is required to adopt and maintain in order to administer it, an enema is not ethically acceptable.

INTRAMUSCULAR AND SUBCUTANEOUS ADMINISTRATION

Intramuscular and subcutaneous administration are very painful and unreliable methods of administering thiopental. These methods must therefore not be applied.

Intramuscular and subcutaneous administration of neuromuscular blocker must also not be applied.

Oral or rectal administration of neuromuscular blocker are also not suitable methods. Neuro-muscular blockers are ionised molecules and are therefore scarcely absorbed when administered using these methods.

No data is known to exist on the intramuscular or subcutaneous administration of propofol. These methods must therefore not be applied.

Appendix II Medication not to be used

BENZODIAZEPINES

It is extremely difficult to induce an adequate reduction of consciousness via oral administration of a benzodiazepine.

Intravenous administration also offers no guarantees. Cases have been documented in which even a high dose of intravenous benzodiazepines proved insufficient. Benzodiazepines must therefore not be used as a coma induction medication.

Midazolam can be used as a premedication.

OPIOIDS

Terminal patients who have used opioids for a prolonged period are more tolerant of the respiratory depressant effect. Sometimes it is not possible to induce death in these patients using opioids, even if high doses are used. If a patient has not been treated with opioids beforehand, then intravenous administration of a high dose will cause a major depression of the respiratory centre and a period of Cheyne-Stokes respiration, which quickly result in death. In addition, certain opiates such as buprenorphine and pentazocine can have antagonistic effects in addition to agonistic effects. Their use can induce acute abstinence symptoms. The use of opioids is therefore unpredictable.

INSULIN

Parenteral administration of sufficiently high doses of insulin causes a hypoglycaemic coma, resulting in death. The speed at which this occurs depends on the patient's state of health. Whatever happens, death occurs within hours at the earliest and can sometimes take days. The depth of the coma varies and can even reduce over time, in which case it is necessary to administer an extra dose. During a shallow coma, the patient can become restless and suffer from cramp.

POTASSIUM CHLORIDE

Cardiac arrest can be induced by administering a high dose of potassium chloride (KCl). Injection of KCl is very painful. Furthermore, KCl also causes muscle spasms, even if a neuromuscular blocker has been administered.

Appendix III Advice regarding the insertion of an infusion needle

FOR THE INSERTION OF AN INFUSION NEEDLE, YOU REQUIRE:

- an infusion needle of at least 20G (pink) or even 18G (green)
- 10 ml of sodium chloride solution 0.9%
- 2 pieces of gauze (10 x 10 cm)
- a tourniquet
- a tube with a stopcock, and a Luer lock
- transparent dressing material (e.g. Tegaderm®) or dressing tape (e.g. Leukosilk®)

Ensure you have sufficient materials. Always bring extra materials.

INFUSION NEEDLES CAN BE INSERTED INTO A VEIN

- on the forearm
- on the hand
- in the cubital fossa
- near the ankle in the great saphenous vein, which runs along the ventral side of the medial malleolus
- on the foot

TECHNIQUE

- Ensure undisturbed surroundings.
- Take your time.
- Fill the tube with the stopcock on it with sodium chloride solution 0.9% using a 10 ml syringe. Leave the syringe connected to the tube and close the stopcock.
- Place the tourniquet on the forearm or calf and pull it tight, ensuring that the arterial circulation remains intact.
- The effect of the tourniquet is usually improved by letting the arm or leg hang loose.
- Look for a suitable blood vessel. Feeling a blood vessel is more reliable than seeing it.
- Feel whether the blood vessel is resilient, and therefore probably open.
- On the forearm and cubital fossa in particular, the blood vessels are sometimes easier to feel than to see.
- By rubbing or carefully tapping on blood vessels, they usually become easier to see and feel.
- Sometimes the blood vessels in one extremity are much easier to see and feel than in other extremities.
- Tell the patient when and where the venipuncture will be performed.
- Once the needle has been inserted into the vein, blood will be visible in the plastic section.
- The metal section of the needle protrudes slightly out of the plastic section that will ultimately remain in the blood vessel. For this reason, make sure that the needle is inserted 5-10 mm into the blood vessel.

