12th European Postgraduate Course in Neonatal and Pediatric Intensive Care Medicine

March 16 – 18, 2017 University Children's Hospital, Inselspital, Bern, Switzerland Endorsed by ESPNIC – The European Society of Paediatric and Neonatal Intensive Care

1st Bedside Ultrasound Workshop in Pediatric Emergency, Neonatal and Intensive Care Medicine

March 14 – 15, 2017 Hosted by the Children's University Hospital of Philadelphia and the Children's University Hospital of Bern



Accreditation for CME

Final program



EUROPEAN POSTGRADUATE COURSE IN **NEONATAL** AND **PEDIATRIC** INTENSIVE CARE MEDICINE

> Bern, Switzerland March 14th-16th, 2019



SAVE THE DATE

13th European Postgraduate Course in Neonatal and Pediatric Intensive Care Medicine

March 14-16, 2019 in Bern, Switzerland

It is our great pleasure to announce the 13th European Postgraduate Course in Neonatal and Pediatric Intensive Care, which will take place on March 14-16, 2019 in Bern, Switzerland.

As usual, internationally renowned speakers will present hot topics and discuss challenging cases in the clinical fields of emergency and intensive care medicine for neonates and children.

This meeting is the ideal opportunity to expand your knowledge in your specialty and to share experiences with colleagues from all over the world.

Venue: The Course will take place on March 14-16, 2019, at the Auditorium Ettore Rossi, University Children's Hospital, Inselspital, in Bern, Switzerland.

For further information please visit our website <u>www.intensivecarecourse.com</u> or contact us. We are looking forward to hearing from you!

It would be fantastic if you would join us at the next Bernese Postgraduate Course.

Course Chairman Bendicht P. Wagner, MD

UNIVERSITÀTSSPITAL BERN HÓPITAL UNIVERSITAIRE DE BERNE



Scientific Secretariat apib.sekretariat@insel.ch Administrative Secretariat: peter.salchli@bbscongress.ch

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Welcome address

Dear colleagues and friends,

We are honoured to welcome you all to the 12th European Postgraduate Course in Neonatal and Pediatric Intensive Care Medicine

As usual, the Course focuses on the critically ill neonate and child in the emergency room or intensive care unit, and its tremendous challenge of clinical management. A clinical management best described by the words of the American Society of Critical Care «Right Care Right Now».

And again, internationally renowned speakers agreed upon coming to Bern and presenting a whole series of hot topics and discussing challenging cases. We hope you will participate to the discussions and meet with the experts during break and lunch times.

Cocktail will be served to everybody on Thursday and Friday evening; the cocktail will be followed by 2 industry sponsored Symposia. Please do not miss.

We also would like to highlight the Pre-Congress ultrasound workshop. It is the «First Bedside Ultrasound Workshop in Pediatric Emergency, Neonatal and Intensive Care Medicine», and it is hosted by the Children's University Hospital of Philadelphia and the Children's University Hospital of Bern.

Finally, the city of Bern offers its usual multitude of activities, including the «Museumsnacht Bern 17» on Friday March 17th, 18.00 - 02.00 h.

We would like to thank you for your participation in the Course, and please fill out the Evaluation forms before leaving. We look forward to seeing you in 2 years again.

In the name of the Scientific Committee

Ben Wagner

Chairperson



Organization and Accreditation

Scientific Committee:	Bert Hennig, Bern
	Michèle Mérat, Bern
	Thomas Riedel, Chur
	Andreas Schibler, Brisbane
	Luregn Schlapbach, Brisbane
	Ben Wagner, Bern (Chairperson)

Scientific Secretariat:

Danae Baumann **Division of Pediatric Intensive Care** University Children's Hospital Inselspital CH-3010 Bern Phone: +41 31 632 97 39 Fax: +41 31 632 07 84 e-mail: danae.baumann@insel.ch www.intensivecarecourse.com

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Organization and Accreditation

International Accreditation

12th European Postgraduate Course in Neonatal and Pediatric Intensive Care Medicine was granted 15 European CME credits (ECMEC) by the European Accreditation Council for Continuing Medical Education (EACCME).

