

Sym

SYMPOSIA



ROYAL COLLEGE
of PHYSICIANS
of EDINBURGH

European Delirium Association and Royal College of Physicians of Edinburgh Joint Conference on Delirium

Programme & Delegate Information



In association with:



 rcpe.ac.uk

 @RCPEdin

 /RCPEdin

Thursday 5 & Friday 6 September 2019

 #EDArcpe19

(insert Philips A4 advert)

Information for delegates

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Welcome

On behalf of the European Delirium Association and the Royal College of Physicians of Edinburgh, we are delighted to welcome you to this historic setting for the European Delirium Association/Royal College of Physicians of Edinburgh Joint Conference on Delirium.

This is the fourteenth annual meeting of the European Delirium Association. We have aimed to produce a programme that covers the best of clinical practice and research in the field, and in particular to give every delegate good ideas for ongoing development of the field.

Over the centuries, Edinburgh has been at the forefront of medical education, innovations and developments, and it is a particular pleasure to welcome the world leaders on delirium to this meeting which will focus on current and future advancements in delirium research and clinical practice.

While you are here, we hope that you will find the time to experience some of the unique heritage collection we have at the College, which was established in 1681, and to explore our beautiful city.

Dr Conor Maguire, Director of Education, Royal College of Physicians of Edinburgh

Professor Alasdair MacLulich, Chair of Local Organising Committee, European Delirium Association

Professor Arjen Slooter, President of the European Delirium Association

Members of the organising committee

(Local, European Delirium Association, and Scottish Delirium Association)

Dr Atul Anand

Dr Amanda Barugh

Dr Mark van den Boogard

Dr Claire Copeland

Dr Colm Cunningham

Dr Daniel Davis

Dr Elke Detroyer

Dr Karen Ferguson

Dr Roanna Hall

Ms Maureen Harding

Dr Wolfgang Hasemann

Dr Jouko Laurila

Dr Ajay Macharouthu

Dr Julie Mardon

Ms Sharon Moncrieff

Dr Alessandro Morandi

Professor Birgitta Olofsson

Dr Valerie Page

Professor Emma Reynish

Ms Daisy Sandeman

Dr Susan Shenkin

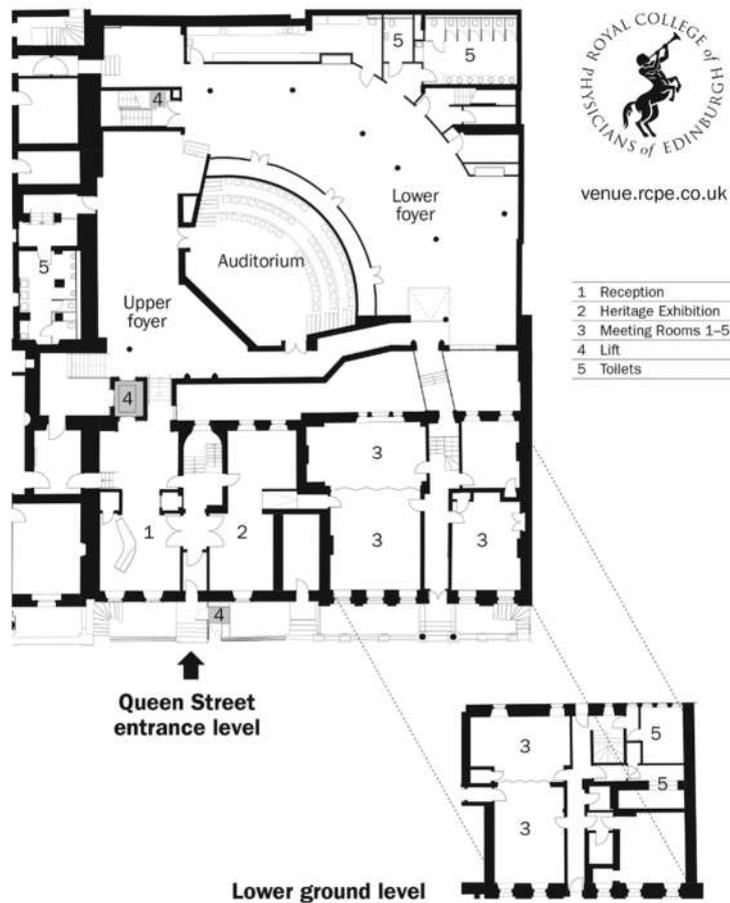
Dr Andrew Teodorczuk

Dr Elizabeth Wilson

Information for delegates

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019



Heritage Exhibition

Please visit our exhibition which is located to the right of the main College reception. Access is also via rooms 1 & 2 during coffee and lunch breaks.



Visit 'Moonstruck' – the College's new exhibition on the history of mental health. The illustrations, books and objects displayed in this exhibition explore how society's understanding and perception of mental health has changed over the last 500 years. Original illustrations of patients at London's infamous Bedlam Asylum will be on display to the public for the first time, along with fascinating illustrations and letters from an artist incarcerated at the Crichton Asylum, Dumfries and artwork by a patient at the Royal Edinburgh Hospital from the 1800s.

Information for delegates

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Abstract Book

An online abstract book is available at <https://events.rcpe.ac.uk/edarcpe-joint-conference-delirium-0>

CPD

The Federation of the Royal Colleges of Physicians of the UK runs a Continuing Professional Development (CPD) Scheme for all post-training physicians. Please note it is your responsibility only to claim credits for the hours you attend.

CPD ID Code: 125693

CPD Credits: 10



Certificates and feedback

The CPD sign-in register is now online and is combined with the symposium feedback form.

- Please note that in order for us to issue CPD attendance certificates we require participants to complete our online feedback survey and you should have received an email containing a link to your individual feedback form. If you have not received this please contact: h.elliott@rcpe.ac.uk
- There is an option to save your feedback as you complete it during the day and finish your responses later. This is done through the '**Finish later**' button which is at the bottom of every page of the survey.
- Please note that the 'Finish later' feature supplies you with an updated individual link which contains your previous answers. These are not accessible to our administration team so please ensure that you store this link as otherwise you will have to begin your survey again.
- The sign-in and feedback form will be open for 14 days after the event, **closing at midnight on Friday, 20 September 2019**. Electronic certificates will be issued after that date. It will not be possible to issue certificates to delegates who do not complete the form by this date as it is your confirmation that you attended – so please make sure you do.

Oral & Poster Presentation Certificates will be emailed to you after the meeting.

Information for delegates

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Exhibitors

This symposium is supported by the following exhibiting companies who have purchased exhibition stand space and made a further contribution towards the running of this event. It should be noted that these companies have played no part in planning the conference and that neither the Royal College of Physicians of Edinburgh or the European Delirium Association endorse any commercial products.

Premium

PHILIPS
VitalMinds

Silver

PROLIRA  **DELTASCAN**

Health professionals and NHS managers are invited to visit the company stands during the breaks.

To facilitate compliance with UK law, and the ABPI Code of Practice, prohibiting companies from promoting prescription-only and certain other medicines to the public, the stands have been set up in clearly defined areas of the conference centre. Members of the public are asked not to approach these areas of the conference centre.

All participants are welcome to visit the general information stands.

Interactive sessions/talks and asking questions

- You can ask questions via the microphones in the auditorium
- You can also submit questions during the talks using Slido - we will be using an interactive software, 'Slido', so that everyone can ask the speakers questions and participate in polls and case discussions.
 - On your mobile, tablet or computer, go to [slido.com](https://www.slido.com).
 - Enter the event code: **#EDArcpe19**. This code will be used throughout the day for all presentations. Please ensure that you select the correct room venue.
 - When delegates send questions to speakers, your device will display the delegate questions.
 - When the speaker asks the audience questions/polls, your device will display the poll and you can vote from your device.
 - After the poll it will switch back to the delegate questions.
 - You can 'like' any delegate questions submitted, questions will rearrange based on how many 'likes' they have, highlighting to the Chair popular questions.

Information for delegates

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Internet Access

Free WIFI is available throughout the RCPE. Please join the network **RCPE-WIFI** and input the password **chiron1681**.

Prayer and Quiet Room

Room 5, No 13 Queen Street has been allocated as the prayer and quiet room. Please ask at the registration desk for directions to this room.

Parent Room

Room 4, No 13 Queen Street has been allocated as the Parent Room. Please ask at the registration desk for directions to this room.

Posters

Posters will be displayed in the Cullen Suite. Please see the table in this delegate pack stating poster board numbers and day of display.

Poster Manning

If you are presenting a poster please refer to the times below when we request that you be available by your poster to discuss your work:

Thursday, 5 September 2019

Lunch break (1240-1330) and afternoon coffee/tea break (1500-1530).

Friday, 6 September 2019

Lunch (1210-1330)

The winner of the poster and oral prizes will be announced in session 8 (Friday 1530).

Scottish Evening – Thursday 5 September 2019

If you have booked a place at the Scottish Evening, your ticket will be attached to your badge. If you have not booked a place and wish to attend, please check availability with Margaret Farquhar at the Conference Registration Desk.

Social media/photography

The College encourages online discussion and the use of social media. You may therefore see participants taking photographs, using mobiles, laptops or tablets for discussion on Twitter. Please feel free to participate – the Twitter hashtag for this event is **#EDArcpe19**

A professional photographer may be in attendance at today's event. Photographs may be used by the College in digital and printed publicity material. If you do not wish to be photographed, please let a member of staff know at the registration desk.

Programme – Thursday

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Day 1 - Thursday 5 September 2019

- 08.00** **Registration** and Coffee *Foyer*
- 09.00** **Welcome** *Auditorium*
Professor Arjen Slooter, President of the EDA, and Professor Alasdair MacLulich, Chair of the Local Organising Committee
- Session 1 - Plenary Session A** *Auditorium*
Chair: Professor Arjen Slooter, Professor of Intensive Care Neuropsychiatry and University Medical Centre, Utrecht, The Netherlands
- 09.10** **Delirium lookalikes you need to know about**
Dr Karin Neufeld, Director of the Inpatient Psychiatry Consultation Service, Johns Hopkins Bayview Medical Center, Baltimore, USA
**serotonin syndrome *malignant hyperthermia *autoimmune encephalitis*
- 09.40** **Challenging cases in delirium: interactive presentations**
- Case 1:** Delirium versus terminal restlessness
Professor Meera Agar, Professor of Palliative Medicine, University of Technology, Sydney, Australia
- Case 2:** A diagnostic challenge
Dr Adam Al-Diwani, Clinical Research Fellow and Registrar in Psychiatry, University of Oxford, England
- Case 3:** Severe, intractable agitation in ICU delirium
Dr Babar Khan, Associate Professor of Medicine, Indiana University School of Medicine, USA
- Case 4:** Delirium superimposed on dementia?
Dr Alessandro Morandi, Consultant in Geriatric Medicine, Department of Rehabilitation, Fondazione Camplani Casa di Cura, Cremona, Italy
- 10.40** **Coffee & Poster Viewing** *Foyer and Room 1 & 2*
- Session 2 - Plenary Session B** *Auditorium*
Chair: Dr Roanna Hall, Consultant in Geriatric Medicine, Royal Infirmary of Edinburgh
- 11.10** **A patient experience**
Ms Alexandra Adams, medical student, Cardiff University, Wales
- A carer experience**
Dr Julie Lustig, Geriatrician, Monash Aging Research Centre, Melbourne, Australia
- 11.40** **KEYNOTE LECTURE:**
A new digital and quality improvement programme to improve delirium care
Dr Emma Vardy, Delirium and Dementia Clinical Lead, Salford, UK
**journey from concept to implementation *developing the digital pathway * system-wide measurement of quality of delirium care*
- 12.30** **Lunch and Poster Viewing** *Foyer and Room 1 & 2*

Programme - Thursday

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Session 3 - Parallel Sessions

Parallel Session A - Invited symposium: State of the science in delirium education

Great Hall

Chair: Dr Wolfgang Hasemann, Clinical Nurse Specialist and Lead of the Dementia Delirium Programme, University Hospital, Basel, Switzerland

13.30 - Introduction

15.00 Dr Wolfgang Hasemann, Clinical Nurse Specialist and Lead of the Dementia Delirium Programme, University Hospital, Basel, Switzerland

Delirium education: where are we now?

Professor Andy Teodorczuk, Associate Professor of Medical Education, Griffith University, Gold Coast & Consultant Psychiatrist, Prince Charles Hospital, Brisbane, Australia

Prequalification: shaping healthcare attitudes early

Dr Claire Copeland, Consultant in Geriatric Medicine, Forth Valley Royal Hospital, Larbert, Scotland

E-learning: is it worth it?

Dr Elke Detroyer, Research Fellow, Academic Centre for Nursing and Midwifery, KU Leuven, Belgium

A realist synthesis of patient and caregiver education in delirium

Dr Emily Gallagher, Registrar in Geriatric Medicine, Auckland, New Zealand

Parallel Session B - Invited symposium: Exploring the features of delirium: what can we learn from other fields

Auditorium

Chair: Dr Thomas Jackson, Clinical Scientist in Geriatric Medicine, University of Birmingham, England

13.30 - Basic science

15.00 Dr Colm Cunningham, Lecturer in Neuroscience, Trinity College Dublin, Ireland

Applying systematic review methodology: identifying research gaps, refining future trials

Dr Esther Oh, Associate Professor, Division of Geriatric Medicine and Gerontology, The Johns Hopkins University School of Medicine, Baltimore, USA

Definition and assessment of inattention: insights from psychological research

Dr Zoe Tiegas, Postdoctoral Research Fellow, University of Edinburgh, Scotland

Delirium and data science - endophenotype identification, classification, prediction, enrichment

Dr Robert Stevens, Associate Professor of Anesthesiology and Critical Care Medicine, Johns Hopkins University, Baltimore, USA

Origins of psychotic features

Dr Edwin van Dellen, Clinical Research Fellow in Psychiatry Utrecht University, The Netherlands

Parallel Session C - oral presentations from submitted abstracts

Chair: Dr Amanda Barugh, Consultant in Stroke Medicine, University of Edinburgh

New Library

13.30 Cognitive trajectories after delirium among frail home-dwelling persons. Results from the CASCADE-study.

Maria Krogseth

Programme - Thursday

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

- 13.40 Delirium is prevalent in older hospital inpatients and associated with adverse outcomes: results of a prospective multi-centre study on World Delirium Awareness Day**
Hannah Moorey
- 13.50 The prevalence and incidence of delirium in inpatients with Parkinson's disease**
Rachael Lawson
- 14.00 A retrospective cohort study of the performances on attention tests in people with cognitive impairment without delirium**
Eleonora Grossi
- 14.10 In older people, delirium is a stronger predictor than frailty status of the need for admission post Emergency Department attendance.**
Ide O'Shaughnessy
- 14.20 The Incidence of Recorded Delirium Episodes Before and After Dementia Diagnosis: Differences Between Dementia With Lewy Bodies and Alzheimer's Disease**
Christoph Mueller
- 14.30 DELIAS Index - the role of a simple prediction index for patients with early onset delirium after acute ischemic stroke**
Katarzyna Kotfis
- 14.40 How could we forget? Implementing a Delirium and Dementia Initiative**
Brianna Walpole
- 14.50 Clinical practice and practice change in the treatment of delirium: an online survey of Australian doctors, nurses and pharmacists**
Annmarie Hosie
- 15.00 Coffee and poster viewing**

*Foyer and
Room 1 & 2*

Session 4 - Workshop Sessions - Workshop Session 1

15.30 - Workshop A: Demonstration of delirium simulation

Great Hall

- 16.00** Dr Julie Mardon, Consultant in Emergency Medicine, Crosshouse Hospital, Kilmarnock, and Head of Simulation, University of Glasgow Medical School
Dr Claire Copeland, Consultant in Geriatric Medicine and Stroke, Forth Valley Royal Hospital, Larbert

Workshop B: Assessment and management of distress in delirium

Auditorium

- Dr Jude Partridge, Consultant Geriatrician, Guy's and St Thomas' NHS Trust, London
Ms Ffion Pritchard, Clinical Nurse Specialist, POPS, Guy's and St Thomas', London

Workshop C: The wicked problem of delirium education: aligning medical education research to practice

*Sir John
Crofton Room*

- Dr Andy Teodorczuk, Associate Professor of Medical Education, Griffith University, Gold Coast and Consultant Psychiatrist, Prince Charles Hospital, Brisbane, Australia
Professor Jan Illing, Professor of Medical Education Research, Newcastle University, England

Workshop D: Qualitative methods and process evaluation in delirium research

New Library

- Dr Susanne Kean, Research Fellow, Edinburgh Critical Care Research Group
Dr Lydia Emerson, Research Fellow, School of Health Sciences, University of London

Programme - Thursday

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

	Workshop E: Music therapy in delirium: update and demonstration Ms Jilly Mathews, Music Therapist, Edinburgh Dr Susan Shenkin, Clinical Senior Lecturer in Geriatric Medicine, University of Edinburgh	<i>Room 1 & 2</i>
Session 4 - Workshop Sessions - Workshop Session 2		
16.10 - 16.40	Workshop F: Demonstration of delirium simulation Dr Julie Mardon, Consultant in Emergency Medicine, Crosshouse Hospital, Kilmarnock, and Head of Simulation, University of Glasgow Medical School Dr Claire Copeland, Consultant in Geriatric Medicine and Stroke, Forth Valley Royal Hospital, Larbert	<i>Sir John Crofton Room</i>
	Workshop G: Assessment and management of distress in delirium Dr Jude Partridge, Consultant Geriatrician, Guy's and St Thomas's NHS Trust, London Ms Ffion Pritchard, Clinical Nurse Specialist, POPS, Guy's and St Thomas', London	<i>Great Hall</i>
	Workshop H: The wicked problem of delirium education: aligning medical education research to practice Dr Andy Teodorczuk, Associate Professor of Medical Education, Griffith University, Gold Coast and Consultant Psychiatrist, Prince Charles Hospital, Brisbane, Australia Professor Jan Illing, Professor of Medical Education Research, Newcastle University, England	<i>Auditorium</i>
	Workshop I: Qualitative methods and process evaluation in delirium research Dr Susanne Kean, Research Fellow, Edinburgh Critical Care Research Group Dr Lydia Emerson, Research Fellow, School of Health Sciences, University of London	<i>Room 1 & 2</i>
	Workshop J: Music therapy in delirium: update and demonstration Ms Jilly Mathews, Music Therapist, Edinburgh Dr Susan Shenkin, Clinical Senior Lecturer in Geriatric Medicine, University of Edinburgh	<i>New Library</i>
17.00	European Delirium Association AGM (open to all EDA members)	<i>Auditorium</i>
19.00	Scottish Evening with Ceilidh at Royal College of Physicians of Edinburgh	<i>Great Hall</i>

Programme – Friday

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Day 2 - Friday 6 September 2019

- 08.00** **Registration** and Coffee *Foyer*
- 08.30** **Welcome to day 2 of the EDA/RCPE Joint Conference on Delirium** *Auditorium*
Professor Arjen Slooter, President of the EDA, and Professor Alasdair MacLulich, Chair of the Local Organising Committee
- 08.35** **Network for investigation of delirium: unifying scientists (NIDUS)** – announcement. *Auditorium*
Dr Babar Khan, President of the American Delirium Society
- Session 5 - Plenary Session C** *Auditorium*
Chair: Dr Roanna Hall, Consultant in Geriatric Medicine, Royal Infirmary of Edinburgh
- 08.40** **What's new in paediatric delirium?**
Dr Heidi Smith, Assistant Professor of Pediatric Critical Care and Anesthesiology, Vanderbilt University, Nashville, USA
*detection * treatment * clinical trials
- 09.10** **Psychological interventions for intensive care unit stress and delirium**
Dr Dorothy Wade, Health Psychologist, UCLH
*research update *liasing with families *trauma
- 09.40** **Delirium in primary care: development and experience of a new pathway**
Dr Lorna Dunlop, General Practitioner, Dundee
*adapting secondary care pathways *managing risk *future developments
- 10.10** **Coffee and poster viewing** *Foyer and Room 1 & 2*
- Session 6 - Plenary Session D** *Auditorium*
Chair: Dr Alessandro Morandi, Consultant in Geriatric Medicine, Department of Rehabilitation, Fondazione Camplani Casa de Cura, Cremona, Italy
- 10.40** **Guidelines and headline results update**
- Cognition care in the Australian National Standards (2nd ed)**
Dr Julie Lustig, Geriatrician, Monash Health, Melbourne, Australia
- New core outcomes in delirium for research**
Professor Louise Rose, King's College London
Dr Valerie Page, Consultant Intensivist, Watford General Hospital, England
- Scottish Intercollegiate Guidelines Network (SIGN) 2019 Guidelines on Delirium**
Ms Daisy Sandeman, Advanced Nurse Practitioner, Cardiothoracic Surgery, Royal Infirmary of Edinburgh
- New findings from the Delirium and Population Health Informatics Cohort (DELPHIC) Study**
Dr Daniel Davis, Senior Clinical Researcher and Consultant in Geriatric Medicine, University College London
- Update on German national delirium care programme**
Dr Stefan Kreisel, Consultant Neurologist, Evangelical Hospital Bethel, Bielefeld, Germany

Programme - Friday

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Agency for the Health Quality and Research (AHRQ) commissioned systematic review on using antipsychotics for Delirium 2019

Dr Esther Oh, Associate Professor, Division of Geriatric Medicine and Gerontology, The Johns Hopkins University School of Medicine, Baltimore, USA

11.10	KEYNOTE LECTURE: The EEG in delirium: where are we now in clinical practice and research? Professor Arjen Slooter, Professor of Intensive Care Neuropsychiatry, Utrecht *research update * new technologies *when should you order an EEG?	Auditorium
--------------	---	-------------------

12.00	Lunch and poster viewing	Foyer and Room 1 & 2
--------------	---------------------------------	---------------------------------

Session 7 - Parallel Sessions

Parallel Session D - Invited Symposium: Quality improvement and real world implementation of better delirium care in different settings

Chair: Ms Karen Goudie, Chief Nurse, University Hospital Monklands, Scotland

13.30	Quality improvement in healthcare: what is it and why do we do it? Ms Karen Goudie, Chief Nurse, University Hospital Monklands, Scotland	Auditorium
--------------	--	-------------------

Improving the quality of sleep in the intensive care unit

Dr Biren Kamdar, Intensivist and Assistant Clinical Professor, Medicine, University of California at San Diego, USA

An ounce of prevention is worth a pound: implementing a comprehensive delirium care program at a university hospital

Dr Vanja Douglas, Neurohospitalist and Associate Professor, University of California at San Francisco, USA

Delirium in hospice care: quality improvement projects

Dr Juliet Spiller, Consultant in Palliative Medicine, Marie Curie Hospice, Edinburgh

Multi-disciplinary pathway for managing delirium: quality improvement initiative at the Aga Khan University Hospital, Pakistan

Dr Shireen Najam, Chief Resident, Psychiatry, Aga Khan University Hospital, Karachi, Pakistan

Parallel Session E - Invited Symposium: EUGMS-EDA Joint Symposium

Chairs: Dr Leiv Otto Watne, Consultant in Geriatric Medicine, University of Oslo and Dr Alessandro Morandi, Consultant in Geriatric Medicine, Department of Rehabilitation, Fondazione Camplani Casa di Cura, Cremona, Italy

13.30	Establishing and improving an interdisciplinary and multidisciplinary care for delirium across Europe	Great Hall
--------------	--	-------------------

Dr Alessandro Morandi, Consultant in Geriatric Medicine, Department of Rehabilitation, Fondazione Camplani Casa di Cura, Cremona, Italy

The role of nursing care in the multidisciplinary management of delirium

Dr Elke Detroyer, Research Fellow, Academic Centre for Nursing and Midwifery, KU Leuven, Belgium

Emerging evidence in occupational therapy in delirium care

Mr Christian Pozzi, Occupational Therapist, University of Applied Sciences and Arts of Southern Switzerland

Programme - Friday

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Early mobility to improve delirium outcomes: physiotherapy interventions
Dr Neus Gual, Geriatrician, University of Barcelona, Spain

The future of interdisciplinary collaboration in delirium care across Europe
Dr Bjorn Erik Neerland, Consultant in Geriatric Medicine, University of Oslo

Parallel Session F - Oral presentations from submitted Abstracts

New Library

Chair: Dr Susan Shenkin, Clinical Senior Lecturer in Geriatric Medicine, University of Edinburgh