- Then, pull the metal section of the needle out slightly and push the whole infusion needle further into the blood vessel.
- If this runs smoothly and the patient doesn't feel much pain, then the needle has probably been inserted correctly.
- Take off the tourniquet and lay the arm or leg in a horizontal position.
- Place a piece of gauze under the section of the infusion needle that is sticking out of the arm.
- Pull the metal section out whilst simultaneously using your other hand to fix the needle in place using the wings and to close the vein proximally from the needle. This prevents the infusion needle from being pulled out or blood leaking out of the needle.
- If you are not entirely sure whether the needle has been inserted correctly, then leave the tourniquet in place. Place a piece of gauze under the protruding section of the infusion needle and pull the metal section out in the manner described above. If the needle is correctly placed, then blood will run out of the infusion needle and leak onto the gauze. You can then remove the tourniquet.
- Connect the tube with the Luer lock on it to the infusion needle.
- Use the transparent dressing material to fix the needle in place such that the site of insertion remains visible. Fix the tube in place with the dressing material as well, in a location near the needle.
- Flush the needle. Subsequently, close the stopcock, remove the syringe and place the cap on the stopcock.
- Place the tube in a loop on the extremity, place a piece of gauze under the stopcock and fix everything in place.
- The same measures apply when inserting an infusion needle into the foot or ankle.

ADVICE IF IT IS DIFFICULT TO FIND A BLOOD VESSEL.

- Keep calm, as it is nearly always possible to insert an infusion needle.
- Take your time. Many of these patients have a poor filling capacity and it takes some time before the blood vessels become apparent. This can take up to several minutes.
- If applying a tourniquet, rubbing or tapping does not result in a vein being found, then leave the tourniquet in place and let the extremity hang.
- Wait patiently, rubbing the extremity a little or carefully tapping it.
- If this does not work, then look for alternative parts of the body, such as the other arm or the ankles or feet.
- If this is also unsuccessful, then you can often induce vasodilation by warming up the extremity.
- You can do this by wrapping a warm, moist towel around the extremity or by putting it in a bucket of warm water.
- Vasodilation can also be achieved using nitro spray or a nitro plaster.
- **Patience** is the most important tool for achieving the desired result.
- If the above measures are unsuccessful, request the assistance of a fellow GP, a nurse (e.g. a home-care medical action team), the ambulance service, a member of a palliative team or an anaesthesiologist.

Appendix IV Advice regarding determination of the level of consciousness

The following is a description of the various levels of consciousness up to and including lack of consciousness.

A patient is said to be in a medically induced coma if the patient satisfies all of the characteristics described in the section 'Medically induced coma'. A neuromuscular blocker can only be administered once the patient is in a medically induced coma.

CONSCIOUS

- Responds to verbal stimuli.
- Is breathing (spontaneously or after being ordered to do so)
- Has protective reflexes.

SEDATED

- Diminished/no response to verbal stimuli.
- Is breathing.
- Responds to pain stimuli.
- Has protective reflexes.

DEEP SEDATION

- No response to verbal stimuli.
- Diminished/no breathing.
- Little to no response to pain stimuli.
- Diminished/no protective reflexes.

MEDICALLY INDUCED COMA

- No response to verbal stimuli.
- Serious depression of circulation, evidenced by a slow and weak pulse.
- Serious depression of ventilation, evidenced by slow, shallow breathing.
- No protective reflexes, such as the eyelash reflex.