1st Bedside Ultrasound Workshop in Pediatric Emergency Medicine, Neonatal and Intensive Care Medicine (Bern, Switzerland, March 14-15, 2017) was granted 12 European CME Credits (ECMEC) by the European Accreditation Council for Continuing Medical Education (EACCME).

National Accreditation

The Course (March 16-18, 2017) is accredited by the following national societies: Swiss Society of Paediatrics (SGP/SSP): 18 Credits Swiss Society for Intensive Care Medicine (SGI/SSI): 15 Credits Swiss Society for Emergency and Rescue Medicine (SGNOR/SSMUS): 9 Credits Swiss Society for Neonatology (SGN/SSN): 18 Credits

The Workshop (March 14–15, 2017) is accredited by the following national society: Swiss Society of Ultrasound Medicine (SGUM/SSUM): accreditation pending



Faculty

Course Faculty:

-	
Arnold John	Professor, Boston Children's Hospital, Boston, USA
Azarow Kenneth S.	Professor, Doernbecher Children's Hospital, Portland, USA
Conlon Thomas W.	Professor, Children's Hospital of Philadelphia, Philadelphia, USA
Guerguerian Anne-Marie	Professor, The Hospital for Sick Children, Toronto, CAN
Hayoz Josef	PhD, SenTec AG, Therwil, CH
Laussen Peter	Professor, The Hospital for Sick Children, Toronto, CAN
Lemmers Petra	Professor, University Medical Center Utrecht, Utrecht, NL
Lemson Joris	MD PhD, Radboud University Nijmegen Medical Center, Nijmegen, NL
Mérat Michèle	MD, Bern University Hospital, Bern, CH
Nadkarni Vinay M.	Professor, Children's Hospital of Philadelphia, Philadelphia, USA
Riedel Thomas	Privatdozent, Kantonsspital Graubünden, Chur, CH
Roehr Charles Christoph	Professor, University of Oxford, School of Medicine, Oxford, UK



Faculty

Schibler Andreas	Professor, Lady Cilento Children's Hospital and the University of Queensland, Brisbane, AUS
Schlapbach Luregn J.	Professor, Lady Cilento Children's Hospital and the University of Queensland, Brisbane, AUS
Shekerdemian Lara S.	Professor, Texas Children's Hospital, Houston, USA
Spinella Philip C.	Professor, St. Louis Children's Hospital, St. Louis, USA
Tobias Joseph D.	Professor, Nationwide Children's Hospital, Columbus, USA
Traube Chani	Professor, Weill Cornell Medical College, New York, USA
van Kaam Anton	Professor, Emma Children's Hospital, Amsterdam, NL
Wagner Bendicht P.	Privatdozent, Bern University Hospital, Bern, CH
Wheeler Derek S.	Professor, Cincinnati Children's Hospital Medical Center, Cincinnati, USA
Z'Graggen Werner	Professor, Bern University Hospital, Bern, CH



Faculty

Workshop Faculty:	
Berger Markus R.	MD, Bern University Hospital, Bern, CH
Conlon Thomas W.	Professor, Children's Hospital of Philadelphia, Philadelphia, USA
Fraga Maria V.	Professor, Children's Hospital of Philadelphia, Philadelphia, USA
Hennig Bert	MD, Bern University Hospital, Bern, CH
Nishisaki Akira	MD, Children's Hospital of Philadelphia, Philadelphia, USA
Pallivathukal Sabine	MD, Bern University Hospital, Bern, CH
Pavlovic Mladen	MD, Bern University Hospital, Bern, CH
Sanchez-de-Toledo Joan	Professor, Sant Joan de Déu Barcelona Hospital Barcelona, E
Schmidt Steffen	MD, Bern University Hospital, Bern, CH