- 13.30** **An exploration of factors impacting on the nurse's decision to restrain a delirious patient on the critical care unit.**
Angela Teece
- 13.40** **Do health care professionals worry about delirium? relatives' experience of delirium in the intensive care unit: a qualitative interview study**
Sos Bohart
- 13.50** **Defining delirium symptom phenotypes based on core diagnostic features in an intensive care unit cohort**
Heidi Lindroth
- 14.00** **Comparison of regional anaesthesia with general anaesthesia on postoperative delirium in the older patients undergoing hip fracture surgery: multi-centre randomised controlled trial - RAGA trial**
Fang Smith
- 14.10** **Measurements of sympathetic autonomic level in stroke patients and delirium**
Jannik Stokholm
- 14.20** **In vivo monitoring of cholinergic neurotransmission: validating a hypocholinergic mouse model**
Sean Doyle
- 14.30** **Incidence rates of CNS drug-induced delirium – results of AMSP – a drug surveillance program between 1993 and 2016**
Michaela-Elena Friedrich
- 14.40** **Decreasing delirium through music: a feasibility trial**
Sikander Khan
- 14.50** **Comparisons of interventions to prevent delirium in critically ill patients: a network meta-analysis**
Lisa Burry
- 15.00** **Coffee and poster viewing**

*Foyer and
Room 1 & 2*

Session 8 - Announcement of EDA 2020, ADS 2020, ADA 2020; Awards and Farewell

Auditorium

Chair: Professor Alasdair MacLulich, Chair of the Local Organising Committee

- 15.30** Announcements on European Delirium Association 2020, American Delirium Society 2020 and Australasian Delirium Association 2020 meetings.
Maeve Leonard Award
Oral presentation and poster prizes
- 16.00** Close and farewell

Posters

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 and Friday 6 September 2019

Poster Board	Title of Abstract	Authors	Day
1	Defining methodological and best practice for studies of biological and clinical correlates of delirium: an international modified delphi study	<u>Ingrid Amgarth-Duff</u> , Annmarie Hosie, Gideon Caplan, Meera Agar	Thursday
2	Delirium and frailty: outcomes from consecutive patients with abnormal 4A's Test (4AT) score on hospital admission	<u>Miriam Veenhuizen</u> , April Covington, Nicholas L Mills, Will Whiteley, Alasdair MJ MacLulich, Susan D Shenkin, Atul Anand	Thursday
3	Preliminary validation of the 4AT in a specialist palliative care inpatient unit: study protocol	<u>Liz Arnold</u> , Anne Finucane, Juliet Spiller, Alasdair MacLulich	Thursday
4	Cognitive assessment: can the hospital palliative care team perform this routinely?	<u>Lucy Baird</u> , Deirdra Sives, Angela Bentley	Thursday
5	Implementation of the palliative care version of the Richmond Agitation-Sedation Scale: a quality improvement project	<u>Shirley H. Bush</u> , Kasia Bronicki, Michel Dionne, Marie-Claude Legacy, Mario DaPonte, Monisha Kabir	Thursday
6	Validated delirium screening tools in palliative care: a systematic review	Mary Scott, Colleen Webber, <u>Shirley H. Bush</u> , Christine Watt, Lindsey Sikora, Monisha Kabir, Jason W Boland, Rebecca Woodhouse, Peter G. Lawlor	Thursday
7	The occurrence and timing of delirium in acute care hospitalizations in the last year of life: a population-based retrospective cohort study	Colleen Webber, Mary Scott, Christine Watt, <u>Shirley H. Bush</u> , Peter Lawlor, Monisha Kabir, Rob Talarico, Peter Tanuseputro	Thursday
8	Development of delirium is associated with consumption of antipsychotic and anti-dementia drugs	<u>Sif Blandfort</u> , Merete Gregersen, Kirsten Rahbek, Svend Juul, Else Marie Damsgaard	Thursday
9	Impact of delirium education on a medical-surgical unit	<u>Tru Byrnes</u>	Thursday
10	Evaluation of circulating miRNA in serum samples of delirium patients in acute geriatric medical setting: insights on the inflammatory hypothesis of delirium	Patrícia Regueira, <u>Ana Rita Silva</u> , Ana Luísa Cardoso, Elisabete Albuquerque, Fabiana Ventura, Mário Carneiro, Inês Baldeiras, Isabel Santana, Joaquim Cerejeira	Friday
11	Evaluation of prevalence of delirium in acute geriatric admissions across the years: considerations on the diagnostic bias and delirium subtypes	<u>Ana Rita Silva</u> , Patrícia Regueira, Ana Luísa Cardoso, Elisabete Albuquerque, Inês Baldeiras, Isabel Santana, Joaquim Cerejeira	Friday
12	Risk factors for long-term cognitive impairment in acutely admitted intensive care patients - a multicentre prospective cohort study	<u>Marie O Collet</u> , Ingrid Egerod, Thordis Thomsen, Helle L Nibro, Jørn Wetterslev, Theis Lange, Bjørn H Ebdrup, Anders Perner	Thursday
13	Delirium recognition at the end of life	<u>Katie Darby-Villis</u> , Mark Lee	Thursday
14	shifting the focus: a QI project to improve the management of delirium in patients with hip fracture	<u>L Dormandy</u> , S Mufti, E Higgins, M Dixon, C Bailey	Thursday

Posters

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 & Friday 6 September 2019

Poster Board	Title of Abstract	Authors	Day
15	Brain atrophy in patients with and without delirium in older acute medical admissions aged 65 and over: preliminary results from a retrospective CT study	<u>Karen J Ferguson</u> , Daniel Levin, Alasdair MJ MacLulich, Joanna M Wardlaw, Bruce Guthrie, Peter T Donnan, Emma L Reynish, Vera Cvoro	Thursday
16	The distribution of CT white matter lesions (WML) in patients with and without delirium in acute medical admissions aged 65 and over: preliminary results of a retrospective study	<u>Karen J Ferguson</u> , Daniel Levin, Alasdair MJ MacLulich, Joanna M Wardlaw, Bruce Guthrie, Peter T Donnan, Emma L Reynish, Vera Cvoro	Thursday
17	The distribution of old and new infarcts and other lesions in patients with and without delirium in acute medical admissions aged 65 and over: preliminary results from a retrospective study	<u>Karen J Ferguson</u> , Daniel Levin, Alasdair MJ MacLulich, Joanna M Wardlaw, Bruce Guthrie, Peter T Donnan, Emma L Reynish, Vera Cvoro	Thursday
18	Delirium team briefing implementation of a communication tool that enables health care teams to optimize delirium care	<u>Claudia Eckstein</u> , Heinrich Burkhardt	Thursday
19	A delirium severity tool for critical care (CC) : validation of the delirium rating scale -R98 (DRS-R98)	Eiman Almuhaire, Monica Badejo, Mervi Pitkannen, Anessa Peers, Graham Davies, David Taylor, <u>Cathrine A. McKenzie</u>	Thursday
20	Evidence that the heightened vulnerability of the pre-adolescent & elderly populations to anesthesia-triggered delirium is linked to increased blood-brain barrier permeability	<u>George A. Godsey II</u> , Hana Choi, Nimish K. Acharya, Mary C. Kosciuk, Robert G. Nagele	Thursday
21	Detecting neurocognitive impairment: a comparison of clinical routine data versus structured assessments	<u>Olga Muser</u> , Kevin Seiler, Wolfgang Hasemann	Thursday
22	Every fourth patient 65+ suffers from delirium during hospital admission – a call for a validated screening program	<u>Irene Instenes</u> , Hege A. Amofah, Leslie Eide, Nina Fålun, Trond Pettersen, Anette H. Ranhoff, James Rudolph, Ole Martin Steihaug, Tone M. Norekvål	Thursday
23	Continuation of antipsychotic medications in critically ill patients: a single-centre retrospective review.	<u>Zebun Nahar</u> , Prina Rajani, Jignna Patel, Valerie Page	Thursday
24	An audit of the 4AT & TIME bundle as part of the Delirium Ambassador Programme at the Queen Elizabeth University Hospital	<u>Andrew M Richardson</u>	Thursday
25	Team approach toward postoperative and ICU delirium care and challenges	<u>Fumiko Ishimitsu</u>	Friday
26	Recognition, diagnosis and management of delirium in a palliative care setting	Ann Williams, <u>James Killeen</u> , Alison Roberts	Thursday
27	The role of preoperative serum inflammatory markers (NLR, PLR, PWR and CRP) as biomarkers of postoperative delirium in cardiac surgery.	<u>Katarzyna Kotfis</u> , Justyna Ślózowska, Krzysztof Safranow, Maciej Żukowski, Aleksandra Szylińska, Mariusz Listewnik	Friday
28	Improving delirium recognition in 2 East	<u>Tilda McCrimmon</u>	Friday

Posters

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 & Friday 6 September 2019

Poster Board	Title of Abstract	Authors	Day
29	Raising Delirium awareness in the north east of England the story of MELISSA & ERIIC	<u>Mani Santhana Krishnan</u> , Namita Kumar, Jill Cassells	Thursday
30	Role of Delirium clinic – a project to identify people at risk of developing dementia and improving the awareness of people at risk – 4 years on what have we learnt?	<u>M Santhana Krishnan</u> , Jacqui Straughan, Lisa Parker	Thursday
31	Investigating the composition of monocyte subpopulations and effector function in delirium	<u>Hannah C Moorey</u> , Thomas A Jackson	Friday
32	Exploring Danish critical care nurses' knowledge of delirium and delirium assessment, a survey	<u>Camilla B Mortensen</u> , Nina C Ranberg-Andersen, Jens P Laigaard, Marie O Collet, Ingrid Egerod	Friday
33	Understanding delirium in Australian acute care: results from a medical record review to assess compliance with the delirium clinical care standard	Virginia Mumford, <u>Mary Ann Kulh</u>	Friday
34	Delirium in patients undergoing hip surgery: A prospective observation study from Karachi, Pakistan.	<u>Shireen Najam</u> , Tania Nadeem, Muhammad Zaman Khan	Friday
35	Fatty acid-binding protein 3 in cerebrospinal fluid of hip fracture patients with delirium and of cognitively healthy controls	<u>Bjørn Erik Neerland</u> , Kaj Blennow, Henrik Zetterberg, Leiv Otto Watne	Friday
36	Changing the culture of dementia care in hospitals: evaluation of the italian edition of best practice in dementia care learning programme designed for healthcare staff working in hospitals	<u>Andrea Fabbo</u> , Francesca Neviani, Rontauroli Caterina	Friday
37	Evaluating delirium management in critical care at West Middlesex Hospital	<u>Chitra Sanjel</u>	Friday
38	Delirium in nursing homes – incidence and risk factors for delirium in nursing home patients	<u>Wenche Helen Skretteberg</u> , Ingunn Holmefoss Hovland, Leiv Sandvik, Maria Krogseth	Friday
39	A carer intervention to improve support for patients with delirium in a palliative care inpatient setting: a quality improvement approach	<u>Max Fend</u> , Juliet Spiller, Anne Finucane	Friday
40	Polypharmacy as a risk factor for delirium: a large population-based longitudinal record linkage study	<u>Lucy E Stirland</u> , Tom C Russ, Craig W Ritchie, Graciela Muniz Terrera	Friday
41	Patients' experiences with delirium assessments	<u>Helle Svenningsen</u> , Dorthe Sørensen	Friday
42	Using audio-visual vignettes to explore how nurses make the decision to restrain a delirious patient on the critical care unit.	Sarah A Smith, Michael N Black, <u>Angela Teece</u> , John Baker, Helen Smith	Friday
43	A retrospective case-note analysis investigating the management of diagnosed delirium in patients on medicine of the elderly wards	<u>Sarah Train</u> , Alexandra Peterson, Emma Marshall, Susan Shenkin, Alasdair MacLullich	Friday

Posters

EDA/RCPE Joint Conference on Delirium

held on Thursday 5 & Friday 6 September 2019

Poster Board	Title of Abstract	Authors	Day
44	Comparison of brief clinical delirium and cognitive testing amongst patients admitted via the trauma and orthopaedic (T&O) acute intake: a service evaluation on the clinical dependence, efficacy and accessibility of implementing Gwent orientation and awareness listing (GOAL) testing in relation to the 4AT at the Royal Gwent Hospital Newport	<u>Jack Wellington</u> , Alexander Eggleton, Reem Naji, Inderpal Singh, Miles Allison	Thursday
45	A feasibility randomised controlled trial to compare regional versus general anaesthesia in reducing delirium in patients with hip fractures (REGARD)	<u>Joyce Yeung</u> , Keith Couper, Rebecca Kearney, Ranjit Lall, Iain Moppett, Thomas Jackson, Philip Bell, Gavin Perkins	Friday
46	Interventions for preventing delirium in older people in institutional long-term care: cochrane systematic review	<u>Rebecca Woodhouse</u> , Jennifer K Burton, Namrata Rana, Yan Ling Pang, Jennie E Lister, Najma Siddiqi	Friday
47	Screening for delirium: protocol for a survey of delirium screening practice in specialist palliative care units in the UK	Rebecca Woodhouse, Miriam Johnson, Jason W Boland, Imogen Featherstone, Najma Siddiqi	Friday



**European Delirium Association/
Royal College of Physicians of Edinburgh
Joint Conference on Delirium
Thursday 5 and Friday 6 September 2019**

Speaker Abstracts, Thursday 5 September 2019

Session 1 – Plenary Session A

09.10 Delirium Causes and Look-a-likes You Need to Know About

Dr Karin Neufeld

Director of the Inpatient Psychiatry Consultation Service, Johns Hopkins Bayview Medical Center, Baltimore, USA

This 20 minute talk will briefly review several clinical conditions that should be differentiated from delirium due to more common causes such as metabolic imbalances or infection. These conditions include 1) Serotonin Syndrome, 2) Neuroleptic Malignant Syndrome, 3) Central Anticholinergic Syndrome, 4) Malignant Hyperthermia, 5) Catatonia and 6) NMDA Receptor Auto-Immune Encephalitis. An overview of the clinical signs and symptoms of each condition is followed by a brief discussion of approaches to help with their differential diagnosis.

The discussion of these specific causes of delirium and delirium-lookalikes highlights the importance of becoming more focused on the etiological underpinnings of the delirium syndrome. Better diagnostic specificity will certainly improve delirium care and treatments for patients and accelerate pathophysiological inquiry and understanding.

Session 2 – Plenary Session B

11.40 KEYNOTE LECTURE

A New Digital and Quality Improvement Programme to Improve Delirium Care: The Salford Experience

Dr Emma Vardy

Delirium and Dementia Clinical Lead, Salford, UK

Dr Emma Vardy BMedSci, MBChB, PhD, FRCP is Consultant in Geriatric Medicine and Clinical Lead for Dementia and Delirium in Salford, England. In the last few years she developed and implemented a new digital assessment process to detect delirium in the acute hospital as a *Global Digital Exemplar*. In the last 12 months this has led to large real-world clinical change: screens for delirium have risen from 800 to 5,600 (7-fold increase), with increased overall delirium detection and reduced length of stay in patients with delirium.

Dr Vardy's talk will describe how combining digital technology and quality improvement methods can improve delirium assessment and care at scale in clinical practice. She will also share how she

has worked with managers and policymakers to create this project. Dr Vardy will also speak about raising delirium awareness and engaging with policymakers regionally and nationally, including the Secretary of State for Health in England.

Further information:

<https://www.salfordgde.nhs.uk/news-and-events/salford-launches-first-nhs-gde-blueprint/>

Session 3 – Parallel Session A

Delirium Education: Where are we now?

Professor Andrew Teodorczuk

Associate Professor of Medical Education, School of Medicine, Griffith University, Gold Coast Campus, Queensland, Australia

Consultant Psychiatrist, Prince Charles Hospital, Brisbane, Australia

Strong theoretical arguments exist for the use of delirium education as a non-pharmacological intervention to raise awareness and thereby prevent delirium. In the last 10 years there have been a growing number of studies evaluating the effectiveness of diverse education approaches from eLearning to family education to interprofessional education. Furthermore, qualitative studies have advanced our understandings of staff practice gaps.

This state of the science overview of delirium education considers the “continuum of delirium education” and reviews recent important studies in the field. In addition, new findings from a literature review, evaluating quality of education studies *and* the impact of interventions, is presented. The review suggests that the evidence base for education as an approach to improve staff knowledge and healthcare outcomes is robust.

However, given challenges with ongoing implementation, it is proposed that delirium represents a “wicked problem”. Wicked in so far as it is difficult to solve by teaching because of incomplete, contradictory, and changing workplace and cultural requirements. As educators we are therefore presented with a qualitatively different educational challenge.

The talk concludes there is a need for education studies focussing less on evaluating education impact and more on understanding what works, in which contexts, for whom by means of realist research methodologies and the adoption of contemporary educational theory lenses to develop innovative approaches to pedagogical practice. Moreover, gaps in the literature including sustainability, mimetic and systems learning and addressing attitudes towards patients with delirium are highlighted as important avenues for future research.



References

- Babine RL, Hyrkäs KE, Hallen S, Wierman HR, Bachand DA, Chapman JL, Fuller VJ. Falls and delirium in an acute care setting: A retrospective chart review before and after an organisation-wide interprofessional education. *J Clin Nurs*. 2018 Apr;27(7-8):1429-1441.
- Mukaetova Ladinska E, Cosker G, Coppock M, Scully A, McNally R, Kim SK, Teodorczuk A. Delirium Stigma Among Healthcare Staff Geriatrics 2018 Dec 31; 4(1)
- Varpio, L., Aschenbrenner, C., Bates, J. Tackling wicked problems: how theories of agency can provide new insights. *Medical Education* 2017 51 353 - 365

E-learning: is it worth it?

Dr Elke Detroyer

Research Fellow, Academic Centre for Nursing and Midwifery, KU Leuven, Belgium
Department of Geriatric Care, University Hospitals Leuven, Belgium

Staff education is an important element of delirium preventive and treatment strategies. To date, there exists a heterogeneity in delirium educational initiatives with packages including formal presentations in combination with case-based discussion, feedback and/or local expert input. During the last 10 years, e-learning and blended-learning have been widely used as methods of delivering education to large groups of healthcare workers.

The talk will give a state of the art overview of e-learning and blended-learning studies in delirium research, will focus on the advantages and disadvantages, and will finally highlight important issues.

A realist review of family caregiver and patient education in delirium: How, for whom and what circumstances do they work?

Dr Emily Gallagher

Advanced Trainee Registrar Auckland City Hospital, New Zealand

Delirium is being increasingly identified as a serious and common complication of hospitalisation in older adults. There are systematic reviews on the use of multi-component, non pharmacological interventions and education of health professionals focused on promoting staff knowledge of delirium as a strategy to improve delirium outcomes. In contrast there is a significant gap in the literature addressing the learning requirements of patients and their families and whether this is an effective strategy in delirium prevention.

The realist synthesis approach has been developed to evaluate complex social interventions and examines the interplay of context, mechanism and outcomes in order to generate a hypothesis which can then be applied to future interventions¹. Our objective in using the realist synthesis approach was to identify the causal mechanisms in

effective caregiver and patient education interventions in delirium, taking into account the context and outcomes to guide the design and implementation of delirium prevention interventions.

After reviewing the literature we included 12 articles in the data extraction and final analysis, identifying common mechanisms and outcomes. In conclusion, we can improve caregiver factual knowledge of delirium through the traditional approach of written materials, however, combining this with interventions teaching skills such as early mobilization, communication strategies and delirium screening appear to have a greater impact on delirium incidence and severity as well as improving family caregiver outcomes. These interventions are low risk, are not associated with harm to patients or their family care givers and they can be easily embedded in multicomponent delirium prevention interventions.

References:

1. Pawson R GT, Harvey G & Walshe K. Realist Review: A new method of systematic review designed for complex policy interventions. *Journal of Health Services and Research Policy* 2004;10(1):21-34

Session 3 – Parallel Session C

13.30 Cognitive trajectories after delirium among frail home-dwelling persons. Results from the CASCADE-study

*Maria Krogseth** (1,2) mariakrogseth@gmail.com,
*Daniel Davis** (3), *Geir Selbæk* (4,5,6), *Torgeir Bruun Wyller* (6,7) *shared first authorship

- (1) Old Age Psychiatry Research Network, Telemark Hospital Trust and Vestfold Hospital Trust, Norway.
- (2) University of South-Eastern Norway.
- (3) MRC Unit for Lifelong Health and Ageing, UCL, London, UK.
- (4) Norwegian National Advisory Unit on Ageing and Health, Vestfold Hospital Trust, Tønsberg, Norway.
- (5) The Centre for Old Age Psychiatric Research, Innlandet Hospital Trust, Ottestad, Norway.
- (6) Faculty of Medicine, University of Oslo, Oslo, Norway.
- (7) Department of Geriatric Medicine, Oslo University Hospital, Oslo, Norway

Abstract not published at authors' request.

13.40 Delirium is prevalent in older hospital inpatients and associated with adverse outcomes: results of a prospective multi-centre study on World Delirium Awareness Day

On behalf of the UK Geriatric Medicine Research Collaborative



Hannah Moorey hannahclare.moorey@nhs.net

Introduction

We aimed to ascertain the point prevalence of delirium in non-elective UK hospital admissions, and the relationship of delirium to adverse outcomes.

Methods

We undertook a prospective observational study, in 45 UK acute care hospitals, using collaborative research methodology. Participants were aged 65 years and older, and admitted within 48 hours before World Delirium Awareness Day 2018 (excluding critical care). Prevalence of delirium, screening rates, and recognition rates, length of stay, frailty, and mortality to one month follow-up was collected.

Results

1507 patients were included. The point prevalence of Diagnostic and Statistical Manual on Mental Disorders, Fifth Edition (DSM-5) delirium diagnosis was 14.7% (222/1507); 21.2% (320/1507) including those with possible delirium; and 25.1% (379/1507) were 4AT positive ($\geq 4/12$). This was recognised in 34.2% (76/222) as part of usual care. Routine screening was performed in 27.3% (410/1507). DSM-5 delirium prevalence was associated with increased age (OR per year of life 1.04; $p < 0.001$), dementia status (OR 1.95; $p < 0.001$), and higher Clinical Frailty Scale (CFS, $p < 0.001$). However, higher CFS was associated with reduced delirium recognition ($p = 0.021$).

In multivariable analyses, delirium was associated with increased length of stay (bootstrapped mean difference +3.45 days; $p = 0.001$). Delirium by DSM 5 (OR 2.43; $p = 0.001$), and 4AT ≥ 4 (OR 2.55, $p < 0.001$), was associated with mortality at one month. Screening for delirium was associated with increased chance of recognition (OR 5.47; $p < 0.001$).

Conclusions

Delirium is prevalent in older adults in UK hospitals, but remains under-recognised. Frailty is strongly associated with development of delirium, but delirium is less likely to be recognised in frail patients. The presence of delirium and a 4AT ≥ 4 is associated with increased mortality at one month. A national programme to increase screening has potential to improve recognition.

13.50 The prevalence and incidence of delirium in inpatients with Parkinson's disease

Rachael A Lawson (1) Rachael.lawson@ncl.ac.uk,
Sarah J Richardson (1), *Alison J Yarnall* (1,2),
David J Burn (1), *Louise M Allan* (3)

(1) Newcastle University, Newcastle upon Tyne, England
(2) Newcastle upon Tyne Hospitals NHS Foundation Trust, Newcastle upon Tyne, England
(3) University of Exeter, Exeter, England

Introduction

People with Parkinson's disease (PD) may be at increased risk of delirium. However, delirium prevalence in PD may be underestimated due to an overlapping clinical phenotype, a lack of awareness and poorly defined criteria. Commonly reported PD symptoms include attentional dysfunction, hallucinations,

delusions, sleep disturbance and daytime somnolence; these are also common in delirium, making it difficult to distinguish PD symptoms from delirium. This study aimed to identify the prevalence and incidence of delirium in inpatients with PD using standardised assessments.

Methods

Over four-months, people with PD admitted to hospitals in Newcastle upon Tyne were invited to take part. A single research visit using a standardised assessment based on the Diagnostic and Statistical Manual of Mental Disorders 5th Edition (DSM-5) criteria was used to identify point prevalent delirium. Incident cases of delirium were identified by reviewing participants' hospital notes over their whole admission; delirium was diagnosed using a validated consensus method.