Appendix V Dosage table for of euthanatic agents, local anaesthetics, anti-emetics and premedication

Generic	Trade name	Dose	Contents of pack*	Notes
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PREMEDICATION (INTRAVENOUS)

Midazolam HCl	Dormicum® and generic	2,5 mg (0,5 ml)	1 ampoule 5 mg (5mg/ml, 1 ml)	5 mg = 1 ml
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LOCAL ANAESTHETIC (INTRAVENOUS)

Lidocaine HCl		20 mg (2 ml)	1 ampoule 100 mg (10mg/ml, 10 ml)	10 mg = 1 ml
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COMA INDUCTION MEDICATION (INTRAVENOUS)

Thiopental sodium	Thiopental	2000 mg	4 vials 500 mg	Dissolve the vial of dry medication in water for injections
Propofol **	Propofol-Lipuro emulsion® Propofol Fresen MCT/LCT emulsion®	1000 mg (50 ml)	1 vial 1000 mg (20mg/ml, 50 ml)	1000 mg = 50 ml

NEUROMUSCULAR BLOCKER (INTRAVENOUS)

Rocuronium bromide	Esmeron® and generic	150 mg (15 ml)	3 vials 50 mg (10mg/ml, 5ml)	50 mg = 5 ml
Atracurium besylate	Tracrium® and generic	100 mg (10 ml)	2 ampoules 50mg (10mg/ml, 5ml)	50 mg = 5 ml
Cisatracurium besylate	Nimbex®	30 mg (15 ml)	3 ampoules 10 mg (2mg/ml, 5ml)	10 mg = 5 ml

Generic	Trade name	Dose	Contents of pack*	Notes
ANTI-EMETICS				
Metoclopramide (rectal)	Primperan®	20 mg		Administer at intervals of 12 hours, 6 hours and 1 hour before the procedure
Metoclopramide HCl (oral)	Primperan® and generic	10 mg		Administer at intervals of 12 hours, 6 hours and 1 hour before the procedure

BARBITURATE (ORAL)

Pentobarbital sodium - raw material		15 g	100 g	
Secobarbital sodium - raw material		15 g	100 g	

For the most up-to-date information, see the websites of the KNMG and KNMP.

All data is correct as of 1 aug 2012.

- * The contents of a single pack are displayed. For the neuromuscular blockers and premedication, other pack sizes are available.
- ** Always use the emulsion form with medium-chain triglycerides. These are less painful to inject than the propofol, which contains no medium-chain triglycerides.

Appendix VI Preparation procedure for mixtura nontherapeutica

Instead of pentobarbital sodium, secobarbital sodium can be used.

MIXTURA NONTHERAPEUTICA PENTOBARBITAL (150MG/ML)

Formula - see also the 'Comments' section

pentobarbital sodium	15	g
alcohol 96% V/V	16.2	g (20 ml)
purified water	15	g
propylene glycol	10.4	g (10 ml)
saccharin sodium	250	mg
syrup simplex	65	g
star anise oil	1	drop
	121.85	g (100 ml)

Preparation - See LNA procedure 'Solution for oral use', preparation (Fo6-4) and the 'Comments' section.

- Mix the purified water, propylene glycol and the alcohol.
- Dissolve the pentobarbital sodium in this mixture whilst stirring.
- Dissolve the saccharin sodium in this mixture.
- Mix with the sugar syrup and the star anise oil.

Packaging

Bottle that protects the contents from the effects of light.

Storage

Unopened bottle:

- patient's bottle: 1 month: store under 25°C, but not in the refrigerator or freezer.

Labelling

Shelf life and storage temperature of an unopened bottle.

Comments

Pentobarbitone sodium dissolves effectively in water, although the large quantity can mean it takes some time to do so. The eventual solution has a pH of between 10.0 and 10.5. Under the influence of CO₂ in the air, the pH level can gradually reduce, which can result in crystallisation of free pentobarbital. This has been shown to be preventable by adding propylene glycol and alcohol in the stated quantities. These additives also work as preservatives.

Pentobarbital sodium is described in the literature as a substance with a bitter taste. Its concentration in this preparation results in a taste that is not only bitter, but also somewhat soapy due to the high pH level. As a result, a sweetener has been added to improve the taste as well as star anise oil to mask the alkalinity. However, despite this, the bitter after-taste is very persistent.

