SURNAME: **Edgeworth (McKenzie)**  DATE OF BIRTH: 29. 1. 64

FORENAMES: Cathrine Anne NATIONALITY: British

Home Address 2 Trinity Barns, Weston, Petersfield, GU32 3NN

1. Qualifications

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BSc (Second class) in Pharmacy 1985 Robert Gordon’s University,

Aberdeen

## Certificate in Pharmacy Practice 1987 School of Pharmacy,

## **University of London**

Short Course Modules 1994 School of Pharmacy

Health Economics University of London

Critical Care

**Doctor of Philosophy (PhD) 2006 University of Brighton**

Analysis and clinical applications of Midazolam and 1-hydroxymidazolam glucuronide in critical illness.

Funded by 2 separate grants from Guy’s and St.Thomas’ Charity

Supplementary Prescribing 2007 King’s College London

University of London

Independent Prescribing 2010 King’s College London

University of London

Fellow of Faculty of Royal Pharmaceutical Society Royal Pharmaceutical Society

FFRPS 2014 London

Fellow of the Royal Pharmaceutical Society (FRPharmS) Royal Pharmaceutical Society London 2015

# Clinical History

Consultant Pharmacist (Locum) Ongoing

Clinical Academic Research

Pharmacy, Kings College Hospital

Denmark Hill, London SE59RS

Patient Review January 2018 to March 2019

Polypharmacy

# Pain management

Drug interactions

Hypertension

Built website : [www.edgeworthmedical.com](http://www.edgeworthmedical.com)

Aesthetic Practitioner January 2018 to present

Cosmetic consultations

Cosmetic advice

Injections of botulinum toxin and dermal fillers

Skin-boosters Redensity-one and Profhilo

**Consultant Pharmacist**

Perioperative Medicine and Critical Care (PMCC) October 1993 to 2017

Guy’s and St.Thomas’ NHS Foundation Trust (GSTT),

London SE1 9EH.

Led and evolved the world-renowned clinical pharmacy service

Sedation and delirium lead

Principal Investigator (s)

Evolution of the critical care pharmacist

Represented my profession numerous times

Established the UK wide critical care pharmacy network

1. Academic

Associate Clinical Staff November 2018

University College London (UCL) Chapter writing, clinical assessment

School of Pharmacy for the clinically enhanced independent

Brunswick Square prescribing course

London OSCE assessment for undergraduates

WC1N 1AX

Honorary Senior Clinical Lecturer (Medical Education) April 2015 to ongoing

School of Life Sciences and Medicine

Clinical Academic Reader August

In Critical Care Therapeutics 2015 ongoing

Institute of Pharmaceutical Sciences PhD Supervision

King College London Developed and led number of research studies

1. Charity Sector

Complex Regional Pain Syndrome (CRPS-UK) Trustee March 2018

1. Politics

MEP Candidate 2019 (Scotland) ChangeUK-

Leader of Petersfield and East Meon European Movement

1. Markers of Esteem

Fellow of the Royal Pharmaceutical Society (FRPharmS)

Represent clinical research on the Royal Pharmaceutical Society’s Science and Research Board.

Chair sub-group: Adopting new technologies (focus immunocellular therapy)

Sub-group member: generating evidence in pharmacy

Represent pharmacy Critical Care leadership forum (CCLF). 2012 to 2015

UK Critical Care Research Forum (clinical pharmacy representative) 2012 to 2017

# NIHR Clinical Specialist Group (CSG) Critical Care Research. Invited Clinical Pharmacist

# Professional Organisations.

UK and Europe recognition as acritical care therapeutic leader.

Invited clinical investigator on ‘A2B’, a first for critical care pharmacy. This is NIHR HTA commissioned UK wide sedation study.

Global recognition as clinical pharmacy leader in critical care.

1. National Awards and Prizes

**United Kingdom Clinical Pharmacy Association (UKCPA) Special Recognition Award 2017**

Awarded for outstanding contribution to Clinical Pharmacy especially in critical care

**#ilove my pharmacist 2016**,

For devotion to patients

Regional finalist

**Glaxo Smith Kline Award for Advanced Practitioner 2006 (1st Author)**

Over-sedation and Midazolam in the ICU

**Eli Lilly Critical Care Award 2004 (2nd Author)**

An approach to ensuring consistent standards of prescribing and usage of drotrecogin-Alfa across a network of healthcare institutions

**Pharmaceutical Scientist of the Year 2014**

Awarded to the Expert Advisory Panel of the

Royal Pharmaceutical Society (RPS), Clinical Pharmacist on EAP

1. Academic Supervision

1.PhD Supervisor: Miss Eiman Salm. Title: Atypical anti-psychotics in critical care.