Results

Forty-four PD patients consented to take part in the study, accounting for 53 admissions. At the single research assessment, the point prevalence of delirium was 34.0% ($n = 18$) a mean of 39.7 ± 30.7 hours after admission. Reviewing participants over the duration of their hospital stay identified 30 (56.6%) incident delirium cases. Thirteen (24.5%) participants were screened for delirium by the admitting team; of these three cases of delirium were identified. Eight cases of delirium were documented (14.8%) in participants' medical notes.

Conclusions

We found that delirium is common in PD inpatients at admission, with incidence increasing during hospital stay. However, delirium was commonly missed and screening was sub-optimal. Our results highlight the importance of frequent delirium screening in patients with PD. Future studies should evaluate existing operationalised criteria for delirium for use in PD; this would have utility in future clinical trials to prevent or manage delirium.

14.00 A retrospective cohort study of the performances on attention tests in people with cognitive impairment without delirium

Eleonora Grossi (1) eleonora.grossi@ancelle.it,
Daisy Raffaelli (1), *Elena Lucchi* (1,2), *Marco Trabucchi* (1,2),
Giuseppe Bellelli (2,3), *Simona Gentile* (1,2),
Alessandro Morandi (1,2).

(1) Rehabilitation Department Fondazione Camplani Casa di Cura Ancelle della Carità, Cremona, Italy
(2) Geriatric Research Group, Brescia, Italy
(3) University of Milano Bicocca, Milano, Italy

Introduction

Attention is a complex function that supervises all cognitive domains. The first criterion (DSM-5) for the diagnosis of delirium is the presence of attention deficits not due to a pre-existing cognitive disorder. However, it is



unclear how people with cognitive impairment without delirium perform on different attention tests. The purpose of this work is to determine the average level of attention performances in patients with mild, moderate and severe cognitive impairment, in order to identify the most appropriate test to assess attention deficits in patients with delirium superimposed on dementia.

Methods

We analyzed different tests for selective, divided and sustained attention of neuropsychological evaluations of 880 patients (age \geq 65 years) with mild (MMSE=21-24), moderate (MMSE=10-20), and severe (MMSE=9-0) cognitive impairment, assessed in a memory clinic at the Ancelle Della Carità (Cremona, Italy) between 2006 and 2018. The mean scores and standard deviations of attention tests were calculated and compared according to the level of cognitive impairment.

Results

The mean age was 80.45 ± 5.86 , education 6.43 ± 3.35 years, and the average MMSE score 21.01 ± 4.29 . The sample groups differed significantly for education ($p=0.001$) and profession ($p<0.05$). Performances on divided attention vary not only for the level of cognitive impairment but also for the version of the Digit Span Backwards used. Additionally, tests for sustained attention are significantly different in patients with mild and moderate cognitive impairment.

Conclusions

The study shows that in patients with different degree of cognitive impairment without delirium, tests for divided and sustained attention might be used to assess the presence of inattention in the context of delirium. Indeed, a lower score on these test might be indicative of an acute change and worsening of the baseline inattention and a longitudinal monitoring of these changes might be used to determine the delirium resolution.

14.10 In older people, delirium is a stronger predictor than frailty status of the need for admission post Emergency Department attendance

*de O'Shaughnessy (1) ideoshaughnessy@gmail.com,
Robert Briggs (2) Conal Cunningham (2)
Suzanne Timmons (3)*

*(1) Emergency Department, St. James's Hospital, Dublin, Ireland
(2) Medicine for Older Persons Directorate, St. James's Hospital, Dublin, Ireland.
(3) Centre for Gerontology and Rehabilitation, University College Cork, Cork, Ireland*

Introduction

Short validated screening tools such as the 4AT can enable Emergency Department (ED) staff to identify delirium and cognitive impairment in a timely manner, triggering appropriate care pathways. This prospective cohort study explored the predictive validity of the 4AT, and two frailty scales (Clinical Frailty Scale (CFS); Think Frailty (TF)) on disposition post ED index visit, including unscheduled 30 day revisit.

Methods

All consecutive ED attendees aged ≥ 70 years with Manchester Triage System score 3-5 (i.e. non-critical), in a 6-month period, were eligible. Participants underwent an interdisciplinary assessment by a Home FIRsT (Frailty Intervention & Response Team) member. Logistic regression analyses were performed to identify factors independently predictive of admission and unscheduled revisit.

Results

1,156 ED attendances were included - 59% were female; median age was 80 years; 66% were discharged home from ED; 17.8% had an unscheduled ED revisit within 30 days. Age and sex did not predict hospital admission post ED attendance. Hospital admission was predicted by mild-moderate frailty: CFS score 3-4 (Odds Ratio (OR) 1.48; 95% CI 0.95-2.32; $p=1.71$) and CFS score 5-6 (OR 1.83; 1.11 – 3.04; $p=0.019$), 'Think Frailty' score 3 (OR 1.75; 1.07 – 2.85; $p=0.025$) and 4 (OR 2.32; 1.16 – 4.63; $p=0.017$). But higher frailty scores were associated with lower rates of admission: CFS 7-9 (OR 1.25; 0.56-2.67; $p=0.58$), TF score 5 (OR 0.36; 0.09-1.35; $p=0.13$).

In contrast, 4AT score strongly predicted admission; 4AT score 1-3 (OR 1.62; 1.16 – 2.27; $p=0.005$) and 4AT ≥ 4 (OR 5.87; 3.17 – 10.88; $p<0.001$).

Unscheduled review within 30 days was weakly predicted by moderate frailty on the CFS only (not TF).

Conclusions

Delirium is a stronger predictor of admission post ED index visit than frailty status. Older persons have high rates of 30-day unscheduled revisits; however, it is difficult to predict this from either frailty or delirium status.

14.20 The Incidence of Recorded Delirium Episodes Before and After Dementia Diagnosis: Differences Between Dementia With Lewy Bodies and Alzheimer's Disease

James M. FitzGerald (1), Gayan Perera (2), Alexandra Chang-Tave (2), Annabel Price (3), Anto P. Rajkumar (2,4), Manorama Bhattarai (5), John T. O'Brien (3), Clive Ballard (2,6), Dag Aarsland (2,7), Robert Stewart (2,4), and Christoph Mueller (2,4) christoph.mueller@kcl.ac.uk

(1) Leeds Teaching Hospital Trust, Leeds, United Kingdom, LS9 7TF

*(2) Institute of Psychiatry, Psychology and Neuroscience, King's College London, London, United Kingdom, SE5 8AF
(3) University of Cambridge, Cambridge, United Kingdom, CB2 1TN*

(4) South London and Maudsley NHS Foundation Trust, London, United Kingdom, BR3 3BX

(5) Barnet, Enfield and Haringey Mental Health Trust, London, United Kingdom, N15 3TH

(6) University of Exeter Medical School, Exeter, United Kingdom, EX1 2LU

(7) Stavanger University Hospital, Stavanger, Norway, 4068



Introduction

There is considerable overlap between symptoms of delirium and fluctuations in the context of dementia with Lewy bodies (DLB). One possible pitfall lies in misdiagnosing DLB as delirium, which might lead to patients being treated with antipsychotics with the risk of severe reactions and mortality. Using routinely collected data from a specialist mental health and dementia care provider linked to national hospitalisation records, we aimed to investigate the incidence of delirium recording before and after a diagnosis of dementia is established, and whether this differed between DLB and Alzheimer's disease (AD).

Methods

We identified 194 patients with DLB in the South London and Maudsley NHS Foundation Trust and 1:4 matched these with 776 patients diagnosed with AD on age, gender, and cognitive status. We identified delirium episodes recorded in mental health and hospitalisation records from one year before to one year after dementia diagnosis.

Results

Patients with DLB had significantly more episodes of delirium recorded in the year before dementia diagnosis than patients with AD (incidence rate 17.6 vs 3.2 per 100 person-years; $p < 0.001$). Whereas the incidence of recording of delirium episodes reduced substantially in patients with DLB after dementia diagnosis, it remained significantly higher than in patients with AD (incidence rate 6.2 vs. 2.3 per 100 person-years; $p = 0.032$). Cox regression models indicate that patients with DLB remain at a higher risk of delirium than patients with AD after a dementia diagnosis.

Conclusions

Establishing a diagnosis of dementia reduces episodes classified as delirium in patients with DLB and might lead to fewer potentially harmful interventions such as hospitalisation or use of antipsychotic medication.

14.30 DELIAS Index - the role of a simple prediction index for patients with early onset delirium after acute ischemic stroke

Katarzyna Kotfis¹ katarzyna.kotfis@pum.edu.pl

Marta Bott-Olejnik², Aleksandra Szylińska³, Iwona Rotter³

(1) Department of Anesthesiology, Intensive Therapy and Acute Intoxications, Pomeranian Medical University, Szczecin, Poland

(2) Department of Neurology, Regional Specialist Hospital in Gryfice, Poland

(3) Department of Medical Rehabilitation and Clinical Physiotherapy, Pomeranian Medical University, Szczecin, Poland

Introduction

Delirium is an acute brain dysfunction that may occur after acute ischemic stroke (AIS). The pathomechanism is related to neuroinflammatory process and oxidative stress. The aim of this study was to investigate whether Neutrophil-to-Lymphocyte Ratio (NLR) could serve as a potential marker for delirium prediction in patients with AIS and to find a diagnostic index based on simple clinical and laboratory values to predict early onset delirium (<24 hours).

Methods

Prospective observational study (NCT03944694) included patients admitted to a neurology department with AIS. CAM-ICU was used to screen patients for delirium. Data regarding demographics, medical history and admission laboratory results (differential blood cell analysis) were collected from all patients.

Results

A group of 1001 patients was included in the final analysis. Mean age was 72 years, 52% of patients were men. The incidence was 17.2% for early onset delirium and 32.9% for delirium until day 5. NLR was elevated in delirious patients (6.39 ± 8.60 vs 4.61 ± 5.61 , $p < 0.001$). Using receiver operating characteristics (ROC) curve the best cut-off value for NLR to predict delirium was calculated at 4.86. Multivariable logistic regression analysis showed that odds ratio for $NLR > 4.86$ (adjusted to age, sex, BMI, comorbidities and baseline neurology) was 1.875 (95%CI 1.314-2.675, $p = 0.001$). DELIAS Index (DELirium In Acute ischemic Stroke) was calculated: $(1.272 * \text{hemianopia}) + (0.098 * \text{aphasia}) + (0.026 * \text{age}) + (0.054 * \text{NIHSS score on admission}) - (0.005 * \text{NLR}) + (0.028 * \text{Leukocytes}) + (0.001 * \text{CRP})$, with the area under the ROC curve of 0.801 ($p < 0.001$). Significant correlation of DELIAS Index was observed with occurrence of early onset delirium ($OR = 8.976$, $p < 0.001$) and with delirium until day 5. after AIS ($OR = 7.744$, $p < 0.001$).

Conclusions

NLR can be regarded as a potential marker for prediction of early onset delirium after acute ischemic stroke. DELIAS Index based on laboratory and clinical parameters, shows high predictive value for delirium in patients after acute ischemic stroke.

14.40 How could we forget?

Implementing a Delirium and Dementia Initiative

[Brianna Walpole](#) (1) Brianna.Walpole@monashhealth.org

[Julie Lustig](#) (1) (2)

(1) Monash Health, Melbourne, Australia

(2) Monash Ageing and Research Centre, Monash University, Melbourne, Australia

Introduction

Delirium and dementia are serious medical conditions with significant ramifications for patients, carers and staff. Older people with cognitive impairment admitted to hospital are at an increased risk of adverse outcomes and preventable complications. Harm can be minimised if cognitive impairment is identified early and risks acted upon. Monash Health have developed "The Delirium and Dementia Initiative" a multifaceted approach to improve recognition and management of patients with cognitive impairment.



Methods

A Cognition Clinical Lead has led the implementation on high risk wards identified by delirium prevalence using coded data. The initiative targets screening using the 4AT, escalation for medical diagnosis and using non-pharmacological management strategies. Two communication tools and an overarching education framework are important components. The Cognition Clinical Lead actively participates in the improvement of care by role-modelling best practice at the bedside to increase the skills and confidence of clinicians. Implementation was evaluated at 3 months through auditing compliance of screening and communication tools, analysis of coded and adverse outcome data and qualitative data through staff and family feedback.

Results

Prevalence of delirium increased from 8.2% to 19.4%, through the use of screening and medical assessment. An 88.1% compliance rate using the 4AT facilitated improved recognition. There was a 48% reduction in behavioural response calls (Code Greys) reduced severity of falls, reduced pressure injuries and length of stay was reduced by 0.8 days, demonstrating improved patient outcomes. Patients, family and staff feedback illustrated improved confidence and satisfaction with care.

Conclusions

This approach has been effective in improving recognition and management of patients with a cognitive impairment in hospital. It has reduced adverse outcomes experienced by patients and improved staff knowledge and confidence in caring for patients with delirium and dementia. To be sustainable champions need to be identified to continue the change management process and upskill new staff to embed it in routine practice.

14.50 Clinical practice and practice change in the treatment of delirium: an online survey of Australian doctors, nurses and pharmacists

Annmarie Hosie 1 annmarie.hosie@uts.edu.au,

Meera Agar 1, *Linda Brown* 1, *David Currow* 1, *Gideon Caplan* 2,3, *Brian Draper* 2,3, *Stephen Hedger* 4, *Debra Rowett* 5, *Penny Tuffin* 6,7, *Seong Leang Cheah* 1, *Manraaj Sidhu* 1, *Jane Phillips* 1

1. IMPACCT, University of Technology Sydney, Ultimo, Australia
2. Prince of Wales Hospital, Randwick, Australia
3. University of New South Wales, Kensington, Australia
4. Flinders University of South Australia, Adelaide, Australia
5. University of South Australia, Adelaide, Australia
6. Royal Perth Hospital, Perth, Australia
7. Curtin University, Perth, Australia

Introduction

Long-term clinical practice has been to treat delirious patients with antipsychotics. Several recent high-quality studies have called this practice into question, and highlighted the need for practice change. The aim of this study was to understand how Australian doctors, nurses and pharmacists ('clinicians') currently treat delirium, and how their practice has changed following publication of the new evidence.

Methods

An online survey was developed by investigators with medical, nursing, pharmacy and statistical expertise,

piloted with 11 representative clinicians, and then revised accordingly. The final brief survey contained closed and open-ended items on respondents' demographics, frequency of encountering a new patient with delirium, current practice in delirium treatment, practice change and practice influencers. We asked 20 relevant professional organisations to distribute invitations to participate to their memberships, with 15 doing so via newsletters or email distribution lists. A priori outcomes will be proportion of respondents reporting practice change in delirium treatment, characteristics of their current practice, and factors that influenced them to align practice with evidence. Descriptive statistics will be used to summarise responses, with free-text to be independently categorised by two researchers according to guideline recommendations (practice) and a behaviour change theoretical framework (influencers of practice). A multinomial logistic regression model at 95% confidence interval will be used to identify associations between i) practice change and ii) respondent characteristics and factors influencing practice.

Results

The survey opened in April and closes July 31, 2019. To date, 579 clinicians (85 doctors, 30 nurse practitioners, 436 registered nurses, 28 pharmacists) working across geriatric, psychiatric, medical, surgical, primary, oncology, respiratory, emergency, burns, maternity, rehabilitative, palliative, critical and residential aged care have participated. Data will be analysed in August and results reported at the EDA meeting.

Conclusions

Results will inform ongoing research and translation to progress interdisciplinary practice in the treatment of delirium.

Friday 6 September

Session 6 – Plenary Session D

11.10 KEYNOTE LECTURE

The EEG in delirium: where are we now in clinical practice and research?

Professor Arjen Slooter

Professor of Intensive Care Neuropsychiatry, Utrecht

Prof Arjen Slooter MD PhD is Professor of Intensive Care Neuropsychiatry at University Medical Center Utrecht, The Netherlands. He is current President of the European Delirium Association.

Prof Slooter and colleagues have been working on EEG as a means of assessing brain activity in delirium for more than 10 years. They have shown that during delirium, EEG shows distinct features, including an increase of slow activity, and a decrease of brain network strength and integration. EEG can aid in resolving unanswered research



questions about the pathophysiology of delirium. Objective delirium detection and monitoring can be performed with a brief, one-channel EEG recording. Prof Slooter will provide a state of the art talk on EEG in delirium, giving insights into recent scientific advances and clinical use of the EEG in delirium care.

Session 7 – Parallel Session D

An Ounce of Prevention is Worth a Pound: Implementing a Comprehensive Delirium Care Program at a University Hospital

Dr Vanja Douglas

Sara & Evan Williams Foundation Endowed Neurohospitalist Chair
Associate Professor of Clinical Neurology
University of California, San Francisco, USA

Randomized studies demonstrate that up to a third of delirium cases acquired in the hospital can be prevented through a multicomponent, non-pharmacologic intervention. This intervention is also one of the mainstays of delirium treatment. However, multicomponent delirium prevention and treatment requires a significant commitment of resources. Hospitals considering whether to devote capital to delirium prevention and treatment want to understand how to best target those resources and whether they can expect a return on their investment. I will describe our experience implementing a comprehensive delirium care program at the University of California, San Francisco Medical Center. The program was based on the concept that multicomponent interventions should be delivered only to patients at high risk of delirium and those with active delirium. Therefore, we implemented a delirium risk assessment upon admission using the AWOL score and delirium screening by the bedside nurse once per shift using the nursing delirium screening scale in all patients. High risk patients and those with delirium received an inter-professional multicomponent intervention involving bedside nurses; patient care assistants; pharmacists; physical, occupational, and speech therapists; and physicians. This project spanned two years and required a relatively small investment on the part of the health system, but, for general medicine patients, resulted in a significant reduction in length of stay and hospital cost that more than justified the Medical Center's investment.

Delirium in hospice care: quality improvement projects

Dr Juliet Spiller

Consultant in Palliative Medicine
Marie Curie Hospice, Edinburgh

Delirium is one of the most common and serious neuropsychiatric complications in the specialist palliative care setting with prevalence studies showing that 13%–42% of patients admitted to these inpatient units have delirium. There is evidence that delirium in this population is frequently missed or misdiagnosed as fatigue or depression making routine screening a priority for these settings. Despite medical and nursing education

programmes about delirium, levels of engagement with screening were low and inconsistent in our Edinburgh hospice.

A quality improvement (QI) approach (PDSA: Plan, Do, Study, Act) was used to improve cognitive assessment on admission to a hospice inpatient unit by: (1) determining staff preference between the Short CAM and the four 'A's Test (4AT) and (2) using PDSA cycles to embed the preferred tool into the admission process while continuing to assess usability and completion rate.

Increased delirium identification from this QI project resulted in nursing staff highlighting a practice gap with regards to non-pharmacological management and a lack of information for families of inpatient hospice patients who were admitted with or developed delirium. A further QI project was undertaken to develop a carer information booklet that could be given to families as part of a more structured approach to non-pharmacological management of delirium on the unit.

Both of these QI initiatives will be outlined in the session and the benefits of a QI approach for enabling and embedding practice change will be discussed.

Baird L, Spiller JA. A quality improvement approach to cognitive assessment on hospice admission: could we use the 4AT or Short CAM? *BMJ Open Quality* 2017;6:e000153. doi:10.1136/bmjopen-2017-000153

Session 7 – Parallel Session E

Establishing and improving an interdisciplinary and multidisciplinary care for delirium across Europe?

Dr Alessandro Morandi

Consultant in Geriatric Medicine, Department of Rehabilitation, Fondazione Camplani Casa di Cura, Cremona, Italy

Recent guidelines underline the importance of multicomponent nonpharmacological approach for the prevention and treatment of delirium. Inouye and colleagues(1) twenty years ago showed how multicomponent approach was effective in reducing the incidence of delirium. However, it is currently not clear how and when all the professional should be involved in this process. For instance there is not a clear consensus on the involvement of occupational therapists and physical therapists. In this symposium we have involved a delirium society (European Delirium Association, EDA), a geriatrics society (European Geriatric Medicine Society, EuGMS), a nursing society (European Academy of Nursing Science, EANS), an occupational therapy society (Council of Occupational Therapists for European Countries, COTEC), and a physiotherapy society (International Association of Physical Therapists working with Older People of the World Confederation for Physical Therapy, IPTOP/WCPT) to establishing a path to improve the application of the



multicomponent nonpharmacological approach for the management of delirium.

1 Inouye SK, Bogardus ST, Jr., Charpentier PA, Leo-Summers L, Acampora D, Holford TR, et al. A multicomponent intervention to prevent delirium in hospitalized older patients. *The New England journal of medicine*. 1999;340(9):669-76

The role of nursing care in the multidisciplinary management of delirium

Dr Elke Detroyer

Research Fellow, Academic Centre for Nursing and Midwifery, KU Leuven, Belgium
Department of Geriatric Care, University Hospitals Leuven, Belgium

Evidence recommends to manage delirium with multicomponent intervention strategies addressing risk factors, detecting early signs and treating underlying causes. The management of delirium concerns the entire healthcare team. Yet, because of the continuous contacts with patients, nurses play a pivotal role in its prevention, detection and treatment. Despite the investments being made in delirium research, the syndrome remains poorly prevented and frequently unrecognized or misdiagnosed in daily practice.

The talk will give an overview of nursing care in delirium management, including prevention (i.e. risk patients), detection (i.e. screening tools), treatment and follow-up care; and will offer ingredients to them working in clinical practice.

Emerging evidence in occupational therapy in delirium care

Ms Christian Pozzi

Occupational Therapist
University of Applied Sciences and Arts of Southern Switzerland

I will present the current scientific evidence in occupational therapy and care of people with delirium in different settings (Schweickert 2009, Alvarez 2017, Pozzi 2017). The specificity of the occupational therapist (evaluation, rehabilitation procedures in occupational therapy) will be described and the scientific work that the community of occupational therapists is concluding this year will be presented. Finally, the correct modalities of inclusion of the occupational therapist in the interdisciplinary team will be analysed.

Main References:

William D Schweickert et al, "Early physical and occupational therapy in mechanically ventilated, critically ill patients: a randomised controlled trial" *Lancet* 2009; 373: 1874–82
[Álvarez EA](#) et al, "Occupational therapy for delirium management in elderly patients without mechanical ventilation in an intensive care unit: A pilot randomized clinical trial" *J Crit Care*. 2017 Feb;37:85-90.

C. Pozzi et al "Preliminary Evidence of a Positive Effect of Occupational Therapy in Patients With Delirium Superimposed on Dementia" *J Am Med Dir Assoc*. 2017 Dec 1;18(12):1091-1092.

Healthcare improvement Scotland "Risk reduction and management of delirium. A national clinical guideline" March 2019

The future of the multidisciplinary and interdisciplinary collaboration of delirium care across Europe

Dr Bjørn Erik Neerland

Senior Consultant and Postdoctoral Research Fellow
Oslo Delirium Research Group
Dep of Geriatric Medicine, Oslo University Hospital
P.B 4956 Nydalen, N-0424 Oslo

"Multicomponent, nonpharmacological approaches are recommended for the prevention and treatment of delirium, in addition to diagnosis and treatment of the underlying causes. Key components to address are immobilization, poor nutrition, dehydration, sensory impairment and cognitive impairment, pain, polypharmacy and sleep disturbances. Optimal delirium care requires an interdisciplinary collaboration involving doctors, nurses, physiotherapists and occupational therapists (and may sometimes also involve other staff members). However, implementation of guidelines and coordinated interdisciplinary interventions are challenging.

This talk will suggest and discuss some actions that can be taken locally, nationally and internationally, to improve the future interdisciplinary collaboration of delirium care. This includes inter-professional educational activities, shaping attitudes to delirium across health care settings, raising awareness and knowledge in society and among health care personnel, as well as organizational approaches."

Session 7 – Parallel Session F

13.30 An exploration of factors impacting on the nurse's decision to restrain a delirious patient on the critical care unit

Sarah A Smith (1), Michael N Black (2), Angela Teece (1), a.m.teece@leeds.ac.uk, Professor John Baker (1), Dr Helen Smith (1)

(1) University of Cambridge, Cambridge, England
(2) Queen Elizabeth University Hospital, Glasgow, Scotland



Introduction

In critical care, delirious and agitated patients are at risk of disrupting life-sustaining therapies, for example, dislodging an endotracheal tube or vascular access devices. Chemical or physical restraint are often cited by staff as the main method of preserving patient safety. However, the efficacy of restraint in improving patient safety is unproven and its use is associated with impaired long-term recovery. In addition, critical care nurses have expressed confusion regarding the lack of precise language to describe restraint, and the challenge of objectively quantifying the point at which restraint could become clinically appropriate. This study aims to explore factors impacting on the nurses' decision to restrain a delirious patient in critical care.