Appendix VII Materials: infusion needles and elastomeric pump

INFUSION NEEDLES

ZI number	Name of product	Number	Manufacturer
20G			
14880474	VENFLON IV CANNULA 1.0X32MM PINK PTFE + BYSP 391452 (20G)	50	BECTON-DICKINSON
15434524	B-D NEXIVA IV CLOSED CATHETER SYST+KR 20G 32MM Q-SYTE (383667)	20	BECTON-DICKINSON
18 G			
14880717	VENFLON IV CATHETER IN PTFE 18G 32MM	50	BECTON-DICKINSON
14880725	VENFLON IV CATHETER IN PTFE 18G 45MM	50	BECTON-DICKINSON
15434559	B-D NEXIVA IV CLOSED CATHETER SYST+KR 18G 45MM Q-SYTE	20	BECTON-DICKINSON

ELASTOMERIC PUMP

ZI number	Name of product	Number	Manufacturer
14282224	EASYPUMP ST 100-0.5 200ML/HOUR 100ML	10	BRAUN MEDICAL BV
15156583	INTERMATE SV 200 105 ml	1 ST	BAXTER
14685043	INTERMATE SV 200 105 ml	24 ST	BAXTER

For the most up-to-date information, see the websites of the KNMG and KNMP.

All data is correct as of 1 aug 2012.

Appendix VIII Most important differences with regard to the 2007 edition of the Standards for Euthanasia

1. Propofol added as a coma induction medication

For the intravenous method, propofol is also included as a possible coma induction medication in addition to thiopental. The reason for this is that in recent years, there have regularly been problems regarding the availability of thiopental.

2. No emergency solutions included

Preferably, the same coma induction medication and the same neuromuscular blocker should be used as much as possible. This enables experience to be gained in a more concentrated fashion. Propofol and thiopental are two effective types of medication. As a result, emergency solutions need no longer be included.

3. Amendment to the advice regarding neuromuscular blockers

In mid-2011, pancuronium was withdrawn from the market. Until that time, pancuronium was the most frequently used neuromuscular blocker. Rocuronium is now the medication of choice. Atracurium (100 mg) or cisatracurium (30 mg) are good alternatives. Due to its short duration of effect, we advise against using mivacurium.

4. Prior administration of lidocaine 1% for thiopental and propofol

Due to the pain associated with both coma induction medications, 2ml of lidocaine (1%) will be injected intravenously beforehand.

5. Solvent for thiopental

Water for injections is the only stated solvent for ampoules of thiopental.

6. Elastomeric pump

For the intravenous administration of thiopental an elastomeric pump is an alternative. Examples are Easypump® and Intermate®. For order, the pharmacist can find the ZI-numbers in appendix VII.

7. Oral method

The dose of pentobarbital or secobarbital has been increased from 9 grams to 15 grams. In Switzerland, experience shows that for doses of 15 grams, 98% of the patients die within 30 minutes (unpublished data). For doses of 9 grams, 70% die within 30 minutes and 87% within 60 minutes (unpublished data).

Due to the large quantity, 15 grams of pentobarbital or secobarbital cannot easily be mixed into a pot of yoghurt. For this reason, it is advised that pentobarbital or secobarbital powder is no longer mixed with yoghurt.

8. Intravenous premedication method

For the intravenous method, premedication with lorazepam has been removed. Experience tells that GPs have little to no experience with lorazepam. In addition, lorazepam is difficult to obtain and often forms precipitation. This means that only IV midazolam is included as a premedication.

9. Medically induced coma

When determining whether or not the patient's consciousness has been sufficiently reduced, the term 'medically induced coma' is used. These guidelines include a framework with which the patient's level of consciousness can be determined. See Appendix IV.

10. Advice regarding the insertion of an infusion needle

It is not always easy to insert an infusion needle. The guidelines include advice on inserting an infusion needle. See Appendix III.

11. Infusion needles

A number of infusion needles have been assigned ZI numbers to enable pharmacists to place orders. See Appendix VII.