At final write up stage (upgrade awarded in 2015).

2. MPHARM Supervisor: Miss Hishma Sanchez: Lorazepam and delirium in the ICU.

3. MPHARM Academic Supervisor. Hassan Masson. Lorazepam/Oxycodone and Sedation wean in extracorporeal membrane oxygenation (ECMO).

4. MRES 2014: Mrs Grainne D’Ancona

Inhaled corticosteroids and chronic obstructive pulmonary disease (COPD).

5. MRES 2015: Miss Ruth Wan, Predisposing and precipitating factors in critical care delirium

6. MRES 2016, Mrs Christabelle Chen, Pharmacokinetics of Gentamicin in Critical Illness

7. Phase 5 Medical Under-graduates: Prescribing

Teaching Lead: Design, plan and deliver both courses\ Phase 5 Medical Under-graduates: Prescribing

1. Examinations

**PhD Thesis**

Dr Keiran Shikar

Dr Sarah Arenas

UCL SOP

Undergraduate formative OSCE

1. National and International Presentations

**National and International Presentations (2014 to 2019)**

**Meeting: UK Critical Care Research Forum (Leeds) June 2019**

**Presentation:** Parenteral ThiAmine (Pabrinex)to prevent and treat DELirium in high-risk critically ill patients – a clinical effectiveness feasibility study. (DELTA-ICU)

**Meeting : ChangeUK Edinburgh Rally March 2019**

**Presentation:** What Brexit means for me

**Meeting CRPS Annual Conference 2018**

**Meeting:** UK clinical pharmacy congress 2018 April

**Presentation:** Sepsis from Community Pharmacy to Critical Care

**Meeting :**UK Critical Care Network Midlands event

**Presentation:** Delirium screening and anti-psychotic prescribing

**Meeting**: UKCPA National Conference, Leeds 2017

**Presentation**: Acceptance Speech, Critical Care Award

**Meeting**: Sedation in Critical Illness , London 2017

**Presentation**: Pharmacology and Sedation

**Meeting:** Anti-infective Meeting LONDON 2015 (March)

**Presentation Title**: Antibiotic Dosing in Critical Illness

**Meeting:** UKCPA Critical Care Beginners LONDON 2015 (March)

**Presentation Title**: Analgesia, Sedation and Delirium

**Meeting:** More Tales from the Riverbank LONDON 2015 (March)

**Presentation Title**: Important Pharmacy Issues in Critical Illness

**Meeting:** Sedation and Delirium in the Intensive Care Unit (ICU) DUBLIN 2014

**Presentation Title**: Sedation and Analgesia in the ICU

**Meeting**; UKCPA National Symposium Leeds

**Presentation Title:** PROTECTED–UK group Pharmacist’s Review and Outcomes: Treatment Enhancing Contributions Tallied, Evaluated and Documented.

**Meeting:** RPS Women in Healthcare LONDON 2014

**Title:** Critical Care Pharmacy and Multi-professional leadership

**Meeting**: Advanced Ventilation for Intensivists LONDON 2014

**Title:** Sedation in Ventilation, What, When, How

**Meeting**: More Tales from the Riverbank LONDON 2016

**Title:** Pharmacy issues and Critical Care

**Meeting:** ECMO Simulation Course, LONDON2016, 2015, 2014,2013

**Title**: PK and ECMO: what does it mean

**Meeting:** Delirium, Intensive Care Society, LONDON

**Title**: Treating delirium in the ICU

1. Peer Reviewed Publications

**2018**

**Original Articles**

1. Edgeworth, Shankar Hari M, Wyncoll D, McKenzie CA Long-term adherence to a 5-day antibiotic course guideline for treatment of intensive care unit associated Gram-negative Infections Journal of Antimicrobial Chemotherapy. 2014 69 (6): 1688-1694doi: 10.1093.