1st Bedside Ultrasound Workshop in Pediatric Emergency, Neonatal and Intensive Care Medicine University Children's Hospital Bern; Tuesday – Wednesday March 14 – 15, 2017

Scientific program, March 16, 2017

08:30	Welcome Ben Wagner
08:35	Opening lecture Quality and safety: are we using the right metrics? <i>Derek Wheeler</i>
09:05 – 11:45	Session I – Sedation Analgesia Chair: John Arnold
09:05	Update on sedation and analgesia in the critically ill neonate and child Joseph Tobias
09:35	Pediatric delirium: definition, prevention and treatment Chani Traube
10:05	Procedural sedation for the ICU physician – an update Joseph Tobias
10:30 – 11:00	Coffee break
11:00	Case presentation: sedation analgesia in PICU NICU Chani Traube
11:25	Case presentation: sedation analgesia in PICU NICU Joseph Tobias



Scientific program, March 16, 2017

11:45 – 15:30	Session II – Shock Chair: Luregn Schlapbach
11:45	Hemodynamic monitoring: from cardiovascular physiology to applied intensive care Joris Lemson
12:15	Role of bedside cardiovascular ultrasound in neonatal and pediatric shock <i>Thomas Conlon</i>
12:30 – 14:00	Lunch break
14:00	Monitoring and treating the microcirculation Joris Lemson
14:15	Update on surviving sepsis campaign <i>Luregn Schlapbach</i>
14:30	Fluid resuscitation in shock: is the concept of SODS phases clinically useful? <i>Joris Lemson</i>
14:45	Case presentation: septic shock – do I follow the guidelines? Luregn Schlapbach
15:05	Case presentation: septic shock – do I follow the guidelines? Joris Lemson



Scientific program, March 16, 2017

15:30 – 18:20	Session III – Heart Disease Chair: Peter Laussen
15:30	Postnatal management of the decompensating neonate with CHD <i>Peter Laussen</i>
16:00	Cardiopulmonary interaction: how do I improve the circulation with/on the ventilator Lara Shekerdemian
16:15 – 16:45	Coffee break
16:45	Chronic and acute decompensated heart failure in the infant Lara Shekerdemian
17:15	ECLS in congenital heart disease Peter Laussen
17:40	Case presentation: do I follow the PCICS pharmacotherapy consensus statement? Lara Shekerdemian
18:00	Case presentation: do I follow the PCICS pharmacotherapy consensus statement? Peter Laussen
18:20	Cocktail
19:00 – 20:00	Industry-sponsored Symposium 1 – Details see page 21
20:00	End of day one

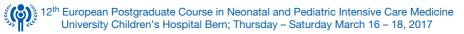
Scientific program, March 17, 2017

08:00 – 10:00	Session IV – Mechanical Lung Support Chair: Anton van Kaam
08:00	Strategies, modes and targets of mechanical ventilation in the premature <i>Anton van Kaam</i>
08:30	Lung recruitment without lung injury: moving beyond stress and strain John Arnold
09:00	The changing landscape of NIV and high flow in ICU Andreas Schibler
09:20	HFOV in pediatric patients – where are we? John Arnold
09:40	Neonatal RDS: update on surfactant use Anton van Kaam
10:00 – 10:30	Coffee break
10:30 – 12:00	Session IV – Mechanical Lung Support Chair: Andreas Schibler
10:30	Spontaneous breathing on a ventilator: a double edges sword? Andreas Schibler
10:45	Current and future status of ECLS for respiratory failure Anne-Marie Guerguerian



Scientific program, March 17, 2017

11:05	Case presentation: do I follow the neonatal RDS guidelines 2016? Anton van Kaam
11:35	Case presentation: do I follow the PARDS guidelines? John Arnold
12:00 – 13:30	Lunch break
13:30 – 14:15	Session V – Quality Improvement Chair: Derek Wheeler
13:30	Process of care, ICU structures and workforces Derek Wheeler
13:45	Quality improvement on health care related infections Luregn Schlapbach
14:15 – 16:45	Session VI – Trauma and Beeding Chair: Phil Spinella
14:15	Medical management of the severely bleeding child Phil Spinella
14:45	Interventions in severely injured children – «primum non nocere» Kenneth Azarow
15:15	Clinical impact of blood product optimization Phil Spinella