12. Doctor's and pharmacist's questionnaires

A number of adjustments have been made and the questionnaires have been geared more closely toward professional practice.

Appendix IX Criteria of due care for pharmacists

DECISION REGARDING PROVISION

The decision to provide of euthanatic agents can only be taken following timely consultation between the doctor(s) and the pharmacist concerned. Preferably, this will take at least the necessary time period agreed by the doctor and pharmacist.

Pharmacists have the right to refuse to provide of euthanatic agents for reasons of their own. In such cases, the pharmacist must discuss this with the doctor. Upon request, the doctor must sufficiently inform the pharmacist of background information relevant to the pharmacist. This can be done verbally¹.

The pharmacist will check that the medication, the dosage and the route of administration are suitable for the patient in question. The pharmacist can consult a colleague about the pharmaceutical aspects without violating doctor-patient confidentiality.

Hospital pharmacists must also comply with the rules and regulations applicable at his/her institution. If a pharmacist refuses any form of cooperation with euthanasia for reasons of principle, then the pharmacist must inform the doctors in his/her catchment area of this fact in advance.

REQUEST FOR PROVISION OF EUTHANATIC AGENTS

Requests for the provision of euthanatic agents must be made in writing. The request must be clear and compliant with the requirements that also apply to medications governed by the Opium Act (Opiumwet).

The filing and storage of such request must be conducted by the pharmacist as if it were a medication covered by the Opium Act. A period of 15 years is advised for the storage of requests for of euthanatic agents, the same retention period as for medical records. The preparation protocols will be stored together with the request.

PREPARATION

If the syringes are prepared by the pharmacist, then he/she will record the name of the patient and the dosage of medication on each syringe. To prevent mistakes, the syringes or other administration materials will be numbered in the correct order of administration.

PROVISION

The pharmacist will give verbal instructions regarding the practical and technical conduct of euthanasia. If necessary, a manual for the administration of euthanatic agents can be provided together with the agents.

The of euthanatic agents must be provided directly from the pharmacist to the doctor. When doing so, the pharmacist will give instructions regarding storage of the agents.

The pharmacist and the doctor will agree that once the procedure has been conducted, any unused medication, materials and remnants will be handed over to the pharmacist and they will fill in the evaluation form together.

¹ For example, the pharmacist can ask whether another independent doctor has been consulted.

Appendix X Composition of expert group

Dr. P.V. Admiraal, *anaesthesiologist (retired)*, chair, Rijswijk

Drs. R.S. van Coevorden, *GP, SCEN doctor*, Amsterdam

Drs. A. van Dijk, *hospital pharmacist*, Sint Antonius Hospital, Nieuwegein

Dr. J.J. Ennema, *intensive care anaesthesiologist, SCEN doctor*, Isala Clinics, Zwolle

Drs. I.E.J. Geerligs, *hospital pharmacist*, AMC, Amsterdam

Drs. W.G.H. van der Geest, *pharmacist*, Groesbeek Pharmacy, Groesbeek

Drs. W.P. Göttgens, *pharmacist*, Blanckenburgh Pharmacy, Beuningen

Drs. E.G.H. Kenter, *GP, SCEN doctor*, Aerdenhout

Drs. J.M.M. Verwiël, *internist-intensivist, SCEN doctor*, St Radboud UMC, Nijmegen

Composition and final editing

Drs. A. Horikx, *pharmacist*, KNMP Drug Information Centre, The Hague

Drs. R.H.J.M. Sanders, *SCEN district coordinator*, KNMG, Utrecht.