1. Yassin SM, Terblanche M, Yassin J, McKenzie CA. A web-based survey of United Kingdom sedation practice in the intensive care unit. J Crit Care. 2015 Apr;30(2):436.e1-6. doi: 10.1016/j.jcrc.2014.11.006

(Corresponding)

1. Shulman R, McKenzie CA, Landa J, et al. Pharmacist’s review and outcomes: Treatment-enhancing contributions tallied, evaluated, and documented (PROTECTED-UK). *J Crit Care*. 2015;30(4). doi:10.1016/j.jcrc.2015.04.008.

(Joint first)

1. Borthwick M, Barton G, Bourne RS, McKenzie C. Critical care pharmacy workforce: UK deployment and characteristics in 2015. *Int J Pharm Pract*. 2017. doi:10.1111/ijpp.12408.

1. Rudall N, Mckenzie C, Landa J, Bourne RS, Bates I, Shulman R. PROTECTED-UK - Clinical pharmacist interventions in the UK critical care unit: Exploration of relationship between intervention, service characteristics and experience level. *Int J Pharm Pract*. 2016. doi:10.1111/ijpp.12304. (corresponding)

1. Shankar-Hari M, Donnelly A, Pinto R, et al. The influence of statin exposure on inflammatory markers in patients with early bacterial infection: Pilot prospective cohort study. *BMC Anesthesiol*. 2014;14(1). doi:10.1186/1471-2253-14-106.

**Editorials**

1. Devlin JW, **McKenzie C.** Expanding the Reach of Critical Care Pharmacists Globally\*. *Crit Care Med*. 2018;46(2):328-330. doi:10.1097/CCM.0000000000002879.

2.            Hanks F, **McKenzie C**. Paracetamol in intensive care – intravenous, oral or not at all? *Anaesthesia*. 2016;71(10). doi:10.1111/anae.13517.

**3. McKenzie C** A Corticosteroids in Delirium: Yet Another Critical Care Conundrum?

Crit Care Med. 2015 Dec;43(12):2703-4. doi: 10.1097/CCM.0000000000001436. No abstract available.

PMID: 26575670

**Feature articles**

 Edgeworth C. The Tale of the Consultant pharmacist and complex regional pain syndrome. Pharmacy in Practice September 25, 2018.

**Investigator citations**

PROTECT

1. Li G, Cook DJ, Levine MAH, et al. Competing risk analysis for evaluation of dalteparin versus unfractionated heparin for venous thromboembolism in medical-surgical critically ill patients. *Med (United States)*. 2015;94(36). doi:10.1097/MD.0000000000001479.

2.            Lamontagne F, McIntyre L, Dodek P, et al. Nonleg venous thrombosis in critically Ill adults a nested prospective cohort study. *JAMA Intern Med*. 2014;174(5). doi:10.1001/jamainternmed.2014.169.

DALI

3. Roberts JA, De Waele JJ, Dimopoulos G, et al. DALI: Defining Antibiotic Levels in Intensive care unit patients: a multi-centre point of prevalence study to determine whether contemporary antibiotic dosing for critically ill patients is therapeutic. *BMC Infect Dis*. 2012. doi:10.1186/1471-2334-12-152.

4.            Abdul-Aziz MH, Lipman J, Akova M, et al. Is prolonged infusion of piperacillin/tazobactam and meropenem in critically ill patients associated with improved pharmacokinetic/pharmacodynamic and patient outcomes? An observation from the Defining Antibiotic Levels in Intensive care unit patients (DALI) cohort. *J Antimicrob Chemother*. 2016. doi:10.1093/jac/dkv288.

5.            Roberts JA, Paul SK, Akova M, et al. DALI: Defining antibiotic levels in intensive care unit patients: Are current ß-lactam antibiotic doses sufficient for critically ill patients? *Clin Infect Dis*. 2014. doi:10.1093/cid/ciu027.

6. JJ De Waele, J Lipman, M Akova, M Bassetti, G Dimopoulos, M Kaukonen,

Risk factors for target non-attainment during empirical treatment with β-lactam antibiotics in critically ill patients

Intensive care medicine 40 (9), 1340-13512014

7. JA Roberts, V Stove, JJ De Waele, B Sipinkoski, B McWhinney, ...

Variability in protein binding of teicoplanin and achievement of therapeutic drug monitoring targets in critically ill patients: lessons from the DALI Study

International journal of antimicrobial agents 43 (5), 423-430

8. Clin Infect Dis. 2014 Apr;58(8):1072-83. doi: 10.1093/cid/ciu027. Epub 2014 Jan 14.

Variability in protein binding of teicoplanin and achievement of therapeutic drug monitoring targets in critically ill patients: lessons from the DALI Study.