Scientific program, March 17, 2017

15:30 – 16:00	Coffe break
16:00	Case presentation: early interventions in the severely injured child Kenneth Azarow
16:25	Case presentation: hemostatic resuscitation in the severely injured child <i>Phil Spinella</i>
16:45 – 17:00	Miscellaneous Chair: Derek Wheeler
16:45	(Muscle) weakness in ICU Werner Z'Graggen
17:15	Situation awareness: predicting and preventing patient deterioration Derek Wheeler
17:30	Cocktail
18:10 – 19:10	Industry-sponsored Symposium 2 – Details see page 21
19:10	End of day two



Scientific program, March 18, 2017

08:00 – 10:00	Session VII – Brain and CPR Chair: Vinay Nadkarni
08:00	What to do in the first critical hour of a neurological emergency? Anne-Marie Guerguerian
08:30	Brain-oriented hemodynamic management in the critically ill newborn Petra Lemmers
09:00	High quality postresuscitation management: the pediatric patient <i>Vinay Nadkarni</i>
09:30	Neonatal aspects in postresuscitation management and prognostication Petra Lemmers
09:45	CPR in special circumstances: hyperkalemia, hypothermia, intoxication <i>Vinay Nadkarni</i>
10:00 - 10:30	Coffee break
10:30 - 12:00	Session VII – Brain and CPR Chair: Peter Laussen
10:30	CPR in acquired and congenital heart disease <i>Peter Laussen</i>
10:50	ECPR: utilization, management and outcomes Vinay Nadkarni

Scientific program, March 18, 2017

11:10	Case presentation: do I follow the ILCOR guidelines? Petra Lemmers
11:30	Case presentation: do I follow the ILCOR guidelines? Vinay Nadkarni
12:00	Final lecture Chair: Ben Wagner
12:00	Pedatric donation after circulatory determination of death Anne-Marie Guerguerian
12:30	End of the Course – Closing remarks



Workshop, March 14–15, 2017

Workshop Directors

Thomas Conlon, Philadelphia, USA Bert Hennig, Bern, Switzerland

Workshop Overview and Objectives

Bedside ultrasound is an emerging technology in pediatric acute care settings. Learn how to acquire and interpret bedside ultrasound images in procedural and non-procedural applications. Lectures provided by international multi-discipline pediatric specialists will describe bedside ultrasound techniques and highlight relevant literature supporting applications in practice. Hands-on stations will allow learners the opportunity to practice skills to implement at the bedside in the care of critically ill neonates and children.

Workshop Program

Tuesday, March 14, 2017, 07:30 - 17:15

- 07:30 Registration
- 08:00 Introduction and Pre-Test (Thomas Conlon / Bert Hennig)
- 08:30 Physics and Knobology (Thomas Conlon)
- 09:00 Vascular Access (Joan Sanchez-de-Toledo)
- 09:30 Break
- 09:45 Hands-On (Knobology, Vascular access) (all Workshop Leaders)
- 11:00 The Abdominal Exam (Akira Nishisaki)
- 11:30 Lunch & Case Review (Maria Fraga / Thomas Conlon)
- 12:45 Hands-On (Abdomen, Subcostal View) (all Workshop Leaders)
- 13:45 The Cardiac Exam (Maria Fraga)
- 14:30 Left and Right Ventricular Assessment (Joan Sanchez-de-Toledo)
- 15:15 Break
- 15:30 Hands-On (Parasternal Views, Apical Views) (all Workshop Leaders)
- 17:15 Close