Methods

Integrative review.

Results

Seven health sciences databases were searched to identify published and grey literature, with additional hand-searching. The systematic deselection process followed PRISMA guidance. 23 studies were included. Four main themes were identified: The lack of standardised practice; patient characteristics associated with restraint use; the struggle in practice; the decision to apply restraint.

Conclusions

There are wide variations in physical and chemical restraint use despite the presence of international guidance. Nurses are the primary decision-makers in applying restraint and report that caring for delirious patients is physically and psychologically challenging. They experienced a lack of support from medical colleagues, which could lead to conflict around the decision to restrain. The nurses' decision can be influenced by the working environment, previous adverse events, patient behaviours and the presence of devices. Subjective descriptors of patient behaviour are used to rationalise restraint use despite the presence of validated sedation level assessment tools. Guidelines, where present, are not always adhered to. Enhanced clinical support and education for nurses is indicated, together with further research into potential modifiable factors leading to the decision to restrain.

13.40 Do health care professionals worry about delirium? Relatives' experience of delirium in the intensive care unit:

A qualitative interview study

Søs Bohart (1) Sos_bohart@hotmail.com,
Ann Merete Møller (1), Suzanne Forsyth Herling (2)

Introduction

In intensive care units, there is a high incidence of delirium, which relates to the risk of complications. Engagement of relatives is an acknowledged part of handling delirium, but knowledge of relatives' perspectives is lacking. The aim of the study was to explore relatives' experiences of delirium in the critically ill patient admitted to intensive care unit.

Methods

A qualitative design with a phenomenological approach. Semi-structured interviews were conducted with 11 relatives in an

Intensive Care Unit in Denmark. The Method of analysis was based on systematic text condensation by Malterud.

Results

Three categories emerged: "Delirium is not the main concern", "communication with health-care professionals is crucial", "Delirium impacts on relatives". Symptoms of delirium were thought of as a natural consequence of critical illness and seemed to be a secondary problem. Health-care professionals did not talk about delirium and information was requested. Delirium and the manifestation of it was experienced in different ways and brought different ways of coping. Uncertainty of possible long-term consequences after hospital admission appeared.

Conclusions

Studies of relatives in non-ICU's concurs with findings in the present study in relation to lack of understanding delirium, differences in manifestation of deliriums, and the need for more information. Unlike the present study, relatives in non-ICU's had delirium as a central worry and had major concerns of the long-term consequences. This gave an indication that focus is moving when the patient is out of the life-threatening situation in ICU. Findings give a new insight into relatives' experience of delirium in intensive care unit. Relatives need more information to better understand delirium. Future research must investigate the potential in helping relatives to cope with delirium, to the benefit of both patient and relatives.

13.50 Defining Delirium Symptom Phenotypes based on Core Diagnostic Features in an ICU Cohort

Heidi Lindroth (1,2,5) hlindrot@iu.edu, Sujuan Gao (3), Janet Carpenter (4), Sikandar Khan (1,5), Sophia Wang (3,6,7), Malaz Boustani (2,5,7), Babar Khan (1,5,7)

(1) Indiana University, School of Medicine, Division of Pulmonary, Critical Care, Sleep, and Occupational

Medicine, Department of Medicine, Indianapolis IN

(2) Indiana University, School of Medicine, Center for Health Innovation and Implementation Science,

Regenstrief Institute, Indianapolis IN

(3) Indiana University, School of Medicine, Department of Biostatistics, Indianapolis IN

(4) Indiana University, School of Nursing, Indianapolis IN

(5) Center for Aging Research, Regenstrief Institute, Indianapolis IN

(6) Indiana University, School of Medicine, Department of Psychiatry, Indianapolis IN

(7) Sandra Eskenazi Center for Brain Care Innovation, Eskenazi Hospital, Indianapolis, IN

Abstract not published at authors' request.

14.00 Comparison of Regional Anaesthesia with General Anaesthesia on Postoperative Delirium in



the Older Patients undergoing Hip Fracture Surgery: Multi-centre Randomised Controlled Trial – RAGA Trial

Ting Li (1), Jun Li (1), Liyong Yuan (4), Chenchen Jiang (1),
Rainikant Mehta (2), Thomas Jackson(2,3), Fang Gao Smith(1,2,3)
F.GaoSmith@bham.ac.uk

(1) The 2nd Affiliated Hospital of WMU, Wenzhou, China
(2) University of Birmingham, Birmingham, England
(3) University Hospitals of NHS Foundation Trust, Birmingham, England
(4) Ningbo No.6 Hospital, Ningbo, China

Abstract not published at authors' request.

14.10 Measurements of sympathetic autonomic level in stroke patients and delirium

Jannik Stokholm (1,2) jannik.stokholm.01@regionh.dk,
Claudio Csillag (2,3), Troels W Kjær (2,4) and Thomas Christensen (1,2)

(1) Nordsjællands Hospital - Hilleroed, Dept. of Neurology, Hilleroed, Denmark (Test site)
(2) Department of Clinical Medicine, University of Copenhagen, Denmark
(3) Mental Health Centre North Zealand, Hilleroed, Denmark
(4) Zealand University Hospital, Dept. of Neurology – Center for Neurophysiology, Roskilde, Denmark

Introduction

Delirium is a common complication in acute stroke. Stroke may be connected to a shift to sympathetic dominance in the autonomic regulation. Autonomic dysfunction may impact several higher brain functions and we therefore hypothesize that subtle changes in sympathetic regulation may be linked with manifest delirium in acute stroke patients.

Methods

We enrolled patients admitted with acute ischemic stroke to the Acute Stroke Ward at Nordsjællands Hospital, Denmark. Patients were screened for delirium using the CAM on a daily basis. The sympathetic level was estimated up to two times daily. We measured electrical finger skin conductance level (SCL, in μ Siemens (μ S), pupillometry (T75, time to reach 75% of initial pupil diameter after light stimulus, in seconds(sec)) and facial thermography (average of 7 regions of interest in each side of the face, in degrees Celsius ($^{\circ}$ C)). Data was analysed using linear mixed models.

Results

Sixty-four patients were included in this prospective cohort study and eight patients had a positive CAM at least once during their hospitalization. The mean age was 70.0 (SD 9.8) years and the median *National Institute of Health Stroke Scale (NIHSS)* score at enrolment was 2 (IQR [1;5]). The preliminary linear mixed models show that a positive CAM score was correlated with SCL (estimate 0.3 μ S, 95%CI [0.2;0.5], $P=0.0269$), but not with neither T75 (estimate 0.2 sec, 95%CI [-0.5;0.8], $P=0.5638$) nor facial thermography on either side (right; estimate -0.3° C, 95%CI [-

0.8;0.2], $P=0.1961$; left; estimate -0.4° C, 95%CI [-0.9;0.1], $P=0.1031$).

Conclusions

In this small sampled ($n=64$) prospective cohort study we found in preliminary linear mixed models a small but significant correlation between an increased electrical finger skin conductance and a positive CAM score. This could indicate that stroke patients in the future would benefit from SCL monitoring to avoid development of delirium.

14.20 In vivo monitoring of cholinergic neurotransmission: Validating a hypocholinergic mouse model

Seán Doyle (1) sean.a.doyle@mu.ie, Michelle M Doran (1),
Keeley L Baker (1), Colm Cunningham (2) and John P Lowry (1)

(1) Maynooth University, Maynooth, Ireland
(2) Trinity College Dublin, Dublin, Ireland

Introduction

Prior neurodegenerative pathology and existing cognitive impairment are strong predisposing risk factors for delirium. Preclinical animal models which replicate aspects of existing pathology are highly useful in gaining an understanding of the pathophysiological mechanisms associated with delirium. Selective lesioning of the basal forebrain, a major source of cholinergic neurons, depletes cholinergic tone and decreases neurotransmission (hypocholinergia) in projected regions, a key feature of Alzheimer's disease. Here we validate a hypocholinergic mouse model using implantable microelectrochemical biosensors selective for choline, a verified marker of cholinergic neurotransmission.

Methods

Enzymatic choline biosensors were stereotaxically implanted in the medial prefrontal cortex (mPFC) and contralateral dorsal hippocampus (dHPC) of female C57Bl6J mice. Selected mice were administered intracerebroventricular injections of control PBS or murine p75-saporin immunotoxin (p75-sap; 1.2 μ g bilateral) to induce selective lesioning in the basal forebrain. Following recovery, mice were singly housed in sampling cage systems under a 12-hour light/dark cycle. Choline current was continuously recorded over several days.

Results

Real-time choline current recordings revealed circadian fluctuations in non-lesioned mice, with extracellular choline levels highest during light phases. Circadian fluctuations were also evident in p75-sap lesioned mice. Administration of pharmacological compounds known to induce central acetylcholine release, scopolamine (1mg/kg) and amphetamine (4mg/kg), evoked a robust increase in choline current in non-lesioned mice. Similarly, the induction of systemic inflammation (LPS; 500 μ g/kg), an important trigger for delirium, evoked a transient rise in central choline levels in both regions. However, LPS did not significantly alter the diurnal rhythm of tonic choline



levels. In lesioned animals, the scopolamine/amphetamine-evoked cholinergic response was dramatically attenuated. Similarly, preliminary data indicates that the LPS-induced rise in choline is also reduced when superimposed on lesioned mice.

Conclusions Selective lesioning of the basal forebrain with p75-sap attenuates cholinergic responses in projected regions.

14.30 Incidence rates of CNS drug-induced delirium – Results of AMSP – a drug surveillance program between 1993 and 2016

Michaela-Elena Friedrich

Vienna North Hospital, Austria

Abstract not published at authors' request.

14.40 Decreasing Delirium through Music: A Feasibility Trial

Sarah A Smith (1), Michael N Black (2), etc.

Sikandar H Khan (1) sikhan@iu.edu, Chenjia Xu (1), Heidi Lindroth (1), Sophia Wang (1), Sujuan Gao (1), Annie Heiderscheidt (2); Linda Chlan (3), Babar A. Khan (1)

(1) Indiana University School of Medicine, Indianapolis, Indiana, USA

(2) Augsburg University, Minneapolis, Minnesota, USA

(3) Mayo Clinic, Rochester, Minnesota, USA

Introduction

The management of ICU delirium remains challenging due to a lack of effective therapies. Due to its relaxing and sedative-sparing properties, music may be a promising non-pharmacological intervention. The objective of this study was to determine feasibility and acceptability of personalized vs. slow-tempo music vs. attention-control in mechanically ventilated (MV) ICU patients, and to estimate the effect of music on delirium.

Methods

We conducted an RCT with blinded outcome assessments at an academic medical-surgical ICU. Inclusion criteria: Adult (≥ 18 years), English-speaking patients on MV for at least 24 hours. Exclusion criteria: Duration of MV longer than 48 hours at time of enrolment, acute neurologic injury, dementia, coma after cardiac arrest, alcohol/drug intoxication, pregnant/nursing, or incarcerated, or primary team refusal. Patients were randomized to personalized music (PM) vs. slow-tempo relaxing music (STM) vs. attention-control audiobook (AC) with twice daily, one-hour long sessions up to 7 days while in the ICU using noise-cancelling headphones and mp3 players. Delirium and delirium severity were assessed twice daily using the CAM-ICU and CAM-ICU-7. Between-group differences were analysed using the Fisher's exact test.

Results

We screened 1589 patients, 117 (7.4%) were eligible, 56 consented (48%), and 52 (44%) were randomized, with a recruitment rate of 5 patients per month. Adherence was higher

in the music arms (PM: 80%, STM: 80%, AC: 30%, $p=0.01$), and 80% of patients surveyed rated music enjoyable.

Median delirium/coma free days by day 7 were: PM: 2 [IQR: 1-6], STM: 3 [IQR: 1-6], AC: 2 [IQR: 0-3], $p=0.32$.

Median delirium severity measured by CAM-ICU-7 for each group was: PM: 5.5 [IQR: 1-7], STM: 3.5 [IQR 0-7], AC: 4 [IQR: 1-6.5], $p=0.78$.

Conclusions

Music delivery is acceptable to patients and is feasible in the ICU environment. Further research testing this promising intervention to reduce delirium is warranted

14.50 Comparisons of interventions to prevent delirium in critically ill patients: A network meta-analysis

Lisa Burry (1) lisa.burry@sinaihhealthsystem.ca, Brian Hutton (2), Wei Cheng (2), David Williamson (3), Neill Adhikari (4), Sangeeta Mehta (1), Ingrid Egerod (5), Salmaan Kanji (2), David Moher (2), Claudio Martin (6), Louise Rose (7)

(1) Mount Sinai Hospital and University of Toronto, Toronto, Canada

(2) Ottawa Hospital and University of Ottawa, Ottawa, Canada

(3) Hopital du Sacre Coeur de Montreal and Universite de Montreal, Montreal, Canada

(4) Sunnybrook Hospital and University of Toronto, Toronto, Canada

(5) Rigshospitalet and University of Copenhagen, Copenhagen, Denmark

(6) Western University, London, Canada

(7) King's College London

Introduction

Relative effectiveness of various interventions to prevent ICU delirium remains unclear. We conducted a systematic review (SR) and network meta-analysis (NMA) to assess effects of interventions on delirium occurrence and clinical outcomes (e.g., duration of mechanical ventilation, ICU and hospital stay, mortality).

Methods

We used established Cochrane SR and NMA methods to identify, assess bias, and analyze RCTs of any intervention applied to prevent ICU delirium in adults. RCTs evaluated pharmacologic (e.g., antipsychotics, melatonin, daily sedation interruption) and non-pharmacologic (e.g., mobilization, music) interventions. Treatment effects for continuous outcomes were summarized as ratios of means (RoM = $\text{mean}[\text{experimental}]/\text{mean}[\text{control}]$); binary endpoints were summarized as odds ratios (OR) (95% Credible Intervals (CrI)). We included interventions connected to the evidence network with ≥ 2 studies and performed conventional pairwise meta-analyses, NMA within a Bayesian framework and random-effects models. For NMAs, we estimated the probability of each intervention to be the best, surface under the cumulative ranking curve values, and mean rank.



EDA/SDA/RCPE Delirium Teaching Day
4 September 2019

Delirium Association/Royal College of Physicians of Edinburgh
Joint Conference on Delirium
5 and 6 September 2019



Results

We screened 7674 citations; 36 eligible trials (11,530 participants) contributed to the analysis of delirium occurrence with 11 pharmacological interventions connected to the evidence network (no non-pharmacological interventions connected). Only dexmedetomidine reduced delirium occurrence (OR 0.44, CrI 0.21 to 0.88, high-quality evidence) and ICU length of stay (RoM 0.78, CrI 0.64 to 0.97, high-quality evidence) (20 trials, 9,131 participants). Hospital length of stay (20 trials; 9131 participants) was reduced by opioids (RoM 0.47, CrI 0.27 to 0.81, high-quality evidence), sedative interruption (RoM 0.64, CrI 0.41 to 1.00, moderate-quality evidence), dexmedetomidine (RoM 0.65, CrI 0.52 to 0.83, high-quality evidence) and protocolized sedation (RoM 0.68, CrI 0.47 to 0.98, moderate-quality evidence). No intervention altered mechanical ventilation duration (21 studies, 4,940 participants), or mortality (23 studies, 10,578 participants).

Conclusions

Dexmedetomidine was the only effective intervention for preventing ICU delirium and reducing ICU length of stay.



Poster Summary

Poster Board	Title of Abstract	Authors	Day
1	Defining Methodological and Best Practice for Studies of Biological and Clinical Correlates of Delirium: An International Modified Delphi Study	<u>Ingrid Amgarth-Duff</u> , Annmarie Hosie , Gideon Caplan, Meera Agar	Thursday
2	Delirium and frailty: outcomes from consecutive patients with abnormal 4A's Test (4AT) score on hospital admission	<u>Miriam Veenhuizen</u> , April Covington, Nicholas L Mills, Will Whiteley, Alasdair MJ MacLulich , Susan D Shenkin, Atul Anand	Thursday
3	Preliminary Validation of the 4AT in a Specialist Palliative Care Inpatient Unit: Study protocol	<u>Liz Arnold</u> , Anne Finucane, Juliet Spiller, Alasdair MacLulich	Thursday
4	Cognitive assessment: can the hospital palliative care team perform this routinely?	<u>Lucy Baird</u> , Deirdra Sives, Angela Bentley	Thursday
5	Implementation of the palliative care version of the Richmond Agitation-Sedation Scale: A quality improvement project	<u>Shirley H. Bush</u> , Kasia Bronicki,, Michel Dionne, Marie-Claude Legacy, Mario DaPonte,, Monisha Kabir	Thursday
6	Validated Delirium Screening Tools in Palliative Care: A Systematic Review	Mary Scott, Colleen Webber, <u>Shirley H. Bush</u> , Christine Watt, Lindsey Sikora, Monisha Kabir, Jason W. Boland, Rebecca Woodhouse, Peter G. Lawlor	Thursday
7	The occurrence and timing of delirium in acute care hospitalizations in the last year of life: A population-based retrospective cohort study	Colleen Webber, Mary Scott, Christine Watt, <u>Shirley H. Bush</u> , Peter Lawlor, Monisha Kabir, Rob Talarico, Peter Tanuseputro	Thursday
8	Development of delirium is associated with consumption of antipsychotic and anti-dementia drugs	<u>Sif Blandfort</u> , Merete Gregersen, Kirsten Rahbek, Svend Juul, Else Marie Damsgaard	Thursday
9	Impact of Delirium Education on a Medical-Surgical Unit	<u>Tru Byrnes</u>	Thursday
10	Evaluation of circulating miRNA in serum samples of delirium patients in acute geriatric medical setting: insights on the inflammatory hypothesis of delirium	Patrícia Regueira, <u>Ana Rita Silva</u> , Ana Luísa Cardoso, Elisabete Albuquerque, Fabiana Ventura, Mário Carneiro, Inês Baldeiras, Isabel Santana, Joaquim Cerejeira	Friday
11	Evaluation of prevalence of delirium in acute geriatric admissions across the years: considerations on the diagnostic bias and delirium subtypes	<u>Ana Rita Silva</u> , Patrícia Regueira, Ana Luísa Cardoso, Elisabete Albuquerque, Inês Baldeiras, Isabel Santana, Joaquim Cerejeira	Friday



Poster Board	Title of Abstract	Authors	Day
12	Risk factors for long-term cognitive impairment in acutely admitted intensive care patients - a multicentre prospective cohort study	<u>Marie O Collet</u> , Ingrid Egerod, Thordis Thomsen, Helle L Nibro, Jørn Wetterslev, Theis Lange, Bjørn H Ebdrup, Anders Perner	Thursday
13	Delirium recognition at the end of life	<u>Katie Darby-Villis</u> , Mark Lee	Thursday
14	Shifting the focus: A QI Project to Improve the Management of Delirium in Patients with Hip Fracture	<u>L Dormandy</u> , S Mufti , E Higgins, M Dixon, C Bailey	Thursday
15	Brain atrophy in patients with and without delirium in older acute medical admissions aged 65 and over: preliminary results from a retrospective CT study	<u>Karen J Ferguson</u> , Daniel Levin, Alasdair MJ MacLulich, Joanna M Wardlaw, Bruce Guthrie, Peter T Donnan, Emma L Reynish, Vera Cvoró	Thursday
16	The distribution of CT white matter lesions (WML) in patients with and without delirium in acute medical admissions aged 65 and over: preliminary results of a retrospective study	<u>Karen J Ferguson</u> , Daniel Levin, Alasdair MJ MacLulich, Joanna M Wardlaw, Bruce Guthrie, Peter T Donnan, Emma L Reynish, Vera Cvoró	Thursday
17	The distribution of old and new infarcts and other lesions in patients with and without delirium in acute medical admissions aged 65 and over: preliminary results from a retrospective study	<u>Karen J Ferguson</u> , Daniel Levin, Alasdair MJ MacLulich, Joanna M Wardlaw, Bruce Guthrie, Peter T Donnan, Emma L Reynish, Vera Cvoró	Thursday
18	Delirium Team Briefing Implementation of a communication tool that enables health care teams to optimize delirium care	<u>Claudia Eckstein</u> , Heinrich Burkhardt	Thursday
19	A Delirium Severity Tool for Critical Care (CC) : Validation of the Delirium Rating Scale -R98 (DRS-R98)	Eiman Almuhairi, Monica Badejo, Mervi Pitkannen, Anessa Peers, Graham Davies, David Taylor, <u>Cathrine A. McKenzie</u>	Thursday
20	Evidence that the Heightened Vulnerability of the Pre-Adolescent & Elderly Populations to Anesthesia-Triggered Delirium is Linked to Increased Blood-Brain Barrier Permeability	<u>George A. Godsey II</u> , Hana Choi, Nimish K. Acharya, Mary C. Kosciuk, Robert G. Nagele	Thursday
21	Detecting Neurocognitive Impairment: A Comparison of Clinical Routine Data versus Structured Assessments	<u>Olga Muser</u> , Kevin Seiler, Wolfgang Hasemann	Thursday
22	Every fourth patient 65+ suffers from delirium during hospital admission – a call for a validated screening program	<u>Irene Instenes</u> , Hege A. Amofah, Leslie Eide, Nina Fålun, Trond Pettersen, Anette H. Ranhoff, James Rudolph, Ole Martin Steihaug, Tone M. Norekvål	Thursday
23	Continuation of antipsychotic medications in critically ill patients: a single-centre retrospective review.	<u>Zebun Nahar</u> , Prina Rajani, Jignna Patel, Valerie Page	Thursday



EDA/SDA/RCPE Delirium Teaching Day
4 September 2019

Delirium Association/Royal College of Physicians of Edinburgh
Joint Conference on Delirium
5 and 6 September 2019



Poster Board	Title of Abstract	Authors	Day
24	An audit of the 4AT & TIME bundle as part of the Delirium Ambassador Programme at the Queen Elizabeth University Hospital	<u>Andrew M Richardson</u>	Thursday
25	Team Approach toward Postoperative and ICU Delirium Care and Challenges	<u>Fumiko Ishimitsu</u>	Friday
26	Recognition, diagnosis and management of delirium in a palliative care setting	Ann Williams, <u>James Killeen</u> , Alison Roberts	Thursday
27	The role of preoperative serum inflammatory markers (NLR, PLR, PWR and CRP) as biomarkers of postoperative delirium in cardiac surgery.	<u>Katarzyna Kotfis</u> , Justyna Ślózowska, Krzysztof Safranow, Maciej Żukowski, Aleksandra Szylińska, Mariusz Listewnik	Friday
28	Improving Delirium recognition in 2 East	<u>Tilda McCrimmon</u>	Friday
29	Raising Delirium awareness in the North East of England the Story of MELISSA & ERIC	<u>Mani Santhana Krishnan</u> , Namita Kumar, Jill Cassells	Thursday
30	Role of Delirium clinic – A Project to identify people at risk of developing dementia and improving the awareness of people at risk – 4 Years on what have we learnt?	<u>M Santhana Krishnan</u> , Jacqui Straughan, Lisa Parker,	Thursday
31	Investigating the composition of monocyte subpopulations and effector function in delirium	<u>Hannah C Moorey</u> , Thomas A Jackson	Friday
32	Exploring Danish Critical care nurses' knowledge of delirium and delirium assessment, a survey	<u>Camilla B Mortensen</u> , Nina C Ranberg-Andersen, Jens P Laigaard, Marie O Collet, Ingrid Egerod	Friday
33	Understanding delirium in Australian acute care: results from a medical record review to assess compliance with the Delirium Clinical Care Standard	Virginia Mumford, <u>Mary Ann Kulh</u>	Friday
34	Delirium in patients undergoing hip surgery: A prospective observation study from Karachi, Pakistan.	<u>Shireen Najam</u> , Tania Nadeem, Muhammad Zaman Khan	Friday
35	Fatty acid-binding protein 3 in cerebrospinal fluid of hip fracture patients with delirium and of cognitively healthy controls	<u>Bjørn Erik Neerland</u> , Kaj Blennow, Henrik Zetterberg, Leiv Otto Watne	Friday
36	Changing the Culture of Dementia Care in Hospitals: evaluation of the Italian edition of Best Practice in Dementia Care Learning Programme designed for healthcare staff working in hospitals	<u>Andrea Fabbo</u> , Francesca Neviani, Rontauroli Caterina	Friday
37	Evaluating delirium management in critical care at West Middlesex Hospital	<u>Chitra Sanjel</u>	Friday



EDA/SDA/RCPE Delirium Teaching Day
4 September 2019

Delirium Association/Royal College of Physicians of Edinburgh
Joint Conference on Delirium
5 and 6 September 2019



Poster Board	Title of Abstract	Authors	Day
38	Delirium in nursing homes – incidence and risk factors for delirium in nursing home patients	<u>Wenche Helen Skretteberg</u> , Ingunn Holmefoss Hovland, Leiv Sandvik, Maria Krogseth	Friday
39	A carer intervention to improve support for patients with delirium in a palliative care inpatient setting: A quality improvement approach	<u>Max Fend</u> , Juliet Spiller, Anne Finucane	Friday
40	Polypharmacy as a risk factor for delirium: a large population-based longitudinal record linkage study	<u>Lucy E Stirland</u> , Tom C Russ, Craig W Ritchie, Graciela Muniz Terrera	Friday
41	Patients' experiences with delirium assessments	<u>Helle Svenningsen</u> , Dorte Sørensen	Friday
42	Using audio-visual vignettes to explore how nurses make the decision to restrain a delirious patient on the critical care unit.	Sarah A Smith, Michael N Black, <u>Angela Teece</u> , John Baker, Helen Smith	Friday
43	A retrospective case-note analysis investigating the management of diagnosed delirium in patients on Medicine of the Elderly wards	<u>Sarah Train</u> , Alexandra Peterson, Emma Marshall, Susan Shenkin, Alasdair MacLulich	Friday
44	Comparison of brief clinical delirium and cognitive testing amongst patients admitted via the trauma and orthopaedic (T&O) acute intake: A service evaluation on the clinical dependence, efficacy and accessibility of implementing Gwent Orientation and Awareness Listing (goal) testing in relation to the 4AT at the Royal Gwent Hospital Newport	<u>Jack Wellington</u> , Alexander Eggleton, Reem Naji, Inderpal Singh, Miles Allison	Thursday
45	A feasibility randomised controlled trial to compare regional versus general anaesthesia in reducing delirium in patients with hip fractures (REGARD)	<u>Joyce Yeung</u> , Keith Couper, Rebecca Kearney, Ranjit Lall, Iain Moppett, Thomas Jackson, Philip Bell, Gavin Perkins	Friday
46	Interventions for preventing delirium in older people in institutional long-term care: Cochrane Systematic Review	<u>Rebecca Woodhouse</u> , Jennifer K Burton, Namrata Rana, Yan Ling Pang, Jennie E Lister, Najma Siddiqi	Friday
47	Screening for Delirium: Protocol for a survey of delirium screening practice in specialist palliative care units in the UK	Rebecca Woodhouse, Miriam Johnson, Jason W Boland, Imogen Featherstone, Najma Siddiqi	Friday



Poster Abstracts

1 Defining Methodological and Best Practice for Studies of Biological and Clinical Correlates of Delirium: An International Modified Delphi Study

Ingrid Amgarth-Duff (1),
Ingrid.amgarth-duff@uts.edu.au

Annamarie Hosie (1), Gideon Caplan (2,3), Meera Agar (1,3).

