

JONATHAN MILLAR

PERSONAL INFORMATION

FULL NAME:	Jonathan Edward Millar	ADDRESS:	26 Calderstone Drive
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QUALIFICATIONS AND MEMBERSHIP AWARDS

University College London, 2009: **MBBS**

Royal College of Emergency Medicine, 2013: **MRCEM**

University of Queensland, 2016 - 2020: **PhD** "*Cell therapy during extracorporeal membrane oxygenation*"

SELECTED PRIZES AND AWARDS

2016 | **Intensive Care Society New Investigator Award**

2012 | **Intensive Care Society of Ireland Kate Flynn Prize Finalist**

2008 | **University College London Medical School Bunzl & Hart Prize for Psychiatry**

2008 | **University College London Medical School Bernard Hart Prize for Clinical Neurosciences**

CURRENT EMPLOYMENT

2020 – present Clinical Lecturer, Intensive Care Medicine, Roslin Institute, University of Edinburgh

2020 – present Honorary Specialist Registrar, Intensive Care Medicine, South East of Scotland

PREVIOUS EMPLOYMENT

2019 – 2020 Visiting Researcher, Baillie Lab, Roslin Institute, University of Edinburgh

2018 – 2020 Specialist Registrar, Intensive Care Medicine, West of Scotland

2016 – 2020 NHMRC CRE Doctoral Fellow, Critical Care Research Group, University of Queensland

2018 – 2019	Visiting Research Fellow, Institute of Experimental Medicine, Queen's University Belfast
2018	Clinical Research Fellow, Regional Intensive Care Unit, Royal Victoria Hospital, Belfast
2016 – 2018	Clinical Research Fellow, Intensive Care Unit, St. Andrew's War Memorial Hospital, Brisbane
2013 – 2015	Acute Care Common Stem StR (Emergency Medicine), West of Scotland
2013 – 2015	Glasgow Academic Training Environment StR, Department of Anaesthesia, Critical Care & Pain, University of Glasgow
2012 – 2013	Clinical Research Fellow, Emergency Department, Royal Victoria Hospital, Belfast
2011 – 2012	General Duties Medical Officer, Royal Army Medical Corps, British Army
2009 – 2011	Academic Foundation Trainee, Northern Ireland Medical & Dental Training Agency

ACADEMIC ACTIVITIES

COMMITTEES

Member, Innovations Workgroup, European Extracorporeal Life Support Organisation (EuroELSO)

Member, Biobank Committee, International ECMO Network

Chair, NHMRC Centre for Research Excellence and EuroELSO collaboration on standards in pre-clinical ECMO research

CLINICAL TRIALS

Co-investigator, Protective Ventilation with Veno-venous Lung Assist in Respiratory Failure (REST)

Co-investigator, High Flow Nasal Oxygen After Bariatric Surgery Study (OXYBAR)

Co-investigator, Aspirin as a Treatment for ARDS (STAR)

Co-investigator, Propofol Target-Controlled Infusion for Sedation in the Emergency Department Study (Pro-TEDS)

PEER REVIEW

PLoS One	Oncotarget	J Crit Care
ASAIO J	Crit Care Resusc	Resp Care
Emerg Med J	J Vis Exp	Am J Resp Crit Care Med

MAJOR TRAUMA

Project Lead, Northern Ireland Major Trauma Audit. bit.ly/2mWEt0L

I acted as project lead on behalf of the Northern Ireland Guidelines and Audit Implementation Network. I was involved in the design, funding, and delivery of the one-year audit of all major trauma cases in Northern Ireland. My role involved the provision of briefings to ministerial level and the drafting of the final report.

Member, Scottish Trauma Audit Group Steering Group (2013-2015).

I acted as the trainee representative to the national steering group responsible for the administration and strategic management of Scotland's trauma database project.

MEMBERSHIPS

Member, Extracorporeal Life Support Organisation; Member, European Society of Intensive Care Medicine; Member, American Thoracic Society; Member, Faculty of Intensive Care Medicine.