Workshop Program

Wednesday, March 15, 2017, 08:00 - 17:30

- 08:00 Review (Thomas Conlon / Bert Hennig)
- 08:45 The Thoracic Exam (Akira Nishisaki)
- 08:45 Volume Assessment (Thomas Conlon)
- 09:15 States of Shock (Thomas Conlon)
- 10:00 Break





1st Bedside Ultrasound Workshop in Pediatric Emergency, Neonatal and Intensive Care Medicine University Children's Hospital Bern; Tuesday – Wednesday March 14 – 15, 2017

Workshop, March 14–15, 2017

10:15	Hands-On (Shock Assessment, Volume Assessment, Thoracic)
	(all Workshop Leaders)
12:15	Lunch & Case Review: Neonatal / Cardiac (Maria Fraga / Thomas Conlon)
13:15	Neonatal Head Ultrasound (Maria Fraga)
13:45	Break
14:00	Hands-On Evaluation (Lung/Abdomen, Cardiac, Vascular Access/
	Expert) (all Workshop Leaders)
16:00	Bedside Ultrasound Education, Program Implementation and Moving
	Forward (Akira Nishisaki)
16:30	Panel Discussion (all Workshop Leaders)
17:00	Concluding Remarks, Evaluation (Thomas Conlon, Bert Hennig)

17:30 Close

Workshopleaders

Markus Berger	Neonatology, Inselspital, Bern University Hospital, Switzerland
Thomas Conlon	Critical Care Medicine, Children's Hospital of Philadelphia, USA
Maria Fraga	Neonatology, Children's Hospital of Philadelphia, USA
Bert Hennig	Pediatric Cardiac Intensive Care, Inselspital, Bern University Hospital, Switzerland
Akira Nishisaki	Critical Care Medicine, Children's Hospital of Philadelphia, USA
Sabine Pallivathukal	Pediatric Cardiology, Inselspital, Bern University Hospital, Switzerland
Mladen Pavlovic	Pediatric Cardiology, Inselspital, Bern University Hospital, Switzerland
Joan Sanchez-de-Toledo	Pediatric Cardiac Intensive Care, Barcelona Children's Hospital, Barcelona, Spain
Steffen Schmidt	Pediatric Emergency, Inselspital, Bern University Hospital, Switzerland

1st Bedside Ultrasound Workshop in Pediatric Emergency, Neonatal and Intensive Care Medicine University Children's Hospital Bern; Tuesday – Wednesday March 14 – 15, 2017

General Information

Venue	Bern/Switzerlan Bus n° 11 (direc	re Rossi, Inselspital (Kinderklinik), d. tion «Holligen») from main rail- nselspital, bus stop «Inselspital».
Official language	English, no simu	Iltaneous translation
Beginning and end of the Workshop		14, 2017, 07:30 h Irch 15, 2017, 18:00 h
Beginning and end of the Course		h 16, 2017, 08:30 h n 18, 2017, 12:40 h
Administrative Secretariat before and after the Course	Phone: +41 31 3	se 83, CH-3013 Bern 331 82 75, Fax: +41 31 332 98 79 chli@bbscongress.ch,
Secretariat during the Course		erklinik), CH-3010 Bern
Registration	Please see www	v.intensivecarecourse.com
egistration Desk – pening hoursEach registered participant will receive personal documentation at the regist located in the Foyer Ettore Rossi, Ch Hospital, Inselspital.		ientation at the registration desk, over Ettore Rossi, Children's
	Tuesday	March 14, 2017 07:30 – 08:00 h (Workshop only)
	Wednesday Thursday Friday Saturday	March 15, 2017 17:00 – 18:00 h March 16, 2017 07:30 – 19:00 h March 17, 2017 07:30 – 18:00 h March 18, 2017 07:30 – 12:30 h