- (1) University of Technology Sydney, Australia
- (2) Prince of Wales Hospital, Randwick, Sydney, Australia
- (3) University of New South Wales, Sydney, Australia

Introduction

Despite the prevalence and impact of delirium, knowledge of its pathophysiology is largely hypothetical. Better understanding of delirium pathophysiology is crucial for more effective prevention and treatment. Improving understanding of delirium pathophysiology requires robust scientific methodology of delirium biomarker research.

Reporting guidelines for delirium biomarker studies would contribute to improved methodological and reporting rigor in this field of research. We therefore sought to obtain consensus from expert delirium researchers to develop a standardised method to report delirium biomarker studies.

Methods

A three-round online Delphi was used to establish consensus among international delirium researchers. In round 1, participants were provided with open-ended questions about delirium biomarker research, based on results from a prior systematic review and the REMARK checklist (a reporting guideline for tumor marker studies). Round 1 responses were qualitatively analysed using content analysis and closed statements were developed. In round 2, participants ranked the importance of each of the Delphi items using a 5-point Likert scale. *A priori*, consensus was defined as $\geq 70\%$ participant agreement. Round 2 items that did not reach a consensus were re-presented to participants for ranking in round 3. Descriptive statistics for each item were computed including the mean Likert scores, standard deviation (SD), and median participant scores.

Results

28 participants completed round 1, which contained 20 open-ended questions. Round 1 responses were grouped and reduced to 56 statements for round 2. 16 participants completed round 2, and 19 completed round 3, with a total of 32 participants who completed at least one round. 60 items reached consensus, and were subsequently 'included'; 8 did not reach a consensus, and were excluded.

Conclusions

These findings provide the groundwork for the development of reporting guidelines for delirium biomarker research, with the goal of improving reporting rigor and increasing the opportunity to synthesise knowledge of delirium pathophysiology.

2 Delirium and frailty: outcomes from consecutive patients with abnormal 4A's Test (4AT) score on hospital admission

Miriam Veenhuizen (1) s1408286@sms.ed.ac.uk,
April Covington (1), *Nicholas L Mills* (2), *Will Whiteley* (3),
Alasdair MJ MacLulich (4), *Susan D Shenkin* (4),
Atul Anand (2)

(1) Edinburgh Medical School, University of Edinburgh, Scotland

(2) BHF/University Centre for Cardiovascular Science, University of Edinburgh, Scotland

(3) Centre for Clinical Brain Sciences, University of Edinburgh, Scotland

(4) Edinburgh Delirium Research Group, Department of Geriatric Medicine, University of Edinburgh, Scotland

Introduction

Delirium is a harmful neuropsychiatric condition that complicates 20-30% of hospital admissions. The interaction between delirium and frailty in hospitalised patients is unclear.

Methods

We performed a retrospective cohort study using electronic extraction of hospital records. Consecutive patients admitted to the Western General Hospital, Edinburgh between April 2016 and January 2017 were included, where the 4AT delirium screen scored >0 points. Eleven frailty deficits were extracted, including mobility, continence, nutrition and functional dependence. New (incident) dementia, deaths and admission to a care home (institutionalisation) were recorded over the following 3 years.

Results

2,023 patients (mean age 78 ± 13 years, 56% female) scored 4AT >0 . Median follow-up was 891 days. Compared to possible cognitive impairment (4AT 1-3 points, $n=1,136$), patients with probable delirium (4AT >3 , $n=887$) more frequently had existing dementia (44.6% vs. 17.7%, $p<0.001$) and had more frailty markers (mean 3.4 ± 2.3 vs. 2.8 ± 2.4 deficits, $p<0.001$). Of 1,218 (60%) patients who died, those with 4AT >3 had 52% higher mortality risk compared to those with 4AT 1-3 after adjustment for differences in baseline age, sex, dementia and frailty (HR 1.52, 95% CI 1.25–1.85). In those without pre-existing dementia ($n=1,426$), 4AT >3 carried a 36% greater risk of incident dementia (adjusted HR 1.36, 95% CI 1.08–1.73). Frailty also independently predicted death (HR 1.05 per deficit, 95% CI 1.02–1.08) and incident dementia (HR 1.04, 95% CI 1.00–1.08), although there was no delirium-frailty interaction. After adjustment for frailty, 4AT >3 was not an independent predictor of institutionalisation (HR 1.19, 95% CI 0.98–1.45), but each additional frailty deficit increased this risk by 15% (adjusted HR 1.15, 95% CI 1.11–1.20).

Conclusions

Admission 4AT score >3 and frailty are independent risk markers for incident dementia and death, while frailty is an important predictor of institutionalisation. This study did not find an interaction between delirium and frailty.



Delirium Association/Royal College of Physicians of Edinburgh
Joint Conference on Delirium
5 and 6 September 2019

3 Preliminary Validation of the 4AT in a Specialist Palliative Care Inpatient Unit: Study protocol

[Liz Arnold \(1\)](#), Liz.arnold@mariecurie.org.uk
[Anne Finucane \(1\)](#), [Juliet Spiller \(1\)](#), [Alasdair MacLulich \(2\)](#)

(1) Marie Curie Hospice, Edinburgh, UK
(2) Geriatric Medicine, University of Edinburgh, Edinburgh, UK

Introduction

Delirium is a serious and distressing neuropsychiatric syndrome, frequently affecting patients in palliative care settings.^{1,2} However, it often goes misdiagnosed or undertreated.³ Patients admitted to Specialist Palliative Care Inpatient units are often fatigued with significant symptom burden, hence a quick, valid and reliable tool for delirium detection is required. The 4AT is a short bedside test for delirium, which has been validated in 10 studies, involving approximately 3000 hospitalised patients.⁴ The test is currently used in hospices, but has not been validated in this context.

Our objective is to validate the 4AT versus a reference standard delirium assessment in a Specialist Palliative Care Inpatient unit (hospice) population.

Methods

100 patients, aged 18 or over, will be recruited at Marie Curie Hospice Edinburgh over 9 months. Recruitment is expected to commence in September 2019.

Eligible patients, or carers of eligible patients, will be approached by a member of their clinical team about willingness to hear about the study. Those interested will be referred to the research team. Capacity assessment will be followed by consenting. Agreement from a legal proxy (Welfare Attorney, Guardian or nearest relative) will be sought where the patient lacks capacity to consent for themselves.

Each patient will undergo the reference standard delirium assessment lasting up to 20 minutes and the 4AT lasting up to 5 minutes, within a maximum 3 hour period (target interval of 15 minutes). The tests will be completed by different clinicians, and the test order randomised.

Analysis

We will calculate sensitivity and specificity scores, as well as positive and negative predictive values of the 4AT.

Implications

The results will provide evidence on the validity of the 4AT for delirium detection in a Specialist Palliative Care inpatient population; and will inform delirium assessment practice of hospice-based clinicians.

References

1. Agar M, Alici Y, Breithart W *et al.* In Cherny N, Fallon M, Kaasa S eds. *Oxford Textbook of Palliative Medicine*: 2015:1092-100.
2. Hosie A, Davidson PM, Agar M *et al.* Delirium prevalence, incidence and implications for screening in Specialist Palliative Care Inpatient settings: a systemic review. *Palliat Med* 2013;**27**:486-98.
3. Bush SH, Bruera E. The assessment and management of delirium in cancer patients. *Oncologist* 2009;**14**(10):1039-1049.
4. www.the4AT.com

4 Cognitive assessment: can the hospital palliative care team perform this routinely?

[Lucy Baird \(1\)](#), lucybaird@nhs.net, [Deirdra Sives \(2\)](#), [Angela Bentley \(3\)](#)

(1) Strathcarron Hospice, Denny, Scotland, UK
(2) Western General Hospital, Edinburgh, Scotland, UK
(3) Western General Hospital, Edinburgh, Scotland, UK

Introduction

Delirium is a serious neuropsychiatric condition and although its prevalence has been researched in the hospice setting there is little known about its prevalence in patients reviewed by Hospital Palliative Care Teams (HPCT). Symptoms of delirium are often subtle and can be missed, but early identification and treatment can improve outcomes. The aims of this audit were to: (i) implement the four 'A's test (4AT), as a screening tool for delirium, into the routine assessment of patients referred to the HPCT at the Western General Hospital in Edinburgh, and (ii) to explore the prevalence of cognitive impairment within the HPCT caseload.

Methods

A formal education session was delivered to the HPCT where there was also an agreement of standards, including that cognitive assessment should be considered in 100% of patients on first assessment. A copy of the 4AT and a results table were introduced into all HPCT assessment documentation. Data were collected for 3 months (April-June 2018) for all patients referred to the HPCT. Paper and electronic notes were used to collect data.

Results

Cognitive assessment was considered in 56.5% of all patients reviewed. A 4AT was performed in 39.6% of patients seen and partially performed in 2.6% of patients. First and overall 4AT scores suggested that 54% and 59% respectively of patients had possible cognitive impairment (4AT score ≥ 1), and 23% and 33% had a possible delirium (4AT score ≥ 4). The most commonly cited potential causes were drugs and infection.

Conclusions

This audit has shown that cognitive impairment is common in patients referred to HPCTs. Introduction of a cognitive assessment tool into routine assessment has potential to improve early identification of delirium and guide treatment to improve outcomes.

5 Implementation of the palliative care version of the Richmond Agitation-Sedation Scale: A quality improvement project

[Shirley H. Bush \(1\)\(2\)\(3\)\(4\)](#), sbush@bruyere.org
[Kasia Bronicki \(4\)](#), [Michel Dionne \(1\)\(4\)](#), [Marie-Claude Legacy \(4\)](#),
[Mario DaPonte \(4\)](#), [Monisha Kabir \(3\)](#)

(1) Department of Medicine, Division of Palliative Care, University of Ottawa, Ottawa, Canada
(2) Ottawa Hospital Research Institute, Ottawa, Canada
(3) Bruyère Research Institute, Ottawa, Canada
(4) Bruyère Continuing Care, Ottawa, Canada



Introduction

The original Richmond Agitation-Sedation Scale (RASS) was developed and validated in ICU patients. Our team had previously adapted this to be applicable to palliative care inpatients. However, the RASS-PAL tool had not yet been formally implemented on our Palliative Care Unit (PCU), and the online version of the tool was scheduled to go live in the electronic medical record (EMR).

Methods

After identifying and recruiting key stakeholders, an interprofessional project group was formed in December 2018. This group identified major barriers and facilitators to the implementation of the RASS-PAL on the unit. The project lead and Nurse Practice Leader developed a clinical case, essential content and post module questions for a brief online interactive self-learning module (SLM). A point-of-care tool was also developed to be used as a quick reference by nurses. Email requests and reminders to complete the SLM and evaluation survey were sent to all members of the PCU team.

Results

By May 2019, the RASS-PAL SLM had been completed by 63/77 (82%) PCU team members: physicians (9/9; 100%), bedside nurses (45/58; 78%), senior nursing (3/3; 100%), allied health (3/3; 100%), and other PCU staff (3/4; 75%). The follow up evaluation survey was completed by 26/77 (34%) team members. Respondents reported finding the SLM to be quick and easy to follow. For lock-in improvement, the RASS-PAL tool became part of standardised EMR documentation in June 2019. A 'refresher' RASS-PAL module will be developed as part of a palliative sedation clinical practice guideline that is due to be rolled out later this year.

Conclusions

Use of an online SLM is an effective method to engage and educate interprofessional staff on the RASS-PAL tool. Ongoing efforts to sustain RASS-PAL implementation will be needed.

6 Validated Delirium Screening Tools in Palliative Care: A Systematic Review

Mary Scott (1,2), Colleen Webber(1,2), [Shirley H. Bush](mailto:shirley.h.bush@bruyere.org)(1,2,3) sbush@bruyere.org, Christine Watt (3), Lindsey Sikora (4), Monisha Kabir(1), Jason W. Boland (5), Rebecca Woodhouse (6), Peter G. Lawlor(1,2,3).

- (1) Bruyère Research Institute, Ottawa, Ontario, Canada
- (2) The Ottawa Hospital Research Institute, Ottawa, Ontario, Canada
- (3) University of Ottawa, Department of Medicine - Division of Palliative Care, Ottawa, Ontario, Canada
- (4) University of Ottawa, Health Sciences Library, Ottawa, Ontario, Canada
- (5) Wolfson Palliative Care Research Centre, Hull York Medical School, University of Hull, Hull, UK
- (6) Hull York Medical School and Department of Health Sciences, University of York, York, UK

Introduction

Delirium affects many hospitalized older patients, particularly at the end of life. Palliative care encounters a high prevalence of delirious patients, given that risk factors and health complications increase as death approaches. There are a variety of tools used to identify delirium in particular patient populations. We conducted a systematic review to evaluate validation studies of delirium screening tools for palliative care eligible populations.

Methods

The search strategy was developed by an experienced information specialist and externally peer-reviewed. The search was conducted across Medline (Ovid), Embase (Ovid), CINAHL (EBSCOhost), and PsycINFO (Ovid) databases from January 1, 1982-May 3, 2019. The protocol is registered on PROSPERO (ID: CRD42019125481). Inclusion criteria: quantitative research, published in English, validating screening tool(s) within an adult palliative care patient population or clinical setting. Exclusion criteria: studies on non-piloted, non-validated tools, studies with insufficient information on validation, non-palliative patient populations including patients with alcohol withdrawal or those within ICU and perioperative settings.

Results

We screened a total of 3330 title and abstracts and 93 full texts. We included 16 validation studies published between years 1997-2019. Among these, 14 studies validated screening tools in inpatient settings; sample sizes ranged from 21 to 2,363 and cancer was the primary diagnosis in 13 studies. Data extraction is currently in progress and full details including tool performance, type of delirium targeted (hyperactive, hypoactive symptoms), study design, ease of use, and timing of assessments will be available in September 2019.

Conclusions

This study enables palliative care clinicians and caregivers to select delirium screening tools that are validated for use in their clinical setting(s) and improve early identification of delirium.

7 The occurrence and timing of delirium in acute care hospitalizations in the last year of life: A population-based retrospective cohort study

Colleen Webber (1-3), Mary Scott (1), Christine Watt (4), [Shirley H. Bush](mailto:shirley.h.bush@bruyere.org) (1, 2, 4, sbush@bruyere.org), Peter Lawlor (1, 2, 4), Monisha Kabir (1), Rob Talarico (3), Peter Tanuseputro (1-4)

- (1) Bruyère Research Institute, Ottawa, Ontario, Canada
- (2) Ottawa Hospital Research Institute, Ottawa, Ontario, Canada
- (3) ICES, Ottawa, Ontario, Canada
- (4) Division of Palliative Care, University of Ottawa, Ottawa, Ontario, Canada

Introduction

Delirium is a common and highly distressing neurocognitive complication for patients at the end of life. This study



describes the occurrence of delirium in patients admitted to acute care hospitals in Ontario, Canada in their last year of life and identifies factors that are associated with delirium in hospital.

Methods

This was a population-based retrospective cohort study of Ontario decedents (January 1, 2014 to December 31, 2016) admitted to an acute care hospital in their last year of life (n=208,715). We used health administrative data from ICES to characterize end-of-life hospitalizations. Delirium was identified via ICD-10 diagnosis codes on the hospitalization discharge record. We used multivariable modified Poisson regression to compare the patient, health and healthcare characteristics between hospitalizations with delirium to those without delirium. We described the timing of delirium-related hospitalization in relation to death, overall and stratified by disease trajectory and the presence of comorbid dementia.

Results

Delirium was recorded as a diagnosis in 8.2% of all end-of-life hospitalizations. Delirium risk was higher in patients with dementia (risk ratio (RR) 1.43, 95% confidence interval (CI) 1.36-1.50), a cause of death due to frailty (RR 1.67, 95% CI 1.56-1.80) or organ failure (RR 1.23, 95% CI 1.16-1.31) and an opioid prescription (RR 1.17, 95% CI 1.12-1.21), and lower in females (RR 0.80, 95% CI 0.77-0.84) and patients admitted from long-term care (RR 0.66, 95% CI 0.63-0.71). There was an increase in delirium risk with advancing age and higher burden of comorbid disease. The frequency of delirium hospitalizations increased as death approached, with 46.8% of all delirium-related hospitalizations occurring in the last week of life.

Conclusions

This study described, at a population-level, the occurrence and timing of delirium in acute care hospitals in the last year of life, and identified factors associated with an increased risk of delirium.

8 Development of delirium is associated with consumption of antipsychotic and anti-dementia drugs

Sif Blandfort¹ sifbland@rm.dk, Merete Gregersen¹, Kirsten Rahbek¹, Svend Juul², Else Marie Damsgaard¹

¹Department of Geriatrics, Aarhus University Hospital, Denmark

²Department of Public Health, Aarhus University, Denmark

Introduction

Medications that affect the central nervous system have been suspected of increasing the risk of delirium and falls among older geriatrics patients. Previously, we demonstrated a substantial reduction of delirium incidence among geriatric patients after relocating from old hospital buildings with multiple-bed rooms to a new hospital with single-bed rooms. The aims of the study were to investigate whether the reduced incidence of delirium in the new wards was associated with a simultaneous change in the use of medications and whether the relocation affected the incidence of falls, both among delirious and non-delirious patients. Finally, we examined whether the use of analgesics and psychoactive

medications was associated with delirium and falls among patients.

Methods

An observational study included 1,014 admissions among patients aged 75 years or older admitted to our geriatric department: at the old hospital during six months in 2016-2017, and at the new hospital during nine months in 2017. Delirium was assessed by the Confusion Assessment Method. From medical records, data on analgesics and psychoactive drugs and falls were extracted.

Results

There were no significant differences in use of analgesics and psychoactive drugs or falls between the two wards. The risk of delirium was increased among patients who received antipsychotic drugs, hazard ratio 2.54 (95% CI 1.61-4.01) and among patients who received anti-dementia drugs the hazard ratio was 2.45 (95% CI 1.46-4.11). Patients with delirium had almost five times higher risk of falls than patients without delirium. There was no significant difference in the risk of falls between users and non-users of analgesic or psychoactive drug.

Conclusions

The number of beds per room does not affect the risk of falls, but a state of delirium does. We found evidence that antipsychotics and anti-dementia drugs are associated with delirium in geriatric inpatients.

9 Impact of Delirium Education on a Medical-Surgical Unit

Tru Byrnes, Tru.byrnes@carolinashealthcare.org

Atrium Health-Carolinas Medical Center, Charlotte, NC, U.S.A

Introduction

Delirium is a common issue experienced by many hospitalized older adults. However, it is often under-recognized and misdiagnosed by nurses and healthcare providers resulting in the delay of treatment. Staff education is vital in delirium prevention and early identification. The purpose of this project was to determine whether the delirium education program increased nurses' knowledge of delirium management and prevention.

Methods

A quasi-experiment mixed-method with pre-test and post-test design was used to evaluate the effect of the intervention. A convenience sample of 65 nurses who work on two medical-surgical units at a large urban hospital participated in this study. The intervention consisted of 30-minutes education.

Results

The results indicated that at baseline both groups had some knowledge of delirium, but the difference was not statically significant ($p < .711$). After the education program, the intervention group's mean score was statistically significant ($p < 0.00$) and continued to retain the knowledge 3 months post-intervention ($p < 0.038$). Multiple linear regression was



used to analyze confounding variables including NICHE training, education level, and years of nursing experience. NICHE training was the only variable that was statically significant ($p < 0.23$). As for the qualitative findings, three themes were identified including understand the risk factors, use non-pharmacological prevention and treatment strategies, and advocate for patients.

Conclusions

The finding supported the use of delirium education as a mean to improve nurses' knowledge of delirium prevention and management. However, continued education is necessary to help nurses stay up-to-date with knowledge. Further investigation is needed to correlate clinical outcomes such as CAM documentation, delirium prevalence, and hospital length of stay

10 Evaluation of circulating miRNA in serum samples of delirium patients in acute geriatric medical setting: insights on the inflammatory hypothesis of delirium

Patrícia Regueira 2, Ana Rita Silva 1 Ana.rita.ess@gmail.com
Ana Luísa Cardoso 1, Elisabete Albuquerque 2, Fabiana Ventura 2, Mário Carneiro 2, Inês Baldeiras 1 3, Isabel Santana3, Joaquim Cerejeira 1 2

- (1) Center for Neuroscience and Cell Biology, University of Coimbra, Coimbra, Portugal
(2) Department of Psychiatry, Coimbra University Hospitals, Coimbra, Portugal
(3) Department of Neurology, Coimbra University Hospitals, Coimbra, Portugal

Introduction

MicroRNA (miRNA) play a role in the regulation of the neuroinflammation, however its association with delirium is not yet established. Acute medically-ill older patients are at high risk to develop delirium, which is frequently related with adverse outcomes. In this ongoing study we are testing the hypothesis of acute neuroinflammatory response as a disease marker of delirium, measured by serum biomarkers such as miRNA. We aim to analyse and present the preliminary data of this research.