Appendix XI Participants in the invitational conference

Regional Euthanasia Review Committees (RTE):

Drs. J.A. Schulkens-van der Pol
Drs. W.G.P. Mulder
Mr. W.J.C. Swildens
Mr. B.E. Liauw

The Royal Dutch Society for the Advancement of Pharmacy (KNMP):

Drs. P. Lebbink

The Dutch College of General Practitioners (NHG):

Dr. P. Janssen

Netherlands Association of Internal Medicine (NIV):

Dr. J.E. Portielje

Netherlands Society of Anaesthesiologists (NVA):

Dr. M.F.M. Wagemans

Netherlands Intensive Care Association (NVIC):

Drs. J.M.M. Verwiel

Right to Die-NL (NVVE):

Dr. P.M. de Jong

Dutch Hospital Pharmacists' Association (NVZA):

Drs. A. van Dijk

The Dutch Association of Elderly Care Physicians and Social Geriatricians (Verenso):

Drs. A.A. Weinberg

Appendix XII Literature consulted

- Horikx A, Admiraal P.V., Toepassingen van euthanatica; ervaringen van artsen bij 227 patiënten (*Utilization of euthanatic agents; experience of physicians with 227 patients, 1998-2000.*), 1998-2000. Ned Tijdschr Geneeskd (*Netherlands Journal of Medicine*) 2000;144:497-500.
- Lalmohamed A, Horikx A., Ervaringen met euthanatica sinds 2007 (*Experience with euthanasia since 2007. Analysis of problems with execution*). Ned Tijdschr Geneeskd (*Netherlands Journal of Medicine*) 2010;154:A1882.
- Regional Euthanasia Review Committees: Annual Report 2009. The Hague: Koninklijke De Swart, 2010.
- Sprij B., Mag het ietsje minder zijn? Laat dosis thiopental bij euthanasie afhangen van het lichaamsgewicht (*Could it be a little less? Let the dose of thiopental in euthanasia depend on the body weight*) Ned Tijdschr Geneeskd (*Netherlands Journal of Medicine*) 2010;154:A1983.
- Standaard Euthanatica: Toepassing en bereiding (*Standards for Euthanasia Drugs: Application and Preparation*) The Hague: The Royal Dutch Society for the Advancement of Pharmacy (KNMP), 2007.

Appendix XIII Doctor's questionnaire

Doctors are requested to complete and return a questionnaire. This enables the KNMP and KNMG to test the advice provided in the Guidelines for the Practice of Euthanasia and Physician-assisted suicide based on practical experiences, and to adjust them if required. This form can be filled in by the doctor anonymously and with no obligations whatsoever, and can be sent carriage forward to the following address:

KNMP Drug Information Centre
Freepost Number 1774, 2501 VB The Hague

The anonymity means that more detailed information cannot subsequently be requested, so the form must be completed as specifically as possible. For this reason, we kindly request that you give answers to the following questions at the very least:

PATIENT DETAILS

- Gender: Age: Weight:
- Illness and physical condition:
- Medication history: Which medications were used? (name and dosage)
 - opioids (oral – pump – etc.):
 - benzodiazepines:
 - other medications:

PRACTICE OF EUTHANASIA OR PHYSICIAN-ASSISTED SUICIDE

- Which method was used?
 - oral method (pentobarbital/secobarbital drink)
 - thiopental injection via syringe + neuromuscular blocker
 - thiopental via elastomeric pump + neuromuscular blocker
 - thiopental via infusion + neuromuscular blocker
 - propofol injection via syringe + neuromuscular blocker
 - propofol via infusion + neuromuscular blocker
 - another method (please specify):
- What were your reasons for selecting the method used?
- Did you inject lidocaine beforehand, before using the intravenous method? Yes No
- If you used the intravenous method, what neuromuscular blocker did you use and in what dosage?

1PREMEDICATION

- If premedication was used, which medication did you use and in what dosage?
- How long before the euthanasia procedure did you administer the premedication?
- What effect did it have?

COURSE OF EUTHANASIA

- On what date was the euthanasia performed?
- How long after the administration of the coma induction medication did the patient lapse into a **coma**?
- How long after the administration of the coma induction medication did the patient **die**?

If you used the oral method and if it took longer than 2 hours for the patient to die, what action did you take?

- Did you experience problems or complications during the administration of the of euthanatic agents? (For example, vomiting, problems finding a blood vessel etc.) If so, can you give details?
- Did you notice anything out of the ordinary, e.g. strange reactions in the patient? If so, can you give details?