General Information

Registration fees (prices in Swiss Francs CHF)	ESPNIC members: 450 CHF (until Dec. 15, 2016), 550 CHF (from Dec. 16, 2016)
	Non members: 550 CHF (until Dec. 15, 2016), 650 CHF (from Dec. 16, 2016)
	The registration fee includes lunches (March 16 & 17), coffee breaks (March 16–18) and cocktails (March 16 & 17).
Remittance of fees	The fees have to be paid in Swiss Francs – clear- ly stating name of the participant – either by bank transfer to the IBAN account below or by credit card.
	Bank: Credit Suisse, Bern BIC/SWIFT: CRESCHZZ30A IBAN: CH87 0483 5021 1255 4001 0 Account holder: BBS Congress GmbH, CH-3013 Bern
Cancellation	Refund less 25% administrative charge may be applied for in writing until February 1 st , 2017. After this date no refund can be made for cancellations. The participant acknowledges that he/she has no right to lodge dammage claims against the organizers should the holding of the Course be hindered or prevented by unexpected political or economic events or generally by force majeure, or should the non-appearance of speakers or other reasons necessitate program changes. With his/her registration the participant accepts this proviso.

General Information

Accommodation	Rooms can be booked online with Bern Incoming GmbH. Please see www.intensivecarecourse.com
Podcast	The participants will have access to podcasts of the conferences after the course.
Public WiFi	Choose WLAN «Public-INSELGRUPPE». Open browser and you'll be directed to the guest portal. Choose «Free WiFi». Enter your mobile number and accept the terms of use. You'll receive a code by short message. Indicate the code in the browser and click on «Registration abschliessen».
Course website	www.intensivecarecourse.com
Workshop website	www.bedsideultrasoundworkshop.com



Industry-sponsored Symposia

Thursday, March 16, 2017, 19:00 - 20:00

Advances in non-invasive transcutaneous gas monitoring in PICU and NICU

Non-invasive CO₂ monitoring in the PICU and beyond *Joseph Tobias, Columbus*

New technologies in transcutaneous blood gas measurement *Josef Hayoz, SenTec AG*

Sponsor: SenTec AG

Friday, March 17, 2017, 18:10 - 19:10

Nasal High Flow in Neonates and Paediatrics: do I really need to change my practice?

Nasal High Flow, from spontaneous breathing to apnoea in paediatrics *Andreas Schibler, South Brisbane*

Neonatal Nasal High Flow therapy: evidence, rather than «go with the flow» *Charles Roehr, Oxford*

Sponsor: Fisher & Paykel Healthcare SAS

Main Sponsors

Fisher & Paykel Healthcare SAS,

Courtaboeuf, France

Fisher & Paykel entered the respiratory care market in 1971 with the development of a unique respiratory humidifier system for use in critical care. We now offer a broad range of products and systems for use in Respiratory and Acute Care (including Optiflow for both adults and infants) and in the treatment of obstructive sleep apnea (OSA).

PanGas Healthcare,

Dagmersellen, Switzerland

SenTec AG,

Therwil, Switzerland



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ACUTRONIC is a Swiss company developing, manufacturing and distributing high tech ventilation solutions for worldwide Intensive Care Units. We are the leading partner when it comes to the most critical areas of respiratory care: Neonatology, Jet Ventilation and Difficult Airway Management. Our innovations simplify the busy clinical routine for caregivers and increase the safety of patients. ACUTRONIC. Ventilation Beyond Limits.



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Anandic Medical Systems AG, Feuerthalen, Switzerland Anklin AG, Binningen, Switzerland Arcomed AG, Regensdorf, Switzerland Dräger Schweiz AG, Liebefeld, Switzerland

Hamilton Medical AG, Bonaduz, Switzerland

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Royal Philips is a leading health technology company focused on improving people's health and enabling better outcomes across the health continuum from healthy living and prevention, to diagnosis, treatment and home care. Philips leverages advanced technology and deep clinical and consumer insights to deliver integrated solutions. The company is a leader in diagnostic imaging, image-guided therapy, patient monitoring and health informatics, as well as in consumer health and home care.