Methods

A case-control prospective study was developed on subjects aged 65 or more, unplanned admitted to Internal Medicine wards, with acute systemic infection. Patients are classified in four groups, according to their cognitive status: no delirium and no dementia (controls), delirium only, dementia only and delirium superimposed on dementia. We also collect blood samples to measure inflammatory mediators, namely levels of miRNAs in circulating monocytes and in exosomes. Serum levels of miRNA were determined by quantitative real-time PCR (qRT-PCR).

Results

A total of 24 patients (63% female, age 85.3 ± 5.9 years) were enrolled in this study: 11 controls, 2 delirium only, 4 dementia only and 6 delirium superimposed on dementia. Cognitive impairment was present in 52% of the sample. Only controls differed significantly from the remaining groups in MoCA test (Chi square = 17.12, $p < .01$, $df = 3$). Regarding the percentage of exosomes in serum, miR-145 is diminished in delirium+dementia group compared to controls

delirium+dementia miR-145 fold change= 1.18 ± 0.3 ; controls= 2.1 ± 0.56) and the mean size of exosomes in delirium alone is superior than the remaining groups (delirium 95.5 ± 7.6 , controls 71.5 ± 10.6 , dementia 55.4 ± 5.6 ; dementia+delirium 68.5 ± 10.8).

Conclusions

These preliminary data suggest a down-regulation of miR-145 (an anti-inflammatory marker) in serum exosomes of patients diagnosed with delirium+dementia or dementia only. Delirium patients seem to have an increased size of extracellular vesicles when comparing with the other groups

11 Evaluation of prevalence of delirium in acute geriatric admissions across the years: considerations on the diagnostic bias and delirium subtypes

Ana Rita Silva 1 Ana.rita.ess@gmail.com, Patrícia Regueira 2, Ana Luísa Cardoso 1, Elisabete Albuquerque 2, Inês Baldeiras 1 3, Isabel Santana3, Joaquim Cerejeira 1 2

- (1) Center for Neuroscience and Cell Biology, University of Coimbra, Coimbra, Portugal
(2) Department of Psychiatry, Coimbra University Hospitals, Coimbra, Portugal
(3) Department of Neurology, Coimbra University Hospitals, Coimbra, Portugal

Introduction

Accurate estimations of delirium prevalence is crucial for adequate allocation of resources and planning of future needs. There is growing evidence suggesting that delirium occurrence can be reduced in acute geriatric wards with multicomponent interventions. On the other hand, increased life expectancy and higher comorbidity burden will lead to higher number of people susceptible to delirium in the next decades. Therefore, it remains uncertain whether delirium prevalence remains stable or it is changing over time. The objective of this study is to conduct a systematic review of the literature in order to: a) determine the pooled prevalence of delirium in geriatric settings; b) estimate the proportion of delirium cases accounted for by each subtype; and c) determine factors explaining the variability of estimates.

Methods

We did an electronic search of papers using four databases of quantitative studies published from December 1999 up to February 2019. Included studies were controlled trials reporting incidence, prevalence and/or proportion of patients with delirium among older adults hospitalized in acute medical wards. When available, data documenting delirium subtypes were included.

Results

We found a total of sixteen studies reporting delirium prevalence in geriatric acute admissions. The pooled prevalence of delirium was 25.6% (95% CI=19%-34%). No differences across the years were found in the prevalence of delirium in geriatric patients, nor concerning other



demographic variables (age, gender, country). The diagnostic tools were found to be an independent source of heterogeneity for the pooled estimate prevalence with the studies that used CAM and DSM-IV for delirium diagnosis having a pooled prevalence of 22.5% and the studies who used other tools pointing a pooled prevalence of 39.4% (21%-61%). The same source of heterogeneity was found for delirium subtypes (and high level of publication bias), with lower prevalence for hypoactive subtype when diagnosis was made using other methods than when was made using items from DRS-8 (other methods : 25%; DRS-R-98: 39%)

Conclusions

Estimates of delirium prevalence across different studies is highly variable which is partially explained by methodological characteristics of the studies. There is no evidence to suggest that delirium prevalence is changing over the years.

12 Risk factors for long-term cognitive impairment in acutely admitted Intensive care patients (ICU) – a multicentre prospective cohort study

Marie O Collet (1,2) Marie.oxenboell-collet@regionh.dk, Ingrid Egerod (1,2), Thordis Thomsen (3), Helle L Nibro (4), Jørn Wetterslev (5), Theis Lange (6), Bjørn H Ebdrup (7,8), Anders Perner (1,2).

1. Dept. of Intensive Care 4131, Copenhagen University Hospital, Rigshospitalet, Denmark.
2. Centre for Research in Intensive Care, Copenhagen, Denmark.
3. Herlev ACES - Herlev Anaesthesia Critical and Emergency Care Science Unit, Dept. of Anaesthesia, Copenhagen University Hospital Herlev-Gentofte, Herlev, Denmark.
4. Dept. of Intensive Care Aarhus, University Hospital, Aarhus, Denmark.
5. Copenhagen Trial Unit, Centre for Clinical Intervention Research, Copenhagen University Hospital, Denmark.
6. Section of Biostatistics, University of Copenhagen
7. Center for Neuropsychiatric Schizophrenia Research
8. (CNSR) & Centre for Clinical Intervention and Neuropsychiatric Schizophrenia Research (CINS), Mental Health Centre Glostrup
9. Department of Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen

Introduction

Prolonged delirium may be a risk factor for long-term cognitive impairment, but research is inconclusive, and other factors may contribute.

Objectives

To describe cognitive function in Danish ICU survivors and assess risk factors for long-term cognitive impairment.

Methods: This prospective cohort study was a sub-study of the AID-ICU inception cohort study (DOI: [10.1007/s00134-018-5204-y](https://doi.org/10.1007/s00134-018-5204-y)). We included Danish adult ICU survivors, defined as being alive 3 months after ICU admission. We excluded patients with known mental illness such as neuro-degenerative disorders or acquired

brain injury after ICU discharge. We registered baseline and ICU data and assessed the cognitive function 6 months after ICU admission in patients' home or in an outpatient clinic using the Repeatable Battery for the Assessment of Neuropsychological status (RBANS). The RBANS was administered by trained professionals and supervised by a neuropsychiatrist.

Preliminary results

We screened 265 Danish ICU survivors for participation, 16 were excluded, 12 died, 131 did not participate for other reasons. We included 106 patients with valid RBANS assessment for analyses. The median age was 67 years (IQR, 56-76), 61% were male and the median length of stay in ICU was 3 days (IQR 2-6). During the ICU stay, 55/249 had delirium (22% (95% confidence interval, CI, 17-28)) and, of those, RBANS was assessed in 25/106 (24%). The mean RBANS global score at 6 months was 76.4 (SD±20.4). Thirty per cent (32/104) had a RBANS global score comparable with patients with Alzheimer's disease, 8% had a score comparable with moderate to severe brain injury, 39% had a score comparable with mild cognitive impairment and 23% had a normal RBANS score. We are still undertaking multivariate analyses of cognitive function adjusted for risk factors including age, sex, markers of delirium and global disease severity.

Preliminary conclusions

Marked, long-term cognitive impairment is frequent among ICU survivors.

13 Delirium recognition at the end of life

Katie Darby-Villis (1 &2) katedarbyvillis@gmail.com, Mark Lee (1)

- (1) South Tyneside and Sunderland NHS Foundation Trust
- (2) Sheffield Hallam University

Introduction

Delirium is an unrecognised distressing condition that occurs in over eighty percent of patients at the end of life and is reversible in up to fifty percent of advanced cancer patients.

The aim of this study was to see if the introduction of the 4AT with some education would increase the recognition and awareness of delirium in the patients seen by an Out of Hours Palliative Care Team.

Methods

A mixed methods approach which involved: a literature search; a pre and post questionnaire; a trial of the 4AT tool for 8 weeks; two focus groups with semi-structured interviews.

Results

13 out of the 16 completed 4ATs scored positive to delirium, however the comments written on the back of the forms, the questionnaires and the focus groups contradicted this. An unexpected finding was the 4AT can produce a false negative score on end of life patients.



The nurse's perception that the patients were 'too poorly' or 'inappropriate' to consider delirium highlights the paradigm terminal agitation is not recognised as delirium but part of the dying process.

Two main themes emerged from the focus groups, barriers and enablers to recognising delirium.

Conclusions

The 4AT was not appropriate for patients at the end of life. The study has shown an increased awareness and questioning of delirium but failed to increase delirium recognition. It has highlighted that delirium recognition is impeded by the imbedded concept of terminal agitation which is further reinforced by a lack of guidance, protocol, strategy, policy or leadership on delirium, which together create an obstruction to delirium recognition.

14 Shifting the focus: A QI Project to Improve the Management of Delirium in Patients with Hip Fracture

L Dormandy l.dormandy@nhs.net, S Mufti, E Higgins, M Dixon, C Bailey

Homerton University Hospital, London

Introduction

Delirium is common in the peri-operative setting, particularly in those admitted with a Neck of Femur fracture. It is associated with poorer outcomes including increasing mortality, morbidity and prolonged hospital stay. It is often poorly recognised and under diagnosed. This was identified as a concern at a district general hospital in London. A strategy to combat this was developed with the aim of improving diagnosis of delirium and increasing staff confidence in managing these patients.

Methods

A Steering group was set up and used PDSA methodology to develop a local diagnostic pathway in accordance with national guidelines. This was then launched in conjunction with an educational campaign that included small group teaching, real time demonstrations of tools and social medical campaign.

Results

There was an increase in the multidisciplinary teams use of the 4AT delirium screening tool by 26% (p value = 0.0008). Staff surveys indicated there was a significant increase in explaining delirium (p= 0.0015) and their knowledge of delirium risk factors (p=0.0001)

Conclusions

This work shows that development of an effective clinical pathway and simple educational program can increase the staffs understanding of delirium, and increase the use of the 4AT screening tool. By ensuring accurate diagnosis of delirium it is hoped that this will lead to improved management of delirium in these often, complex, multimorbid, patients. Further work is needed (and ongoing) to demonstrate if it is successful in improving the management of these patients and key performance indicators in this high-risk group

15 Brain atrophy in patients with and without delirium in older acute medical admissions aged 65 and over: preliminary results from a retrospective CT study

Karen J Ferguson 1 kjf@staffmail.ed.ac.uk, Daniel Levin 2, Alasdair MJ MacLulich 1, Joanna M Wardlaw 3, Bruce Guthrie 4, Peter T Donnan 2,5, Emma L Reynish 6, Vera Cvorc 3,7

1 Edinburgh Delirium Research Group, Geriatric Medicine, University of Edinburgh

2 Dundee Epidemiology & Biostatistics Unit (DEBU)

3 Centre for Clinical Brain Sciences, University of Edinburgh

4 Usher Institute, University of Edinburgh

5 Division of Population Health & Genomics, University of Dundee

6 Dementia Services Development Centre, University of Stirling

7 Victoria Hospital, NHS Fife

Introduction

Computed tomography (CT) is used routinely in acute medical admissions, is better tolerated than MRI and may give a more representative impression of structural neuroimaging in acute geriatrics patients than MRI. A small number of published studies have reported that CT brain atrophy is associated with delirium. This is an ongoing study examining CT brain atrophy and delirium in acute medical patients over 65 admitted to the acute hospital.

Methods

Patients were acute medical inpatients from the consecutive Fife Older Persons Routine Acute Assessment dataset. All had cognitive and medical data routinely collected and electronically recorded on admission by specially trained nurses, and a CT brain scan within 5 days of admission. The Abbreviated Mental test, Confusion Assessment Method and/or clinical impression of delirium were performed. Known dementia diagnosis was recorded. Deep and superficial atrophy were rated using an in-house 5-point visual rating scale. Left and right medial temporal lobe atrophy were assessed using the 5-point Scheltens scale. The analyst was blinded to clinical data.

Results

1352 patients from OPRAA, age 81 +/- 8 had undergone a head CT; of these, delirium was undetermined in 235 and these were excluded. Patients without delirium or dementia accounted for N=541 (48%) of the remaining 1117. There were 283 (25.3%) non-demented patients with delirium; 120 (10.7%) with dementia but no delirium, and 173 (15.5%) with delirium and dementia. In this unadjusted data, there was a tendency for a larger proportion of delirium patients (with or without dementia) to exhibit higher scores for all atrophy scales. Delirium superimposed on dementia had the highest proportion of the most severe scores for medial temporal lobe atrophy bilaterally.

Conclusions

Age-related atrophy may predispose acute geriatrics patients with and without dementia to delirium. Ongoing analyses will quantify the size of these relationships, and examine links to outcomes.

16 The distribution of CT white matter lesions (WML) in patients with and without delirium in acute medical admissions aged 65 and over: preliminary results of a retrospective study

Karen J Ferguson 1 kjf@staffmail.ed.ac.uk, Daniel Levin 2, Alasdair MJ MacLulich 1, Joanna M Wardlaw 3, Bruce Guthrie 4, Peter T Donnan 2,5, Emma L Reynish 6, Vera Cvorc 3,7



1 Edinburgh Delirium Research Group, Geriatric Medicine, University of Edinburgh
2 Dundee Epidemiology & Biostatistics Unit (DEBU)
3 Centre for Clinical Brain Sciences, University of Edinburgh
4 Usher Institute, University of Edinburgh
5 Division of Population Health & Genomics, University of Dundee
6 Dementia Services Development Centre, University of Stirling
7 Victoria Hospital, NHS Fife

Introduction

Routine computed tomography (CT) may be more representative of structural neuroimaging in acute geriatrics patients than MRI. White matter lesions are a manifestation of small vessel disease (SVD). Some published studies have reported that loss of WM integrity predicts delirium. This is an ongoing study of brain CT WML and outcomes of delirium in patients over 65 admitted to the acute hospital.

Methods

Patients were acute medical inpatients from the consecutive Fife Older Persons Routine Acute Assessment dataset. All had cognitive and medical data routinely collected and electronically recorded on admission by specially trained nurses, and a CT brain scan within 5 days of admission. The Abbreviated Mental test, Confusion Assessment Method and/or clinical impression of delirium were performed. Known dementia diagnosis was recorded. Anterior and posterior WML were scored using the Age-Related White Matter Change Scale (ARWMC). Periventricular and deep WML were rated using the 4-point Fazekas scale. The analyst was blinded to clinical data. A 3-point SVD score derived from Fazekas ratings and presence of lacunar infarcts was recorded.

Results

1352 patients from OPRAA, age 81 +/- 8 had undergone a head CT. Delirium was undetermined in 235 and these were excluded. Patients without delirium or dementia accounted for N=541 (48%) of the remaining 1117. There were 283 (25.3%) non-demented patients with delirium; 120 (10.7%) with dementia but no delirium and 173 (15.5%) with delirium and dementia. In this unadjusted data more delirium patients (with or without dementia) had higher scores than non-delirious patients for all WML scales. Delirium patients had higher SVD than non-delirium patients. Dementia patients had higher rate of severe SVD scores.

Conclusions

Indicators of SVD, WML and presence of lacunar infarcts, may predispose acute geriatrics patients to delirium. Future analyses will examine the relationships between neuroimaging features and outcomes of delirium and dementia.

17 The distribution of old and new infarcts and other lesions in patients with and without delirium in acute medical admissions aged 65 and over: preliminary results from a retrospective study

Karen J Ferguson 1 kjf@staffmail.ed.ac.uk, *Daniel Levin* 2, *Alasdair MJ MacLulich* 1, *Joanna M Wardlaw* 3, *Bruce Guthrie* 4 *Peter T Donnan* 2,5, *Emma L Reynish* 6, *Vera Cvorc* 3,7

1 Edinburgh Delirium Research Group, Geriatric Medicine, University of Edinburgh
2 Dundee Epidemiology & Biostatistics Unit (DEBU)
3 Centre for Clinical Brain Sciences, University of Edinburgh
4 Usher Institute, University of Edinburgh
5 Division of Population Health & Genomics, University of Dundee
6 Dementia Services Development Centre, University of Stirling
7 Victoria Hospital, NHS Fife

Introduction

Computed tomography (CT) is used routinely in acute medical admissions, is better tolerated than MRI and may give a more representative impression of structural neuroimaging in acute geriatrics patients than MRI. The presence of pre-existing vascular lesions predisposes to post-operative delirium. Case studies suggest that acute lesions such as small cortical and subcortical strokes may lead to delirium-like syndromes. This is an ongoing study of brain CT measures and outcomes of delirium in patients over 65 admitted to the acute hospital.

Methods

Patients were acute medical inpatients from the consecutive Fife Older Persons Routine Acute Assessment dataset. All had cognitive and medical data routinely collected and electronically recorded on admission by specially trained nurses, and a CT brain scan within 5 days of admission. The Abbreviated Mental test, Confusion Assessment Method and/or clinical impression of delirium were performed. Known dementia diagnosis was recorded. The presence of pre-existing vascular lesions were categorised as cortical or subcortical (lacunar). The presence and type of recent lesions such as infarcts, intra- and extra-cerebral haemorrhages and tumours were recorded.

Results

1352 patients from OPRAA, age 81 +/- 8 had undergone a head CT. Delirium was undetermined in 235 and these were excluded. Patients without delirium or dementia accounted for N=541 (48%) of the remaining 1117. There were 283 (25.3%) non-demented patients with delirium; 120 (10.7%) with dementia but no delirium and 173 (15.5%) with delirium and dementia. The distribution of pre-existing or acute cortical, lacunar or both types of vascular lesions in this unadjusted data was similar in all groups.

Conclusions

In these preliminary analyses, the presence of old vascular lesions was not linked with delirium. Acute lesions of any type was not linked with delirium diagnosis. Future studies will examine the interrelationships of acute and chronic risk factors for delirium incorporating these data.

18 Delirium Team Briefing

Implementation of a communication tool that enables health care teams to optimize delirium care

Claudia Eckstein (1), eckstein@nar.uni-heidelberg.de, *Heinrich Burkhardt* (2)

(1) Network Ageing Research (NAR), Heidelberg University, Germany
(2) Geriatric Centre, University Medicine Mannheim, Germany



Introduction

The care of patients at risk of delirium and delirious patients requires close collaboration and an intensified multi-professional exchange within the health care team. In order to promote this exchange in a structured and systematic way, a daily delirium team briefing was developed, which is currently being piloted and evaluated in the DanA study (Delirium-intervention in the acute-geriatric Setting. A non-pharmacological team-based Approach).

Methods

The DanA study is based on theoretical principles (implementation science and action theory) and empirical findings (preliminary review and consideration of medical guidelines). The 14-month, interrupted pre- and post-test DanA study is performed in three stages: (1) involvement of the team, ensured by study-accompanying workshops, (2) preparation of the team through pre-intervention measurements, (3) guidance and support of the team during the implementation phase.

Intervention

The team briefing according to the SBAR concept considers all patients at risk of delirium (based on the 6-CIT test) and all delirious patients with regard to the CAM items (e.g. acute changes, inattention, disorganized thinking). The team discusses which non-pharmacological interventions are appropriate for the individual patient, depending on the risk or the clinical form and the underlying causes of delirium.

Expected results

Based on empirical findings that a systematic multi-professional exchange can significantly increase the effectiveness of health care services, it is hypothesized that under the influence of a daily team briefing an optimized delirium care can be achieved. An enhanced quality of teamwork is also expected, especially with regard to multi-professional exchanges. In addition, it can be assumed that awareness of delirium in the team will increase, which may lead to a higher detection rate of delirium. In any case, patients are likely to benefit from individual delirium care plans.

19 A Delirium Severity Tool for Critical Care (CC) : Validation of the Delirium Rating Scale -R98 (DRS-R98)

Eiman Almuhairi (1), Monica Badejo(2), Mervi Pitkannen (2), Anessa Peers(2), Graham Davies (1), David Taylor (1,2) and Cathrine A. McKenzie (1,3 and 4), cathy.mckenzie@kcl.ac.uk

(1) Pharmacy Department, Institute of Cancer and Pharmacy, Kings College London SE19NH

(2) Institute of Psychiatry (IOP), Departments of Nursing and Pharmacy, Maudsley Hospital, Denmark Hill, London, SE5 8AZ

(3) Pharmacy Department, Kings College Hospital, London SE5 8AZ

(4) Department of Practice and Policy, University College London (UCL) School of Pharmacy, University College London, WC1N 1AX

Introduction

A delirium severity tool is necessary in critical illness. This is because we need to better understand CC-delirium

athophysiology and assess treatment and prevention strategies. This is important in research and clinical care. After a review of severity tools; the investigators decided to validate the DRS-R98 in CC-delirium.

Method

The validation project was approved by the Biomedical Research Centre (BRC) and ethics was waived. The validation was undertaken by the research fellow (EA) and 3 members of IOP, predominantly MB. EA reviewed CC patient records to identify candidates using delirium chart-based review (24 hour) and extract background and DRSR98 relevant data.

The tool assessor attended EA's patient case briefing, then independently scored using the DRS-R98. A debrief took place after each assessment. Two assessors (MP and AP) simultaneously assessed 6 patients with the DRS-R98 for inter-rater reliability (IRR).

The DRS-R98 was assessed against Clinical Global Impression (CGI) used in previous studies. The concurrent validity, internal consistency, IRR and sensitivity to change in delirium severity overtime were calculated.

Results

22 delirious patients were assessed. The median age was 67 years and 71% were male. The median duration for completion was 15 minutes. Patients were classified as mild 35%, moderate 40% or severe 25%. The Concurrent validity DRS-R98 versus CGI was $r=0.626$ ($p=0.002$), internal consistency (Cronbach's α) was 0.886 for total DRS-98, the IRR was $r=0.505$. The team were unable to assess changes in delirium severity over time.

Conclusions

The investigation established that the DRS-R98 was able to describe variation in delirium severity in the critically ill patient. The DRS-98's correlation versus CGI was highly significant. The consistency was excellent for DRS-R98 and the IRR was moderate. Future work will include DRS98's ability to detect changes over time.

20 Evidence that the Heightened Vulnerability of the Pre-Adolescent & Elderly Populations to Anesthesia-Triggered Delirium is Linked to Increased Blood-Brain Barrier Permeability

George A. Godsey II (1,2) godseyga@rowan.edu

Hana Choi (1), Nimish K. Acharya (2), Mary C. Kosciuk (2), Robert G. Nagele (2)

(1) Graduate School of Biomedical Sciences, Rowan University School of Osteopathic Medicine, Stratford, NJ, USA

(2) New Jersey Institute for Successful Aging, Rowan University School of Osteopathic Medicine, Stratford, NJ, USA

Introduction

Post-operative delirium (POD) in pediatric and elderly patients is rampant and has been associated with the widespread use of Sevoflurane. Here, we use a pre-adolescent rat model and an elderly rat model to ask



whether this heightened sensitivity to Sevoflurane is linked to increased blood-brain barrier (BBB) permeability.

Methods

Two week old (pre-adolescent), four week old (adolescent), and twenty-six month old (elderly) rats were subjected to Sevoflurane or Isoflurane for three hours. Animals were sacrificed and fixed by perfusion. Brains were processed for immunohistochemistry (IHC) and scanning electron microscopy (SEM). IHC was used to detect the presence, location, and extent of BBB compromise. SEM was used to directly visualize the effects of anesthesia on the luminal surfaces of brain vascular endothelial cells (BVECs) forming the BBB.

Results

Following Sevoflurane, pre-adolescent and elderly, but not adolescent, rats showed increased BBB permeability as evidenced by the amount of extravasated IgG and binding of autoantibodies to neurons. Increased BBB permeability was most prevalent in brain regions of pre-adolescent rats showing rapid growth and coincident neovascularization. SEM revealed Sevoflurane-induced structural alterations in cell surface topography at the interface between adjacent BVECs, the site corresponding to the newly formed BBB.

Conclusions

The sensitivity of pre-adolescent children and the elderly to Sevoflurane is due to an anesthesia-induced increase in BBB permeability. We propose that the resulting plasma influx disrupts brain homeostasis and neuronal activity, thus triggering POD. Pre-adolescents are vulnerable to this effect because the brain is engaged in rapid growth and neovascularization. The elderly are vulnerable because the number of BVECs in brain blood vessels declines with age, and the remaining cells are forced to elongate and increase their surface area, making them susceptible to anesthesia.