9. Roberts JA, Stove V, De Waele JJ, Sipinkoski B, McWhinney B, Ungerer JP, Akova M, Bassetti M, Dimopoulos G, Kaukonen KM, Koulenti D, Martin C, Montravers P, Rello J, Rhodes A, Starr T, Wallis SC, Lipman J; DALI Study Authors.

Int J Antimicrob Agents. 2014 May;43(5):423-30. doi: 10.1016/j.ijantimicag.2014.01.023. Epub 2014 Feb 22.

PMID: 2463030

SUP-ICU

10. Krag M, Perner A, Wetterslev J, Wise MP, Borthwick M, Bendel S, McArthur C, Cook D, Nielsen N, Pelosi P, Keus F, Guttormsen AB, Moller AD, Møller MH; SUP-ICU co-authors

Prevalence and outcome of gastrointestinal bleeding and use of acid suppressants in acutely ill adult intensive care patients.

Intensive Care Med. 2015 Apr 10. [Epub ahead of print]

PMID: 25860444

11. ASAP ECMO Investigator

Shekar K, Fraser JF, Taccone FS, Welch S, Wallis SC, Mullany DV, Lipman J, Roberts JA; ASAP ECMO Study Investigators.

The combined effects of extracorporeal membrane oxygenation and renal replacement therapy on meropenem pharmacokinetics: a matched cohort study.

Crit Care. 2014 Dec 12;18(6):565. doi: 10.1186/s13054-014-0565-2.

PMID: 25636084 Free PMC Article

**2013 and earlier**

Berry W, Hewson R, Langrish C**, McKenzie CA**, Barrett NA Levosimendan: A single site retrospective case series Journal of Critical Care 2013 28(6): 1075-1078

Tovey L, Dickie H, Di Gangi S,Terblanche M, **McKenzie CA**, Beale R, Treacher D, Ostermann M Beyond the randomized clinical trial: Citrate for continuous renal replacement therapy in clinical practice . Nephron 2013.

Maintaining normal levels of ionized calcium during citrate-based renal replacement therapy is associated with stable parathyroid hormone levels.

Raimundo M, Crichton S, Lei K, Sanderson B, Smith J, Brooks J, Ng J, Lemmich Smith J, McKenzie C, Beale R, Dickie H, Ostermann M.

Nephron Clin Pract. 2013;124(1-2):124-31. doi: 10.1159/000355860. Epub 2013 Nov 2.

Gillies MA**, McKenzie CA,** Whitely C, Beale RJ, Tibby SM Safety of nicotine replacement therapy in critically Il l smokers: a retrospective cohort study. [Intensive Care Med.](http://www.ncbi.nlm.nih.gov/pubmed?term=%E2%80%A2%09Gillies%20MA%2C%20McKenzie%20CA%2C%20Whitely%20C%2C%20Beale%20RJ%2C%20Tibby%20SM##) 2012 Oct;38(10):1683-8. Epub 2012 May 23

Barrett NA, Jones A, Whiteley C, Yassin S, **McKenzie CA** Management of

Hypothyroidism: a marker of medicines reconciliation with the intensive care unit (ICU). International Journal of Pharmacy Practice 2012 DOI: 10.1111/j.2042-7174.2012.00205.x

**McKenzie CA,** Kasliwal M, Barrett NA Atypical Antipsychotics and Delirium in Critical Care. Critical Care 2011; **15**:453

**McKenzie CA**, Hatton K, Lim J, Barrett N Improving the Accuracy and Timeliness of Medication Allergy Documentation in the Intensive Care Unit. Pharmaceutical Journal 2011; 286: 1-5

Boyle A, **McKenzie CA,** McLuckie A, Yassin S, Wyncoll D Outcomes and adverse events associated with drotrecogin alfa (activated): a single-centre experience of 498 patients. J Crit Care. 2011 Dec 13. [Epub ahead of print]