RESEARCH GRANTS

Principal

Project Grant Combining extracorporeal life support and cell therapy in critical illness (CELTIC).
\$84,473 AUD TPCF Foundation Experienced Researcher Award 2016

Project Grant Combining extracorporeal life support and cell therapy in critical illness (CELTIC).
£15,000 Intensive Care Society (UK) New Investigator Award 2016

Project Grant Northern Ireland Trauma Audit
£35,000 Guidance & Audit Implementation Network 2013

Co-applicant

Programme Grant Bench, bedside, and beyond: a translational research programme to improve outcomes for patients suffering critical illness.
\$600,000 AUD TPCF Foundation Programmes Grant 2017

RESEARCH SUPERVISION

Principal Supervisor Ms. Mengyao Yang (2018) BSc Honors, University of Queensland
The immunomodulatory properties of human mesenchymal stem cells during extracorporeal membrane oxygenation.

Co-supervisor Mr. Michael Cavaye (2017) BSc Honors, University of Queensland
The role of complement activation in the immune response to extracorporeal membrane oxygenation.

Principal Supervisor Mr. Kerrick Hesse (2015) MB BCh SSC, University of Glasgow
Predicting the requirement for massive transfusion after major trauma.

Examiner BSc Honors Dissertations, Faculty of Medicine, University of Queensland (2017-18)

Examiner MB BCh Finals Examinations, University of Glasgow (2014)

External Examiner Peter Nelson Prize, Queen's University Medical School (2013)

SELECTED PUBLICATIONS

JOURNALS EDITED

Millar JE, Fraser JF. ECMO and beyond. *Crit Care Resusc* 2017;18(1)

BOOK CHAPTERS

Hartley EL, **Millar JE**, Fraser JF. The unholy blood: biomaterial interaction in extracorporeal circulation.

Extracorporeal Membrane Oxygenation: An interdisciplinary problem-based learning approach. Oxford University Press. In preparation.

Millar JE, Gregory S, Stevens M, Fraser JF, Bartlett B. Past, Present, and Future.

Mechanical Circulatory and Respiratory Support. Academic Press (Elsevier), 2017.

EDITORIALS

Millar JE, Busse R, Fraser JF, Karagiannidis C, McAuley DF. Apples and oranges: international comparisons of COVID-19 observational studies in ICUs.

Lancet Respir Med 2020. 8(10):952-953. doi: [10.1016/S2213-2600\(20\)30368-4](https://doi.org/10.1016/S2213-2600(20)30368-4)

Millar JE, Fraser JF, McAuley DF. Mesenchymal stromal cells and the acute respiratory distress syndrome (ARDS): challenges for clinical application.

Thorax 2015. 70(7):611-612. doi: [10.1136/thoraxjnl-2015-207121](https://doi.org/10.1136/thoraxjnl-2015-207121)

ORIGINAL ARTICLES

Burton F, Lowe DJ, **Millar JE**, Corfield AR, Watson MJ, Sim MAB. Propofol target-controlled infusion in emergency department sedation (Peo-TEDS): a multicentre, single-arm feasibility study.

Emerg Med J 2020. Epub ahead of print. doi: [10.1136/emmermed-2020-209686](https://doi.org/10.1136/emmermed-2020-209686)

Millar JE, Neyton L, Seth S, Dunning J, Merson L, Murthy S, Russell CD, Keating S, Swets M, Sudre CH, Spector TD, Ourselin S, Steves CJ, Wolf J, ISARIC4C Investigators, Docherty AB, Harrison EM, Openshaw PJM, Semple MG, Baillie J. Robust, reproducible clinical patterns in hospitalised patients with COVID-19.

medRxiv 2020. doi: [10.1101/2020.08.14.20168088](https://doi.org/10.1101/2020.08.14.20168088)

Li Bassi G, Suen JY, Barnett AG, Corley A, **Millar J**, Fanning JP, Lye I, Colombo S, Wildi K, Livingstone S, Abbate G, Hinton S, Lique B, Shrapnel S, Dalton HJ, Fraser JF. Design and rationale of the COVID-19 Critical Care Consortium international, multicentre, observational study.