OTHER QUESTIONS

- Where did the euthanasia procedure take place?
 at the patient's home in a hospice or nursing home
 in hospital other (please specify):
- Did you go through the euthanasia protocol together with the pharmacist? Yes No
- Did you need to use the emergency set? Yes No

GENERAL COMMENTS

- Do you have any suggestions on how to improve the euthanasia advice?
- If you have any additional comments, please write them in the space below.

Appendix XIV Pharmacist's questionnaire

Pharmacists are requested to complete and return a questionnaire. This enables the KNMP and KNMG to test the advice provided in the Guidelines for the Practice of Euthanasia and Physician-assisted suicide based on practical experiences, and to examine how the process of requesting for and providing of euthanatic agents is conducted in practice.

This form can be filled in anonymously and with no obligations whatsoever, and can be sent carriage forward to the following address:

KNMP Drug Information Centre
Freepost Number 1774, 2501 VB The Hague

The anonymity means that more detailed information cannot subsequently be requested, so the form must be completed as specifically as possible. For this reason, we kindly request that you give answers to the following questions at the very least:

REQUEST FOR PROVISION OF EUTHANATIC AGENTS

- After the first (not necessarily the definitive) request for provision of the euthanatic agents, how much time elapsed before the euthanasia procedure was conducted?
 more than 1 week less than 1 week, or days hours
- Did you discuss the patient's pharmacotherapeutic treatment with the doctor? Yes No
- How did you receive the request and the prescription?
 provided by the doctor in person, on paper or by phone
 via e-mail/fax
 other (please specify):
- Did you ask the doctor whether he/she had consulted a 2nd doctor? Yes No
- Did the prescription comply with the requirements for requesting a medication governed by the Opium Act (Opiumwet)? Yes No

PREPARATION

- Did the preparation take place in your pharmacy?
 Yes
 No, the of euthanatic agents were supplied by another pharmacy.
 No, the doctor prepared the syringes or other administration materials him/herself.

- Were your pharmacy assistants involved?
 - Yes, this matter was discussed with the assistants, but they were not involved in the preparation or provision of the of euthanatic agents . This was done by the pharmacist(s).
 - Yes, this matter was discussed with the assistants and they were also involved in all/ part of the preparation of the euthanasia prescription.
 - No, the assistants were not involved. The of euthanatic agents were prepared and provided by the pharmacist(s).
- Did you consult a fellow pharmacist about this euthanasia request?
 - No Yes, I consulted them about:

PROVISION

- Did you give the of euthanatic agents to the doctor in person?
 - Yes No, I gave them to:
- Which medications and for which methods have you delivered (other than for an emergency set)?
 - oral method (pentobarbital/secobarbital drink)
 - thiopental injection via syringe + neuromuscular blocker
 - thiopental via elastomeric pump + neuromuscular blocker
 - thiopental via infusion + neuromuscular blocker
 - propofol, injection via syringe + neuromuscular blocker
 - propofol via infusion + neuromuscular blocker
 - another method (please specify):
- If the intravenous method was used, what neuromuscular blocker did you provide and in what dosage?
- Did you provide a syringe of lidocaine? Yes No
- Did you give the doctor instructions regarding the preparation for administration, the application and the storage of the of euthanatic agents? Yes No
- Did you provide the doctor with an emergency set? Yes No
- Did you receive the unused or remaining of euthanatic agents from the doctor?
 - Yes I don't know if any euthanatic agents were left over.
 - No There were no euthanatic agents left over.

GENERAL

- Was there any deviation from the medications recommended by the guidelines?
 No
 Yes (please explain reasons why):

- Did the doctor inform you of how the procedure ran its course? Yes No

- Did the euthanasia take place at the patient's home, in hospital or at a hospice/nursing home?
 at the patient's home in a hospice or nursing home
 in hospital other (please specify):

- On what date was the euthanasia performed?

- Do you have any further comments or suggestions?



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