Wan R, Kasiwal M, **McKenzie CA**, Barrett N, Quetiapine in refractory mixed and hyperactive delirium Critical Care 2011; **15:** R159

**McKenzie CA**. Antibiotic Dosing in Critical Care. Journal of Antimicrobial Chemotherapy 2011 66: ii25-ii31

**McKenzie CA** Borthwick M, Thacker M, Shulman R, Offord R, McRobbie D, , Assessing and Credentialing Advanced or Higher Level Practice 2010; Pharmaceutical Journal: 286

Whelan G and **McKenzie CA** Continuous renal replacement therapy Hospital Pharmacy Europe 2011

Berry W and **McKenzie CA** Use of inotropes in critical care Clinical Pharmacist 2010

Wyncoll D and **McKenzie CA** Sedation versus no sedation in the intensive-care unit

Lancet 2010; 375: p 9721

Bruynesteyn, Gant V**, McKenzie CA,** Pagliuca T, Poynton C, Kumar RN, Jansen JP

A cost-effectiveness analysis of caspofungin vs liposomal amphotericin B for treatment of suspected fungal infections in the UK. European Journal of Haemtaology 2007; 6: 1-5

Tomlin M, Borthwick M, Forrest R, Young K, **McKenzie CA ,** New ways of working for pharmacists in adult critical care Hospital Pharmacist 2OO5; 363-368

**McKenzie CA**, McKinnon W, Naughton DP, Treacher DF, Davies G, Phillips GJ, Hilton PJ Differentiating midazolam over sedation from neurological damage in the intensive care unit Critical Care 2005; 9: 32-36

**McKenzie CA**, McKinnon W, Naughton DP, Treacher DF, Davies G, Phillips GJ, Hilton PJ Between benzodiazepine over-sedation and neurological damage Critical Care 2005; 9:303

Henderson J, **McKenzie CA**, Hilton PJ, Leach RM Continuous veno-veno haemofiltration for treatment of theophylline toxicity Thorax May 2001; 56:242-243

Meyer E, **McKenzie CA**, Benrimo SI. Epilepsy (Part 1), Aust Journ Pharm , 1992;73:742-744

Meyer E, **McKenzie CA**, Benrimo SI. Epilepsy (Part 2), Aust Journ Pharm , 1992; 73:855-860

**Book Chapters**

**McKenzie CA** Acid-base and Arterial Blood Gasses

Clinical Pharmacy Compendium 2017

Whelan G, **McKenzie C A**. Chapter 15: Drugs Acting on the Respiratory System. Respiratory Disease and its Management. Series: Competency-Based Critical Care. Springer. McLuckie, A. (Ed.). June 2009

Melocco T, Kerr S, **McKenzie CA**, Drug toxicity and interactions post transplantation, Bone Marrow Transplantation, Blackwell Scientific Publications Atkinson (Ed.)1994

**National Publications**

RPS Publications 2014 **McKenzie CA (Co-author)**

New Medicines, Better Medicines Better Use of Medicines

**McKenzie CA** (lead author) New Ways of Working in Adult Critical Care, Specialist Pharmacy Practice 2008

Dade J, **McKenzie CA**, The Clinical Pharmacist, A guideline for healthcare professional staffing in critical care, DH 2002

**McKenzie CA**, West AL, Dade JD, Critical care pharmacy services, Intensive Care Society 2000

# Published and Submitted Abstracts

1. Almehari E, Davies GD, Barrett NA, **McKenzie CA** Higher doses of quetiapine prescribed in delirious ECMO supported patients. Can circuit sequestration have a role?7th EuroELSO Congress on ECMO-ECLS 2018
2. Almehari E, Davies GD, Taylor D, Yassin S, **McKenzie CA**, Antipsychotics (APs) prescribing in critically ill delirious patients, the reported versus the perceived practice March 2018, DOI: 10.13140/RG.2.2.17790.48965
3. Wan R, Camporata L**, McKenzie CA**, Taylor D Precipitating factors in critical care delirium. Critical Care Medicine 2016-04-16
4. De Val, **McKenzie CA** and Glover G Medication errors on step-down from the ICU