BMJ Open 2020. 10:e041417. doi: [10.1136/bmjopen-2020-041417](https://doi.org/10.1136/bmjopen-2020-041417)

Rozencwajg S, Heinser S, Suen JY, Li Bassi G, Malfertheiner MV, Vercaemst L, Broman LM, Schmidt M, Combes A, Ratsep I, Fraser JF, **Millar JE**. Heart failure supported by veno-arterial extracorporeal membrane oxygenation (ECMO): a systematic review of pre-clinical models.

Intensive Care Med Exp 2020. 8:16. doi: [10.1186/s40635-020-00303-5](https://doi.org/10.1186/s40635-020-00303-5)

Malfertheiner MV, Koch C, Fisser C, **Millar JE**, Maier LS, Zemen F, Poschenrieder F, Lubnow M, Phillip A, Muller T. Incidence of early intra-cranial bleeding and ischaemia in adult veno-arterial extracorporeal membrane oxygenation and extracorporeal cardiopulmonary resuscitation patients: a retrospective analysis of risk factors.

Perfusion 2020. 35(1_suppl):8-17. doi: [10.1177/2F0267659120907438](https://doi.org/10.1177/2F0267659120907438)

Malfertheiner MV, Broman LM, Vercaemst L, Belliato M, Aliberti A, Di Nardo M, Swol J, Barrett N, Pappalardo F, belohlavek J, Taccone FS, **Millar JE**, Crawford L, Lorusso L, Suen JY, Fraser JF. Ex vivo models for research in extracorporeal membrane oxygenation: a systematic review of the literature.

Perfusion 2020. 35(1_suppl):38-49. doi: [10.1177/2F0267659120907439](https://doi.org/10.1177/2F0267659120907439)

Millar JE, Bartnikowski N, Passmore MR, Obonyo NG, Malfertheiner MV, von Bahr V, Redd MA, See Hoe L, Ki KK, Pedersen S, Boyle AJ, Baillie JK, Shekar K, Palpant N, Suen JY, Matthay MA, McAuley DF, Fraser JF. Combined mesenchymal stromal cell therapy and ECMO in ARDS: a randomised controlled trial in sheep.

Am J Resp Crit Care Med 2020. 202(3):383-392. doi: [10.1164/rccm.201911-2143OC](https://doi.org/10.1164/rccm.201911-2143OC)

See Hoe LE, Wells MA, Bartnikowski N, Obonyo NG, **Millar JE**, Khoo A, Ki KK, Shuker T, Ferraioli A, Colombo SA, Chan W, McGiffin DC, Suen JY, Fraser JF. Heart Transplantation From Brain Dead Donors: A Systematic Review of Animal Models.

Transplantation 2020. Epub ahead of print. doi: [10.1097/TP.0000000000003217](https://doi.org/10.1097/TP.0000000000003217)

Russell CD, **Millar JE**, Baillie JK. Clinical Evidence Does Not Support Corticosteroid Treatment for 2019-nCoV Lung Injury.

Lancet 2020. 395(10223):473-475. doi: [10.1016/S0140-6736\(20\)30317-2](https://doi.org/10.1016/S0140-6736(20)30317-2)

Burton FM, Lowe DJ, **Millar JE**, Corfield AR, Watson MJ, Shaw M, Sim MAB. Effect of target-controlled propofol infusion to reduce the incidence of adverse events for procedural sedation in the emergency department: a systematic review.

Eur J Emerg Med 2019. Epub ahead of print. doi: [10.1097/MEJ.0000000000000655](https://doi.org/10.1097/MEJ.0000000000000655)

Ki KK, Passmore MR, Chan CHH, Malfertheiner MV, Fanning JP, Bouquet M, **Millar JE**, Fraser JFF, Suen JY. Low flow rate alters haemostatic parameters in an ex-vivo extracorporeal membrane oxygenation circuit.