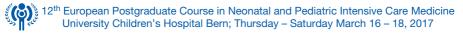
ResMed Schweiz GmbH, Liebefeld, Switzerland

Theramed AG, Adligenswil, Switzerland

Theramed is the competent and innovative solution provider for respiratory care in paediatrics and neonates in Switzerland since 33 years. The Swiss intensive care ventilator bellavista 1000 NEO from imtmedical featuring Tv from 2 ml and HFOT meets the needs of the smallest patients. AquaVENT[®] NEO are the tailored consumable ventilation kits protected by BioCote antimicrobial technology from Armstrong Medical.

Ultrasound Workshop Machine Sponsors

GE Medical Systems (Schweiz) AG, Glattbrugg, Switzerland **Philips AG, Health Systems,** Zürich, Switzerland **Siemens Schweiz AG,** Zürich, Switzerland



12th EUROPEAN POSTGRADUATE COURSE IN NEONATAL AND PEDIATRIC INTENSIVE CARE MEDICINE Bern, Switzerland

Optiflow[™] Junior **Nasal High Flow Symposium**



Nasal High Flow in Neonates and Paediatrics: Do I really need to change my practice?

> Nasal High Flow, from spontaneous breathing to apnoea in paediatrics

A. Schibler (South Brisbane - Australia)

> Neonatal Nasal High Flow therapy: evidence, rather than "go with the flow"

C. Roehr (Oxford - UK)





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Wirkstoff: Distickstoffoxid, Sauerstoff 50% mol/mol. Darreichungsform: Inhalationsgas. Indikationen: Analgesie und Anxiolyse bei Notfalltherapien und in der Geburtshilfe, bei schmerzhaften Eingriffen von kurzer Dauer. Dosierung: Der Fluss des Gasgemisches wird durch die Ventilation der spontanen Atmung des Patienten bestimmt. Anwendung: Die Verabreichung muss durch medizinisch geschulte Personen erfolgen. ENTONOX[®] wird mit Hilfe einer Maske verabreicht, die an die Morphologie des Patienten angepasst ist. Die automatisch kontrollierte Verabreichung ist vorzuziehen. Kontraindikationen: Gesichtstrauma im Bereich der Maske, Pneumothorax, Gasembolie, nach Tauchgängen, in Verbindung mit einer Pneumoenzephalographie, nach einem kardiopulmonalen Bypass, bei Patienten mit Herz-Lungen-Maschine, bei einem ernsten Schädeltrauma, falls in den letzten 2 Monaten eine intraokuläre Gasinjektion verabreicht wurde, bei Anzeichen eines Darmverschlusses, Herzversagen oder ernste Funktionsstörungen des Herzens, erhöhten Schädelinnendruck, verringertes Bewusstsein und/oder verringerte Fähigkeit zur Mitarbeit. Unerwünschte Wirkungen: Schwindelgefühl, Benommenheit, Übelkeit und Erbrechen, zu starke Sedierung, sensorische Wahrnehmungsänderungen. Bei längerer oder wiederholter Verabreichung von ENTONOX[®] wurden neurologische Störungen wie Rückenmarks- oder Polyneuropathie sowie mealoblastische Anämie mit Leukopenie berichtet. Bei Anzeichen eines Mangels an Vitamin B12 sind Ersatz- oder Substitutionstherapien zu erwägen. Interaktionen: Möglichkeit von additiven Wirkungen zusammen mit anderen Arzneimitteln. Sonstige Wechselwrkungen: Anwendung von Distickstoffoxid führt zur Inaktivierung des Vitamins B12, was den Folatstoffwechsel beeinträchtigt. Längere Verabreichung beeinträchtigt die DNA-Synthese. Diese Störungen können zu megaloblastischen Veränderungen des Knochenmarks und möglicherweise zu Myeloneuropathie und subakuter kombinierter Degeneration des Rückenmarks führen. ENTONOX[®] darf als nur zeitlich begrenzt verabreicht werden. A

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