UKCPA 2013

1. Landa J**, McKenzie CA** and Shulman RS Pharmacist weekend activities on the Intensive Care Unit (ICU) RPS 2014
2. Wan R, Whiteley C, **McKenzie CA**, Jones A **Attention to electronic prescription process improves time to first antibiotic in patients on intensive care unit (ICU)** Critical Care 2011 (In press)
3. Boyle A, **McKenzie CA**, Yassin S, McLuckie A, Wyncoll D [**Outcomes and incidence of bleeding events associated with drotrecogin alfa: a single-centre experience of 440 patients**](http://ccforum.com/content/14/S1/P404)Critical Care 2010, 14(Suppl 1):P404 (1 March 2010)
4. **McKenzie CA**, Yassin S, TerblancheM [**Sedation and analgesia: early results from a web-based survey of UK practice**](http://ccforum.com/content/14/S1/P490)Critical Care 2010, **14** (Suppl 1):P490 (1 March 2010)
5. Hatton K, Barrett N, Lim J, **McKenzie CA**

[**Allergy documentation and transfer within critical care**](http://ccforum.com/content/14/S1/P451)Critical Care 2010, **14**(Suppl 1):P451 (1 March 2010)

1. **McKenzie CA**, Naughton D, Davies G, Treacher D

[**Extraction and purification of 1-hydroxymidazolam glucuronide from ultra-filtrate**](http://ccforum.com/content/14/S1/P512)Critical Care 2010, **14**(Suppl 1):P512 (1 March 2010)

1. Kasliwal MR, **McKenzie CA**, Barrett NA

[**Quetiapine in prolonged ICU delirium**](http://ccforum.com/content/14/S1/P497)Critical Care 2010, **14**(Suppl 1):P497 (1 March 2010)

1. A Donnelly; NK Adhikari; R Pinto; Z Salih**; McKenzie CA**; M Terblanche

**The evolution of inflammation in non-ICU patients with infection: pilot prospective cohort study**

*Critical Care* 2009, **13**(Suppl 1):P332 (13 March 2009)

1. Gillies M, Pratt R, Borg J, Bhurrut A, Brooks J**, McKenzie CA**, Tibby SM

**Does choice of sedative agent affect duration of ICU stay, mortality or neurological outcome in patients undergoing therapeutic hypothermia?**

Critical Care 2009, **13**(Suppl 1):P400 (13 March 2009)

# S Lippett1, R Batra2, McKenzie CA1, R Beale1 and D Wyncoll1

Levosimendan: experience of an adult ICU

*Critical Care* 2006, **10**(Suppl 1)**:**P357

1. **S Yassin**1, **H Wells**1, **R Batra**2, **McKenzie CA**1, **D Wyncoll**1, **R Offord**1 and **A McLuckie**1

Monitoring a high-cost drug in critical care units

*Critical Care* 2006, **10**(Suppl 1)**:**P38

1. **McKenzie, CA,** McKinnon, W., Naughton, D.P, Treacher, D., Davies, G., Phillips, G.J., Hilton. (2007) **Over sedation and Midazolam (MDZ) in the intensive care unit** (ICU).Pharmacy World & Science 29, 291-293.

**16) McKenzie CA**, G Davies ,C Oliffe, G Phillips2, D Treacher, P Hilton

**Midazolam (MDZ) AND Aphahydroxymidazolam glucuronide (α-OHMG) detection in ventilated patients using liquid chromatography/mass spectrometry (LC-MS).**

Anaesth and Analg 2002, 7 (Supplement 1), F133

1. **Offord RH, Yassin SM, McKenzie CA,** McLuckie A.

**An approach to ensuring consistent standards of prescribing and usage of drotrecogin-Alfa across a network of healthcare institutions** Pharmacy World & Science 2006

1. **SJ Russell**1, **McKenzie****CA**  and **AC Davids**on of the use of hydrocortisone in intensive care patients with sepsis

*Critical Care* 2002, **6**(Suppl 1)**:**P222

1. **McKenzie CA,** Davidson AC, Leach RM, Palmer A and Treacher DF Fluid Replacement in the ICU, Int Care Med 1997;24: Suppl 1 S607
2. Giles LJ, Herriman T, **McKenzie CA,** Dall Meyer R, Reducing drug costs in intensive care PWS 1997;16: Suppl 6 S803
3. McKenzie, Treacher DF and Leach RM Impact of a specialist pharmacist on drug costs in critical care 1995: 18: S6702