21 Detecting Neurocognitive Impairment: A Comparison of Clinical Routine Data versus Structured Assessments

Olqa Muser (1) Olqa.muser@stud.unibas.ch

Kevin Seiler (2), Wolfgang Hasemann (3)

(1) *University of Basel, Institute of Nursing Science, Basel, Switzerland*

(2) *Department of Anaesthesiology, University Hospital Basel, Basel, Switzerland*

(3) *Department for Practice Development, University Hospital Basel, Basel, Switzerland*

Introduction

Early detection of neurocognitive impairment and the distinction between dementia and delirium in older hospitalized patients may affect quality of life during and after hospitalization. The outcome-oriented nursing assessment instrument Acute Care (ePA-AC[®]) is a standardized computer-based method for the evaluation of patient related care expenditure. It generates "risk profiles", such as the "assessment requirement for confusion, delirium or dementia" (ACDD), by capturing early symptoms of neurocognitive disorders.

Aims: The goal of this study is to verify how well the ePA-AC[®] ACDD

detects the presence of dementia, delirium, and other states of confusion compared to validated scales.

Methods

In August 2018, we conducted a prospective single-centre cross-sectional study on four medical and two surgical wards in a Swiss University Hospital. Thirty-two research assistants assessed neurocognitive impairment with the modified Confusion Assessment Method for the Emergency Department and the Clock Drawing Test in hospitalized patients over all age groups.

Results

Out of 211 inpatients, 116 were included on the day of the study. The average age of the patients was 68.18 (\pm 18.24) years. Among patients with altered cognition, 38% were correctly identified by ePA-AC[®] ACDD (sensitivity). Patients without cognitive impairment were correctly identified in 78% (specificity). ePA-AC[®] ACDD achieved a sensibility of 50%, specificity of 71%, positive likelihood ratio of 1.71 and negative likelihood ratio of 0.71 for delirium.

For disorganized thinking ePA-AC[®] ACDD obtained a sensitivity of 57%, specificity of 72%, positive likelihood ratio of 2.02 and negative likelihood ratio of 0.60. In dementia, ePA-AC[®] ACDD had a sensitivity of 35%, specificity of 80%, positive likelihood ratio of 1.78 and negative likelihood ratio of 0.81.

Conclusions

The results of this study showed that ePA-AC[®] ACDD neither is able to rule out nor rule in delirium, dementia or confusion, respectively, with good precision.

22 Every fourth patient 65+ suffers from delirium during hospital admission – a call for a validated screening program

Irene Instenes¹ irene.instenes@helse-bergen.no

Hege A. Amofah¹, Leslie Eide², Nina Fållun^{1,2}, Trond Pettersen¹, Anette H. Ranhoff³, James Rudolph⁴, Ole Martin Steihaug⁵, Tone M. Norekvål^{1,2,3}

¹*Department of Heart Disease, Haukeland University Hospital, Bergen, Norway*

²*Faculty of Health and Social Sciences, Western Norway University of Applied Sciences, Bergen, Norway*

³*Department of Clinical Science, University of Bergen, Bergen, Norway*

⁴*Department of Health Services, Policy and Practice, Brown University, Providence, USA*

⁵*The Accident and Emergency Department, Haukeland University Hospital, Bergen, Norway*

Introduction

Delirium is a frequent complication in older patients, causing multiple stress factors and prolonged need of healthcare services. Despite being a robust predictor of morbidity and mortality, most hospitals do not have a standard delirium-screening program.

Aim

To determine the prevalence of delirium in randomly selected surgical and non-surgical patients. Furthermore, to compare



documentation of delirium symptoms with delirium diagnosis (ICD-10) in the patients' medical records.

Methods

A point prevalence measurement (24 hours) was conducted at a university hospital in western Norway in March 2018. Patients (N=123) aged ≥ 65 years (52% women), admitted to 14 randomly selected surgical (n=8) and non-surgical (n=6) departments were included. Delirium was assessed using the 4AT and defined as a score of 4+. Delirium sub-types were measured with the Delirium Motor Subtype Scale (DMSS).

Results

Delirium was identified in 33 (27%) of the patients (18 women). Delirium prevalence was associated with age; highest in the age group 85-89 years (n=8, 24%) and lowest in the age group 65-69 (n=2, 6%). Among delirium subtypes, uncharacterized sub-type of delirium was most common (n=12, 36%), followed by the hypoactive (n=10, 30%), hyperactive (n=8, 24%) and mixed type (n=3, 9%). The prevalence was highest in The Accident and Emergency Department (n=7, 21%) and the Department of Acute and Digestive Surgery (n=7, 21%). Surprisingly, the lowest prevalence was in the Department of Heart Disease, Section of Cardiothoracic Surgery (0%). ICD-10 code for delirium (F05) was only documented in two medical records (6%), despite descriptions of delirium symptoms by involved healthcare professionals in 23 patients (70%).

Conclusions

The point prevalence measurement found that one fourth of the screened patients tested positive for delirium the indexed day. The high prevalence of detected delirium in addition to scarce journal documentation highlight the need for a validated screening program in hospital patient care.

23 Continuation of antipsychotic medications in critically ill patients: a single-centre retrospective review

Zebun Nahar(1) Zebun.nahar@nhs.net, *Prina Rajani* (1), *Jignna Patel* (1), *Valerie Page* (1,2,3)

1. Watford General Hospital, Watford UK
2. Imperial College, London, UK
2. University of Hertfordshire, Hatfield, UK

Introduction

Delirium in critical illness is common and patients who develop hyperactive delirium are at high risk of removing life-saving medical devices. The use of antipsychotics to manage agitated symptoms in UK intensive care unit patients (ICU) is common. In North America there is increasing concern over the percentage of those patients started on antipsychotics in ICU being discharged from hospital on these drugs, up to 55%.

The objective of this retrospective single-centre study was to determine whether antipsychotics initiated in a UK mixed medical/surgical adult ICU were continued after hospital discharge.

Methods

We reviewed the discharge documents for consecutive patients admitted from 1st January 2019 to May 20th 2019, to identify patients discharged on antipsychotics and review details of the indication and plan for antipsychotic prescriptions.

The ICU stock record for antipsychotics used over a four-month period was reviewed.

Results

There were 449 patients admitted and 333 survived to discharge from hospital: 7 patients with missing data. 11 patients were prescribed antipsychotics, 5 were on maintenance antipsychotics (3 olanzapine, 2 quetiapine), 3 subcutaneous haloperidol for palliative care and 3 were on quetiapine started in ICU, one for persistent delirium and 2 with weaning orders.

From March 1st to June 30th the stock records show 105 ampoules of 5mgs haloperidol, 16 ampoules of 10mgs olanzapine and 600 25mgs quetiapine tablets used.

Conclusions

This single centre review found only three survivors of ICU admission were discharged from hospital on antipsychotics started in ICU out of 326 patients. This is a small study, and we did not collect data on antipsychotics use in individual patients while in ICU.

Further studies are needed to establish the extent of continuation of antipsychotics after hospital discharge in other UK ICUs. Clear guidance is needed for drug prescribing in ICU discharge to ward summaries

24 An audit of the 4AT & TIME bundle as part of the Delirium Ambassador Programme at the Queen Elizabeth University Hospital

Andrew M Richardson (1) andrew.richardson5@nhs.net

(1) Queen Elizabeth University Hospital, Glasgow, Scotland

Introduction

Delirium is commonly seen with a prevalence of 20-30% on medical wards and 10-50% on surgical wards, however awareness around the condition is lacking. The Delirium Ambassador Programme was created by the Department of Medicine for the Elderly at the QEUH with the aim of improving its recognition and management. Following initial teaching sessions, participants undertook individual delirium projects. This audit looked at the completion of the 4AT and TIME bundles on a general surgical ward.

Methods

Patients aged 65 and over were included in this audit and data was collected over 16 weeks. The completion rates of the 4AT and TIME bundles were recorded on a run chart. During the audit period the following interventions were made; weekly reminders to ward staff, distribution of Think Delirium resources and engagement in a survey around delirium awareness.

Results

The run chart demonstrated a significant improvement in the completion of the 4AT forms. After 16 weeks a significant shift was evident, with 6 consecutive points above the median line. No significant change was demonstrated for the completion of the TIME bundle. From the survey 100% of responders felt familiar and comfortable with the 4AT form but felt more training on the



TIME bundle would be useful. Only 70% of responders reported having previously received training on the 4AT and TIME bundle.

Conclusions

The interventions made during this audit had a significant impact on the completion of the 4AT form. However, in order to improve the TIME bundle completion rate, more tailored staff training may be required as this was the aspect that staff found most challenging. Engagement with medical staff would also be valuable as they play a key role in completing the TIME bundle.

25 Team Approach toward Postoperative and ICU Delirium Care and Challenges

Fumiko Ishimitsu ishimitu@nrs.aichi-pu.ac.jp

Aichi Prefectural University, Nagoya, Japan

Introduction

Delirium care as a team approach with a certain level of quality are required because postoperative and ICU delirium delays recovery from the acute phase. Therefore, this study aimed to elucidate the situation of the team approach toward postoperative and ICU delirium care in Japan.

Methods

The participants, who were intensive care certified nurses in hospitals, answered the questionnaire on the actual team approaches toward delirium screening and monitoring tools and delirium care guidelines and media used to provide information regarding this condition to patients and families. Using a four-point ordinal scale (hereinafter, delirium care satisfaction), the nurses also rated the level of supply and demand of delirium care (symptom monitoring, sedation and pain management, adjustment to environment, risk evaluation and response concerning safety, information and psychological care for families, early mobilization, and support for sleep).

Results

The questionnaire was mailed to 748 nurses; however, only 275 responses were received. The mean age and years of experience as a certified nurse were 39.3 ± 5.1 years and 5.3 ± 4.0 years, respectively. The team approach was applied by 171 participants (63.8%) [i.e., 51 (19.0%), 38 (14.2%), and 82 (30.6%) participants] with the multidisciplinary, interdisciplinary, and transdisciplinary teams, while 97 of the participants had no team approach (36.2%). Furthermore, the delirium screening and monitoring tools were used by 192 (74.1%) and 200 (77.5%) participants, respectively. Then, the delirium care guidelines and media to share the information regarding this condition with patients and families were utilized by 97 (37.6%) and 22 (8.2%) participants, respectively. The average delirium care satisfaction scores of the team approach were significantly higher than no team approach without pain management ($p < 0.05$).

Conclusions

Delirium care with a certain level of quality requires the use of guidelines and media by nurses and interventions via the team approach.

26 Recognition, diagnosis and management of delirium in a palliative care setting

Ann Williams (1), *James Killeen* (2) jkilleen@sah.org.uk,
Alison Roberts (3)

- (1) *University of Manchester, Manchester, England*
- (2) *St. Ann's Hospice, Salford, England*
- (3) *St. Ann's Hospice, Salford, England/Salford Royal Foundation Trust, Salford, England*

Introduction

Within palliative medicine, reported incidence of delirium varies widely from 34%-85%. Furthermore, it has been suggested that over two thirds of delirium cases within palliative medicine patients are missed, with the cause of misdiagnosis being multifactorial but including a lack of understanding of diagnostic criteria for delirium.

All palliative patients are particularly at risk given the presence of at least one of the four main risk factors for delirium – namely severe illness.

This audit was undertaken as part of a quality improvement project aiming to improve the prevention, identification and management of delirium in the hospice.

Methods

We undertook a retrospective audit of inpatient admissions during a single month in the hospice, January 2019. We used NICE guidance quality statements as our audit standards.

Results

30 inpatients were included. In terms of risk assessment, only two were assessed at admission and identified to be at risk of delirium or progression of confusion.

All 30 patients presented with at least one indicator of delirium during their inpatient admission. 53% of patients were described as confused at some point during admission. Of those, 27% were reported to have delirium, however none were screened using a set method or diagnostic criteria.

In terms of non-pharmacological management, 1/30 patients who presented with confusion had a specific care plan initiated. All 30 patients were prescribed standard anticipatory end of life medications. 0/30 patients were prescribed specifically haloperidol on a PRN basis to manage delirium.

Conclusions

The audit demonstrated poor adherence to NICE guidance in terms of identifying and managing delirium.

Recommendations for future care included: introduction of a standardised screening tool, improved staff education especially around non-pharmacological management of delirium and change in practice to encourage prescription haloperidol as first line rather than pre-printed anticipatory benzodiazepines for agitation.

27 The role of preoperative serum inflammatory markers (NLR, PLR, PWR and CRP) as biomarkers of postoperative delirium in cardiac surgery

*Katarzyna Kotfis*¹ katarzyna.kotfis@pum.edu.pl



Justyna Ślózowska¹, Krzysztof Safranow², Maciej Żukowski¹,
Aleksandra Szylińska³, Mariusz Listewnik⁴

- (1) Department of Anesthesiology, Intensive Therapy and Acute Intoxications, Pomeranian Medical University, Szczecin, Poland
- (2) Department of Biochemistry and Medical Chemistry, Pomeranian Medical University, Szczecin, Poland.
- (3) Department of Medical Rehabilitation and Clinical Physiotherapy, Pomeranian Medical University, Szczecin, Poland
- (4) Department of Cardiac Surgery, Pomeranian Medical University, Szczecin, Poland.

Introduction

Postoperative delirium (POD) is an acute neuropsychiatric syndrome, associated with increased mortality, prolonged ICU and hospital stay. Delirium results from multiple insults, including neuroinflammation and oxidative stress. The aim of this study was to evaluate the role of routinely available inflammatory markers derived from white blood cell count (WBC) for their prognostic value in diagnosing delirium after cardiac surgery.

Methods

We performed a retrospective analysis of a prospectively collected database of patients undergoing planned coronary artery bypass grafting (CABG). Differential WBC count and CRP concentration was evaluated preoperatively (T0) and postoperatively (T1, T3, T5 on day 1, 3, 5) after CABG. Differences in neutrophil-lymphocyte ratio (NLR), platelet-lymphocyte ratio (PLR) and platelet-WBC ratio (PWR) between patients with (Del+) and without delirium (Del-) were evaluated. Multivariate logistic regression was performed to find independent preoperative predictors of delirium.

Results

We included 968 patients in the study. The incidence of delirium within the first 6 days after CABG was 13.3%. Preoperative WBC (8.21 ± 3.04 G/l vs 7.55 ± 1.86 G/l, $p = 0.029$) and CRP (6.33 ± 12.34 vs 4.06 ± 7.80 , $p = 0.015$) was higher and mean platelet count was lower (217.7 ± 69.07 G/l vs 227.44 ± 59.31 G/l, $p = 0.031$) in patients with POD. Mean NLR values did not differ between both groups ($p = 0.628$).

Adjusted models have shown that lower mean PLR values ($p = 0.026$) and lower mean PWR values (27.69 ± 7.50 vs 31.32 ± 9.88 , $p < 0.001$) were found in patients with delirium, the association was strongest for PWR.

Conclusions

Lower levels of PLR and PWR, but not NLR, and increased levels of CRP, were associated with POD after cardiac surgery. Preoperative PWR showed strongest correlation with POD and may be a potential new biomarker of neuroinflammation associated with delirium after CABG.

28 Improving Delirium recognition in 2 East

Tilda.McCrimmon, tilda.mccrimmon@ginh.scot.nhs.uk

Golden Jubilee Hospital, West Dumbartonshire

Introduction

With an increasing ageing population and more complex medical and surgical interventions delirium is an increasing risk for patients

in acute care. People who develop delirium have poorer outcomes, experiencing longer hospital stays, loss of independence, long term psychological problems, higher risk of dementia and increased mortality 1 year post delirium.

Due to the care provided at the Golden Jubilee National Hospital it could be described as a "perfect storm" for delirium. Those at high risk being over 65, people with existing dementia, hip fracture/surgery, surgery and ICU stay.

In my role as Lead Nurse for Dementia, I am passionate about ensuring that people living with dementia are able to benefit fully from the care we provide and as a nurse, all patients in our care have their risk of harm minimised. Visiting our ward areas I could see wide variations in the recognition of delirium.

Methods

Project Team established. Process mapping of current practice carried out and staff survey regarding delirium awareness undertaken. Driver diagram developed. Single Question in Delirium added to Care Rounding Document and PDSA cycles carried out to improve completion and accuracy. Delirium month on 2East. All Health Care Support Workers received Delirium awareness on annual update day. S.Q.I.D. prompt poster developed.

Results

Health Care Support Worker report increased confidence in recognising and reporting positive Single Question in Delirium. Improvement in S.Q.I.D. answer matching evaluation and instigation 4AT and T.I.M.E.

Conclusions

Increasing Health Care Support Workers knowledge of delirium improves accuracy of Single Question in Delirium and provides them with the confidence to escalate to Registered Nurse.

29 Raising Delirium awareness in the North East of England the Story of MELISSA & ERIIC

Mani Santhana Krishnan (1,2) Mani.krishnan@nhs.net
Namita Kumar (1), Jill Cassells (2,3)

- (1) Tees Esk and Wear Valleys NHS Foundation Trust
- (2) Health Education England North East
- (3) Northumbria Healthcare Foundation Trust & Health Education England

Introduction

Raising delirium awareness is key to suspecting, spotting and stopping Delirium.

Methods

As a region we prosed to acquire a training bus to travel around the North East and North Cumbria delivering training and promoting health education in hard to reach areas and hard to reach professions. The mobile facility has simulation equipment on board, and Europe's, and the UK's, first Brainarium; an inflatable educational



resource, supporting Delirium education. (ERIIC- Educational Resource Inflatable Cerebrum) Launched in January 2019, MELISSA (Mobile Education Learning Improving Simulation and (patient) Safety Activities) has travelled across the region showcasing the facility and engaging with both NHS and non-NHS workforce. The remit is to provide equitable access to training across all healthcare professions, including working with charitable sector, education providers and private providers. At the time of writing, this is a free resource, with a sponsorship model in design to ensure the project is self-sustainable.

Results

Since launch, to 1 July 2019, we have supported several conferences, health promotions, careers events, public awareness campaigns and training sessions.

We have had over 2000 visitors on board, and trained 450 healthcare staff, across NHS and private sector care-homes. We have done several delirium and dementia awareness sessions. We have also conducted sessions on a variety of topics, including Sepsis, Tracheostomy and NEWS2.

Conclusions

Raising delirium awareness must be given priority. Awareness, knowledge and Skill can be provided with MELISSA and ERIIC. Both have been a big hit regionally and now we are spreading beyond North East of England.

We continually discuss training needs with visitors from various health settings, and we are currently in discussions with a regional university about developing a joint accredited Care Home Training Package, that will be offered across the region, with the aim of up-skilling staff, improving patient care, and reducing acute admissions.

30 Role of Delirium clinic – A Project to identify people at risk of developing dementia and improving the awareness of people at risk – 4 Years on what have we learnt?

M Santhana Krishnan (1) Mani.krishnan@nhs.net,

Jacqui Straughan Associate Nurse Consultant (2)

Lisa Parker, Associate Nurse Consultant (3)

University Hospital of North Tees (1,2)

James Cook University Hospital (2)

Tees Esk and Wear Valleys NHS Foundation Trust (1,2 &3)

Introduction

To aid early detection / diagnosis and treatment of dementia by following up and reviewing patients after discharge from hospital their mental state including cognition / memory and activities of daily living who had previously been assessed by the Liaison Psychiatry team and diagnosed with delirium. To increase awareness and prevention of delirium by offering the patient / carer and family information and education.

Methods

All patients prior to taking part in the pilot had undergone a full mental state examination by the Liaison Psychiatry team including the 4AT and needed to score 4 or more indicating a possible delirium. Consent was gained from either the patient or family member. Information given explaining the rationale of the clinic.

Patients were reviewed approximately eight weeks after discharge from hospital (allong reasonable time for the delirium to resolve).

In the review assessment comprehensive psychiatric assessment was done including detailed cognitive assessment. Four clinic per month were done at South and North Tees Hospital.

Results

In the pilot phase we ran 2 clinics per week. Between March 2015- June 2015 we had 98 referrals to the clinic of which 67 were assessed. 29 were diagnosed with Dementia. 27 were diagnosed with resolved delirium and referred back to primary care physicians. 17 were referred to secondary mental health services for further assessment. 25 patients did not attend we reflected on this and started seeing the patients at home

For the period of 2016-2018: 256 Patients in the South and 209 patients in the North Tees hospital were offered appointments to the clinic between 2016-2018.

Conclusions

The key finding from our 4 years experience: There is lack of such follow up service (funded). There are clear benefits to identify dementia early. Education and support to prevent and reduce risk of delirium for patients at risk.

31 Investigating the composition of monocyte subpopulations and effector function in delirium

Hannah C Moorey Hannahclare.moorey@nhs.net,

Thomas A Jackson

University of Birmingham, Birmingham, UK

Introduction

In delirium, activation of the peripheral innate immune system is recognised in the central nervous system, leading to neuroinflammation. Monocytes, as key mediators of acute inflammation, may play a key role in this process. We hypothesise the composition of monocyte subpopulations, and their effector function, will differ in patients with delirium; with an increase in intermediate type monocytes, reduced phagocytic function, and ROS production, as seen in the remodelled ageing immune system (immunosenescence).

Methods

In this pilot, cross sectional study, patients aged 70 and over admitted to an acute medical unit with infection (evidenced by CRP>40, at least one SIRS criteria and evidence of infection on history and/or examination) are assessed for delirium (DSM 5). 10 patients will be recruited to the delirium group, and 10 patients without delirium will be recruited to a control group. Blood samples are taken from patients on the same day as recruitment. Peripheral blood mononuclear cells are isolated and the monocyte populations characterised through flow cytometry by expression of CD14/CD16/CCR2/HLA-DR. Monocyte phagocytic function and ROS production, in response to stimulation with e.coli will be measured.



Results

Data is currently being collected and will be presented at conference.

Conclusions

This pilot study will improve our understanding of the cellular innate immune response to delirium, and the specific role of monocytes. This will allow us to plan further work to inform the pathophysiology of delirium.

32 Exploring Danish Critical care nurses' knowledge of delirium and delirium assessment, a survey

*Camilla B Mortensen (1) cbem@regionsjaelland.dk,
Nina C Ranberg-Andersen (1), Jens P Laigaard (1) Marie O Collet (2)
Ingrid Egerod (2)*

*(1) Zealand University Hospital, Koege Denmark
(2) Rigshospitalet, Copenhagen Denmark*

Introduction

Due to changes in sedations practices over the last decades delirium has become more apparent in intensive care settings, challenging nurses and doctors. Despite this, regular delirium assessment with a validated screening tool and recognition of delirium in the Intensive Care Unit (ICU) still seems to be inadequate although current guidelines recommend it (PADIS 2018). Therefore, the aim of this study was to explore Danish critical care nurses' knowledge about delirium, current practices in relation to delirium assessment and explore possible barriers in relation to delirium assessment.

Methods

A questionnaire was conducted in May 2019 during a conference for critical care nurses in Denmark. The questionnaire was developed based on previous research then validated by experts within the area of delirium in ICU, and pilot- tested at two Danish ICUs. The questionnaire contained questions exploring knowledge of delirium, implication and barriers toward delirium assessment.

Results

One-hundred and eleven nurses (92%) answered the questionnaire with a mean working experience in the ICU of 13 years. Sixty percent reported that they screened on a regularly basis (meaning at last once per shift) and 95% reported that a delirium screening tool was available in the ICU where CAM-ICU was most prevalent (78%).

Barriers toward the screening was that it was found time-consuming (23%), the screening tool was not found reliable (14%), no actions were taken with a positive delirium result (14%) and the doctors did acknowledge the screening result (14%). Practices toward a positive delirium screening usually involved pharmacological treatment (80%) and non-pharmacological interventions (86%) and involvement for the patients' relatives (75%).

Conclusions

In Denmark delirium screening is challenged by insufficient time among caregivers, distrust towards the screening tools and the lack of actions followed by a positive delirium screening.

33 Understanding delirium in Australian acute care: results from a medical record review to assess compliance with the Delirium Clinical Care Standard

*Virginia Mumford (1), Mary Ann Kulh (2)
maryann.kulh@calvary-act.com.au*

*(1), Macquarie University, Sydney, NSW, Australia
(2) Calvary Public Hospital Bruce, ACT, Australia*

Abstract not published at authors' request.

34 Delirium in patients undergoing hip surgery: A prospective observation study from Karachi, Pakistan

*Shireen Najam Shireen.najam@aku.edu
Tania Nadeem, Muhammad Zaman Khan*

Aga Khan University, Pakistan

Introduction

The objective of the study was to determine the frequency of delirium in patients after hip replacement surgery, at a 560 bed tertiary care teaching hospital in Karachi, Pakistan. Delirium carries a significant disease burden. There is sparse delirium research in Pakistan. Retrospective data available from Pakistan shows the percentage of patients with delirium to be 22%, and the percentage of patients after hip surgery having delirium to be 4%. The accuracy of results obtained is limited, as these were dependent on chart review of physician documentation; which might represent inconsistency in use of a standardized diagnostic criteria.

Methods

This is a prospective cross-sectional survey, and lasted from Oct 2018 to June 2019. 85 inpatients above the age of 50 were included, whose families/ next of kin consented to participation in the study, and data was coded to maintain confidentiality. Patients undergoing hip replacement surgery were recruited consecutively using the hospital record management system software. They were assessed once by the principal investigator who is a senior psychiatry resident. A diagnosis of delirium was made using the short confusion assessment method (short CAM), 48 to 72 hours after surgery. Data was analyzed using SPSS v 19.0.

Results

23 of 85 patients seen (27.1 %) scored positive for delirium. Prevalence of delirium in patients with pre-existing diagnosed dementia was significantly higher (OR: 10.58, $p < 0.001$).

Conclusions

According to our study delirium is under-recognized and the correct extent of the problem needs to be investigated. Our study is small contribution to contextualized delirium research. However, it does not assess the long term outcomes of enrolled patients on follow up; cost of care, length of stay, duration of delirium, development of dementia and mortality. Hence further inter-disciplinary



research from the region is necessary to formulate guidelines for care.

35 Fatty acid-binding protein 3 in cerebrospinal fluid of hip fracture patients with delirium and of cognitively healthy controls

*Björn Erik Neerland (1) Bjorn.erik@neerland.net,
Kaj Blennow (2), Henrik Zetterberg (2), Leiv Otto Watne (1)*

(1) Oslo Delirium Research Group, Oslo University Hospital, Oslo, Norway

(2) Sahlgrenska University Hospital, Mölndal, Sweden

Introduction

Delirium is associated with dementia and thus biomarkers reflecting neurodegeneration are of interest. Heart-type fatty acid-binding protein 3 (FABP3) is a cytoplasmic protein mainly expressed in the heart and skeletal muscles, but has also been isolated from the brain. It is released following a cellular injury and levels in cerebrospinal fluid (CSF) are elevated in Alzheimer's disease.

Methods

FABP3 was measured in cerebrospinal fluid (CSF) in 128 hip fracture patients with and without delirium, and in 124 cognitively normal older adults undergoing elective surgery. Delirium was diagnosed with Confusion Assessment Method (CAM). Dementia diagnosis was made based on consensus in an expert panel. CSF FABP3 concentration was measured on the MSD platform using the Human FABP3 Kit (Meso Scale Discovery).

Results

Median CSF FABP3 (pg/ml) was elevated in hip-fracture patients compared to cognitively healthy controls (5.7 vs 4.5, $p < 0.001$). After adjustment for age, the association between CSF FABP3 and hip-fracture was no longer statistically significant ($\beta = 0.05$, $p = 0.5$). There were no significant differences in median CSF FABP3 levels across delirium groups (5.1 in no delirium, 5.3 in preoperative delirium and 5.8 in incident delirium) or between hip fracture patients with and without dementia (5.5 vs 5.8, respectively). In the whole sample there were significant correlations between age and CSF FABP3 ($\rho = 0.3$, $p < 0.001$). These correlations were significant in both the hip fracture group ($\rho = 0.3$, $p = 0.004$) and in the group with healthy controls ($\rho = 0.2$, $p = 0.002$).

Conclusions

We found high levels of CSF FABP3 in hip fracture patients compared to cognitively normal older adults, indicating ongoing neurodegeneration in these patients. There were no differences of CSF FABP3 levels across delirium groups, suggesting that FABP3 may not be directly involved in delirium pathophysiology.

36 Changing the Culture of Dementia Care in Hospitals: evaluation of the Italian edition of Best Practice in Dementia Care Learning Programme designed for healthcare staff working in hospitals

*Andrea Fabbo a.fabbo@ausl.mo.it, Francesca Neviani,
Rontauroli Caterina*

Health Authorities and Services of Modena, Modena, Italia Introduction

Dementia is recognised as an international health priority. Italian National dementia strategy (2015) requires the integration and delivery of evidence-based practice in dementia care and literature highlight importance to train health care staff to enhance the quality of life of people with dementia in care settings. Best Practice in Dementia Care learning program for hospitals, developed by the Dementia Services Development Centre (DSDC), University of Stirling, is delivered in workplace by an internal facilitator, so learning has immediate impact on care delivery. The content is patient-centred throughout, focusing on the needs of the person receiving care. Participants are supported to reflect and consider how they might change in practice. The aim of this study was to evaluate the effectiveness of the programme in terms of improved or changed skills and practice and increased quality of care and patient well-being.

Methods

This is a Prospective open cohort study. The study included 36 course participants: 12 doctors, 8 carers and 16 nurses to work at geriatric ward and 60 patients. The evaluation included feedback questionnaires, reflective exercises (analysed qualitatively and thematically), Dementia attitude scale (DAS), Caregiver Difficulty Scale (CDS), Neuropsychiatric Inventory Questionnaire (NPI-Q), Memorial delirium assessment scale (MDAS), Barthel Index and an observation grid of the patient's health and wellbeing.

Results

Most participants reported the programme has satisfied their training needs. Most participants reported the programme had affected how they worked with, and supported, their colleagues in their team.

Conclusions

The evaluation demonstrates marked changes in values and belief relating to care and support of people with dementia and an increased awareness and understanding of dementia in practice in these settings. The programme had increased the support among colleagues in their team.

37 Evaluating delirium management in critical care at West Middlesex Hospital

Chitra Sanjel, csanjel@hotmail.com

*Chelsea and Westminster Hospital NHS Foundation Trust,
West Middlesex Hospital, London, England*

Introduction

The prevalence of reported ICU delirium varies from 20% to 80% and is associated with adverse outcomes. Although validated tool CAM ICU has been recommended by national and international guidelines, it has not been used routinely by doctors and nurses in West Middlesex ICU.

Methods

ICU nurses were given questionnaires to assess their knowledge on delirium management. A pilot teaching session was delivered on the use of CAM ICU.



Following feedback from the learners, the contents were revised on subsequent teaching sessions to meet the ICU nurses' learning needs. A delirium resource was created and made available for the staff. Knowledge outcomes of the teaching sessions were re-assessed by repeat questionnaires.

Results

Pre-teaching results found 22% of the staff had received formal teaching on CAM ICU. Only 31.81% reported confidence in managing delirious patients. 18.18% were unaware of the risk factors and symptoms of ICU delirium. Post-teaching results found an increase in confidence in managing delirious patient to 81.82%. 100% of the staff were able to identify the risk factors and symptoms of ICU delirium.

The project achieved its aim of improving delirium management in ICU. However, the identification of hypoactive delirium requires improvement. The initial staff training target was 80% but only 70% was achieved. This project has led to the introduction of a shared cross-site tool in the form of 'Brain Care Bundle'. It has prompted liaison with the consultant lead on setting target RASS scores on ward rounds for patients. This will also help empower the nurses with sedation management. Furthermore, it has introduced regular teaching sessions led by senior nurses.

Conclusions

This project has introduced a simple educational initiative that has helped increase staff knowledge on delirium management; however, there is a need for ongoing education in order to achieve high degree of compliance.

38 Delirium in nursing homes – incidence and risk factors for delirium in nursing home patients

Wenche Helen Skretteberg wenchehelen.skretteberg@outlook.com,
Ingunn Holmefoss Hovland, Leiv Sandvik, Maria Krogseth

University of South-Eastern Norway, Drammen, Norway

Abstract not published at authors' request.

39 A carer intervention to improve support for patients with delirium in a palliative care inpatient setting: A quality improvement approach

Max Fend (1) s1302584@sms.ed.ac.uk, *Juliet Spiller* (2),
Anne Finucane (1,2)

(1) *University of Edinburgh, Scotland*
(2) *Marie Curie Hospice, Edinburgh, Scotland*

Introduction

Delirium is a clinically significant condition for palliative care, found in up to 88% of inpatients at the end of life. There is little evidence for drug therapies to treat delirium in terminally ill adults, and recent findings suggest greater emphasis should be placed on supportive care. This project, using a quality improvement (QI) approach, aimed to improve delirium-related communication

between patients' families and nurses at the Marie Curie Hospice in Edinburgh, thereby aiding non-pharmacological management.

Methods

A baseline questionnaire assessed how nurses approach discussing delirium with family carers. As previous research identifies classes or newsletters as family caregivers' preferred methods for receiving information about the condition, we chose to use a delirium information leaflet to aid these conversations, and help empower carers to best support their family member. This was introduced and tested in the inpatient unit. Using feedback from nurses and family carers, the leaflet was altered. This process of implementation, feedback, and alteration, went through three Plan-Do-Study-Act cycles. The baseline questionnaire was then re-administered.

Results

Leaflet feedback was positive from nurses and family carers, both reported it was helpful. Suggested improvements centered around a less text-heavy leaflet. All nurses said they would use the leaflet in future interactions with carers.

Conclusions

Despite limitations due to the size of our study, our findings provide preliminary evidence for the acceptability and usefulness of a delirium leaflet. Given the prevalence of the condition, relevance of family carer support, and minimally invasive nature of an information leaflet and feedback interview, this project is widely applicable and there is every potential for further study. More QI cycles are required.

40 Polypharmacy as a risk factor for delirium: a large population-based longitudinal record linkage study

Lucy E Stirland (1,2) l.stirland@ed.ac.uk, *Tom C Russ* (1,2,3),
Craig W Ritchie (1), *Graciela Muniz Herrera* (1)

(1) *Edinburgh Dementia Prevention and Division of Psychiatry, Centre for Clinical Brain Sciences, University of Edinburgh, Edinburgh, UK*

(2) *NHS Lothian, Edinburgh, UK*

(3) *Alzheimer Scotland Dementia Research Centre, Edinburgh, UK*

Introduction

Polypharmacy is the concurrent use of multiple medications. It is often considered a risk factor for delirium, but is usually investigated in hospital patients. We aimed to examine this relationship longitudinally at population level.

Methods

We used NHS community prescribing data from all adults in Scotland aged ≥ 50 years in January 2009 who received at least one drug in the first quarter of 2009. A linked dataset included death certificates and discharge diagnoses from psychiatric and general hospital admissions for these patients for 8.5 years.

We used Cox proportional hazards models to assess associations between the number of unique medications



dispensed and risk of delirium (ICD-10 code F05) recorded on hospital discharge and death certificate diagnoses.

Results

Among 1 225 894 patients aged 50 years and over, the mean age was 67.4 (SD=10.8) years, 56.1% were female and 3.8% were resident in a care home. The mean number of drugs dispensed was 5.0 (SD=3.7). In 8.5 years of follow-up, 31 236 (2.6%) patients had at least one hospital admission with a delirium diagnosis, and there were 689 deaths where delirium was recorded on the death certificate.

Compared to 1-4 drugs, the hazard ratio (HR) for hospital admission with delirium in those taking 5-9 drugs was 1.40 (1.36-1.43, $P<0.001$) and ≥ 10 drugs was 2.00 (1.93-2.07, $P<0.001$). For mortality with delirium, compared to 1-4 drugs the HR for 5-9 drugs was 1.32 (1.11-1.57, $P=0.002$) and ≥ 10 drugs was 2.07 (1.67-2.58, $P<0.001$). Both models were adjusted for starting age, gender, care home residence status and Scottish Index of Multiple Deprivation.

Conclusions

There were higher rates of delirium, both on hospital records and death certificates, among people with polypharmacy. These findings rely on the accuracy of recorded diagnoses and do not allow adjustment for multimorbidity or the impact of individual drug classes.

41 Patients' experiences with delirium assessments

Helle Svenningsen hesv@via.dk, *Dorthe Sørensen*

Department of Research in Rehabilitation and Health Promotion, Faculty of Health Science, VIA University College, Hedeager 2, DK-8200 Aarhus, Denmark

Introduction

Screening for delirium has increased the past few decades. Problems with implementation of the screening is well described, and some studies describe the professionals' attitudes to delirium screening. We wanted to understand the hospital and nursing home patients' experiences with delirium assessments.

Methods

We used a qualitative method to summarise, in everyday terms, specific events observed by researchers and experienced by patients. We performed participant observations on eight patients and nurses and conducted seven individual semi-structured face-to-face interviews at a nursing home with patients who had experienced delirium assessment using the bCAM. We carried out content analysis using an inductive approach.

Results

Our findings indicate that patients approached delirium assessment with initial scepticism due to a lack of knowledge. Their scepticism changed to complete acceptance after the assessment's purpose was explained. However, some patients gave up on the assessment due to cognitive challenges, lack of energy, fatigue, or language barriers. Patients appreciated that professionals were interested in their mental and physical well-being. Despite initial scepticism, the patients found the delirium assessment valuable when they better understood its purpose. Thus, healthcare professionals should provide patients' with relevant information about delirium assessments.

Conclusions

Patients appreciate that professionals are interested in their mental and physical well-being. Despite their initial scepticism, patients find delirium assessments valuable when they had better understand the assessments' purpose. This indicates that barriers related to patients' scepticism towards delirium assessments should be overcome by healthcare professionals.

42 Using audio-visual vignettes to explore how nurses make the decision to restrain a delirious patient on the critical care unit

Sarah A Smith, Michael N Black, Angela Teece
a.m.teece@leeds.ac.uk, *Professor John Baker, Dr Helen Smith*

School of Healthcare, University of Leeds.

Introduction

Delirious and agitated patients are at risk of disrupting life-sustaining therapies, for example, dislodging an endotracheal tube or vascular access devices. Chemical or physical restraint are often cited by staff as the main method of preserving patient safety.

An integrative review identified nurses as the primary decision-makers when applying restraint, but showed wide-variations in practice. Subjective descriptors were used to rationalise restraint use, and nurses may be influenced by unit custom and previous adverse experiences. A need for further education was identified together with research to explore the decision-making process.

This study aims to explore how nurses make the decision to restrain patients, and identify potentially modifiable factors which may lead to reduced restraint use with delirious patients.

Methods

'Think Aloud' using audio-visual vignettes.

Results

6 short audio-visual vignettes were developed from reflection on clinical practice and an integrative review of the literature and filmed at the University of Leeds. The vignettes depict a range of patients showing behaviours associated with hyperactive delirium and a range of risk inference. Each vignette begins with either a subjective or objective verbal handover. This is intended to explore whether preconceived ideas of unpopular or disruptive behaviour impacts on the decision making process. 'Think Aloud' aims to reveal the thought processes involved in making decisions through encouraging the participant to vocalise their thoughts whilst watching the vignettes. The audio-visual format is intended to mimic the sights, sounds, and time-pressures of a clinical environment.

Conclusions

The vignettes have been piloted with three participants. The innovative method facilitates decision-making under simulated clinical pressures and captures data about factors impacting on the decision to restrain. Early data suggests



variations in practice, and a focus on short-term management. Data collection is on-going and the study is actively recruiting new participants

43 A retrospective case-note analysis investigating the management of diagnosed delirium in patients on Medicine of the Elderly wards

Sarah Train (1) S1405037@sms.ed.ac.uk, *Dr Alexandra Peterson* (2), *Dr Emma Marshall* (2), *Dr Susan Shenkin* (2), *Prof Alasdair MacLulich* (2)

(1) University of Edinburgh, Edinburgh, Scotland

(2) Medicine of the Elderly, Royal Infirmary of Edinburgh, Edinburgh, Scotland

Introduction

Delirium is a neuropsychiatric medical emergency common amongst inpatients, particularly acutely unwell elderly populations. Current (Scottish Delirium Association; NICE) and new (SIGN) guidelines provide comprehensive recommendations. However, it is unclear how closely practice adheres to these, and how best to study usual care.

Methods

Retrospective case-note analysis was conducted assessing how closely delirium management of patients on Medicine of the Elderly (MoE) wards adheres to current guidelines.

A data collection form was designed based on current and new national guidelines. It was further piloted, refined and used to assess management over the 48 hours from delirium diagnosis.

Results

30 MoE patients diagnosed with delirium at Royal Infirmary Edinburgh were included; 53.3% had pre-existing dementia. 50% were diagnosed in acute assessment areas and 50% after transfer to MoE wards. Delirium assessment tools were used in 36.7% of cases, all of which used the 4AT. Features of delirium were assessed in 80% of patients, though this was often limited to level of arousal. Causes of delirium were considered for 66.7% patients; subsequent investigations of causes varied widely. Although deemed essential by guidelines, medication reviews and clinical neurological examination were recorded in only 50% and 30% of patients, respectively. Psychoactive medication was initiated in 2 patients. Non-pharmacological treatments of delirium such as environment modifications and sleep hygiene were not systematically recorded in medical notes. 10% of patients were involved in documented discussions regarding delirium.

Conclusions

We demonstrate a feasible method for comprehensively assessing patient care in delirium. Assessment and management varied widely particularly in how the diagnosis was made, investigating causes and assessing for specific features of delirium. Reliance on case-note review may have under-reported informal treatment not documented. Future use of the data collection form can facilitate larger, hypothesis testing studies, and evaluate impact of new SIGN guidelines on clinical practice.

44 comparison of brief clinical delirium and cognitive testing amongst patients admitted via the trauma and orthopaedic (t&o) acute intake:

A service evaluation on the clinical dependence, efficacy and accessibility of implementing gwent orientation and awareness listing (goal) testing in relation to the 4at at the Royal Gwent Hospital Newport

Jack Wellington (1) Wellingtonj1@cardiff.ac.uk, *Alexander Eggleton* (1), *Reem Naji* (1), *Dr Inderpal Singh* (2), *Dr Miles Allison* (3),

(1) Cardiff University, Cardiff, Wales

(2) Ysbyty Ystrad Fawr Hospital, Newport, Wales

(3) Royal Gwent Hospital, Newport, Wales

Introduction

GOAL is the brief delirium/cognitive clinical test currently employed at Royal Gwent Hospital Newport where the 4AT test is routinely utilised. To our knowledge, both tests have not been prospectively compared against, relative to equal patient cohorts. Therefore, we aim to evaluate two rapidly-performed valid cognitive examinations amongst the same patient cohort. The present study assesses patient-testing results among acute/emergency T&O admissions compared with previously-obtained patient data presenting acute medical intake.

Methods

Verbal consent to cognitive testing by means of GOAL and 4AT was sought from patients presenting acutely to T&O over a four-week period. A GOAL score of <8/10 is deemed a "fail", and on 4AT any error is deemed "possible cognitive impairment". Patient documentation regarding dementia, epilepsy, psychiatric/neurological illness was recorded alongside living arrangements.

Results

There were 146 patients, of whom 10 were not well enough to be scored, and 1 patient declined to participate. Therefore, results are based on a 135-patient cohort, all of whom were able to co-operate with both scores. Of these, 92 "passed" both tests, 40 "failed" on 4AT, of which 18 also "failed" on GOAL. There were 3 who "failed" on GOAL but passed on 4AT. Likelihood of test failure was significantly greater with 4AT ($X^2 = 7.65$, $p < 0.01$). Ages and comparisons on GOAL testing results with historical general medical patient cohort displayed significant differences between patient co-operation in acute medical and T&O intakes.

Conclusions

(1) The 4AT test is more likely to signal cognitive impairment than GOAL among T&O emergency admissions; (2) T&O intake patients are more likely to co-operate with cognitive testing by GOAL, and they perform better than acute medical emergency admissions.



45 A feasibility randomised controlled trial to compare regional versus general anaesthesia in reducing delirium in patients with hip fractures (REGARD)

Joyce Yeung (1) j.yeung.4@warwick.ac.uk,

Keith Couper (1), *Rebecca Kearney* (1), *Ranjit Lall* (1), *Iain Moppett* (2), *Thomas Jackson* (3),
Philip Bell (4), *Gavin Perkins* (1)

(1) Warwick Medical School, University of Warwick, Coventry, UK

(2) University of Nottingham, Nottingham, UK

(3) University of Birmingham, Birmingham, United Kingdom, UK

(4) Patient Research Partner

Abstract not published at authors' request.

46 Interventions for preventing delirium in older people in institutional long-term care: Cochrane Systematic Review

*Rebecca Woodhouse*¹, Rebecca.woodhouse@york.ac.uk *Jennifer K Burton*², *Namrata Rana*¹, *Yan Ling Pang*¹,
*Jennie E Lister*³, *Najma Siddiqi*^{1,4}

(1) Department of Health Sciences, Hull York Medical School, University of York, York, UK.

(2) Academic Geriatric Medicine, Institute of Cardiovascular and Medical Sciences, University of Glasgow, Glasgow, UK

(3) Department of Health Sciences, University of York, York, UK

(4) General Adult Psychiatry, Bradford District Care NHS Foundation Trust, Bradford, UK

Introduction

Delirium is a common and distressing mental disorder. Adults living in institutional long-term care (LTC) are at particularly high risk of delirium. Multicomponent interventions can reduce the incidence of delirium by a third in the hospital setting. However, it is currently unclear whether interventions to prevent delirium in LTC are effective. This is an update of a Cochrane Review first published in 2014.

Objectives

To assess the effectiveness of interventions for preventing delirium in older people in institutional long-term care settings.

Methods

We used standard methodological procedures expected by Cochrane. We search relevant databases to 27th February 2019. We included randomised controlled trials (RCTs) and cluster-RCTs of single and multicomponent, non-pharmacological and pharmacological interventions for preventing delirium in older people (aged 65 years and over) in permanent LTC residence. Primary outcomes were prevalence, incidence and severity of delirium and mortality.

Results

We included three cluster-RCTs with 3851 participants. One study tested a software-based medication review intervention, which was probably associated with a reduction in delirium incidence. One study tested a hydration intervention, however, it was not possible to determine the effect of the intervention on delirium incidence. In a feasibility study of an educational intervention on delirium, it

was not possible to determine the effect on delirium incidence. Due to the heterogeneous nature of the interventions, we did not combine the results statistically, but produced a narrative summary.

Conclusions

Our review identified limited evidence on interventions for preventing delirium in older people in LTC. Future trials of multicomponent non-pharmacological delirium prevention interventions for older people in LTC are needed to help inform the provision of evidence-based care for this vulnerable group.

47 Screening for Delirium: Protocol for a survey of delirium screening practice in specialist palliative care units in the UK

*Rebecca Woodhouse*¹, Rebecca.woodhouse@york.ac.uk *Miriam Johnson*² *Jason W Boland*², *Imogen Featherstone*³,
Najma Siddiqi^{1,4}

(1) Department of Health Sciences, Hull York Medical School, University of York, York, UK.

(2) University of Hull, Hull York Medical School, Hull, UK

(3) Department of Health Sciences, University of York, York, UK

(4) General Adult Psychiatry, Bradford District Care NHS Foundation Trust, Bradford, UK

Introduction

Delirium is common in palliative care settings and can be very distressing for the patient and their family. Screening tools can help in the identification of delirium. There are many delirium screening tools available in hospital inpatient settings. However, there is currently no strong evidence to offer guidance on which tool should be used in specialist palliative care units (SPCUs), such as hospices. The aim of this survey is to investigate how SPCUs in the UK currently screen for delirium, to collect information on delirium training offered at the SPCUs, and gather views on the barriers and facilitators to delirium screening.

Methods

An 18-question online anonymous survey has been created, hosted by the online software Qualtrics at the University of York. All healthcare staff working in SPCUs (whether a hospice or SPCU as part of a hospital in the UK), will be eligible to complete the survey.

Hospice UK, a national hospice charity, will invite the clinical lead at each UK SPCU registered with Hospice UK to participate. The clinical lead will be invited to distribute the survey URL by email to all nursing, medical, health care assistant staff and allied health professionals working on the in-patient unit. The survey will take between 5 and 10 minutes to complete.

Results

The data will be imported into Excel directly from the Qualtrics website. The results will be collated - quantitative data will be summarised using descriptive statistics and displayed in tables and graphs and qualitative data will be summarised by themes.



EDA/SDA/RCPE Delirium Teaching Day
4 September 2019

Delirium Association/Royal College of Physicians of Edinburgh
Joint Conference on Delirium
5 and 6 September 2019



Conclusions

The survey results will provide an overview of what is currently done to identify delirium in SPCUs and barriers and facilitators to screening tool use. This will be a valuable contribution to research to identify suitable screening tools for delirium in SPCUs.