Intensive Care Medicine Exp 2019. 7(1):51. doi: [10.1186/s40635-019-0264-z](https://doi.org/10.1186/s40635-019-0264-z)

Millar JE, Bartnikowski N, von Bahr V, Malfertheiner MV, Obonyo NG, Belliato M, Suen JY, Combes A, McAuley DF, Lorusso R, Fraser JF. Extracorporeal membrane oxygenation (ECMO) and the acute respiratory distress syndrome (ARDS): a systematic review of pre-clinical models.

Intensive Care Med Exp 2019. 7(1):18. doi: [10.1186/s40635-019-0232-7](https://doi.org/10.1186/s40635-019-0232-7)

von Bahr, **Millar JE**, Malfertheiner MV, Ki KK, Passmore MR, Bartnikowski N, Redd MA, Cavaye M, Suen JY, McAuley DF, Fraser JF. Mesenchymal stem cells may ameliorate inflammation in an ex-vivo model of extracorporeal membrane oxygenation.

Perfusion 2019. 34(Suppl 1):15-21. doi: [10.1177/0267659119830857](https://doi.org/10.1177/0267659119830857)

von Bahr V, Kalzen H, Frenckner B, Hultman J, Frisen KG, Lidegran MK, Diaz S, Malfertheiner MV, **Millar JE**, Dobrosavljjevic T, Eksborg S, Holzgraefe B. Long-term pulmonary function and quality of life in adults after extracorporeal membrane oxygenation for respiratory failure.

Perfusion 2019. 34(Suppl 1):49-57. doi: [10.1177/0267659119830244](https://doi.org/10.1177/0267659119830244)

Obonyo NG, Byrne L, Tung JP, Simonova G, Diab SD, Dunster KR, Passmore MR, Boon AC, See Hoe L, Engkilde-Pedersen S, Fauzi MH, Pimenta LP, **Millar JE**, Fanning JP, Van Haren F, Anstey CM, Cullen L, Fraser JF. Pre-clinical study protocol: Blood transfusion in endotoxaemic shock.

Methods X 2019. 6:1124-1132. doi: [10.1016/j.mex.2019.05.005](https://doi.org/10.1016/j.mex.2019.05.005)

Burton FM, Lowe DJ, **Millar J**, Corfield AR, Sim MAB. A study protocol for a feasibility study: Propofol Target-Controlled Infusion in Emergency Department Sedation (PRoTEDS) – a multicentre feasibility study protocol.

Pilot and Feasibility Studies 2019. 5(1):27. doi: [10.1186/s40814-019-0412-y](https://doi.org/10.1186/s40814-019-0412-y)

Fulton R, **Millar JE**, Merza M, Johnston H, Corley A, Faulke D, Rapchuk I, Tarpey J, Lockie P, Lockie S, Fraser JF. High flow nasal oxygen after bariatric (OXYBAR), prophylactic post-operative high flow nasal oxygen versus conventional oxygen therapy in obese patients undergoing bariatric surgery: a study protocol for a randomised controlled pilot trial.

Trials 2018. 19(1):402. doi: [10.1186/s13063-018-2777-2](https://doi.org/10.1186/s13063-018-2777-2)

Millar JE, von Bahr V, Malfertheiner MV, Ki KK, Redd MA, Bartnikowski N, Suen JY, McAuley DF, Fraser JF. Administration of mesenchymal stem cells during ECMO results in a rapid decline in oxygenator performance.

Thorax 2018. 0:1–3. doi: [10.1136/thoraxjnl-2017-211439](https://doi.org/10.1136/thoraxjnl-2017-211439)

Fanning JP, See Hoe LE, Passmore MR, Barnett AG, Rolfe BE, **Millar JE**, Wesley AJ, Suen JY, Fraser JF. Differential immunological profiles herald magnetic resonance imaging-defined perioperative cerebral infarction.

Ther Adv Neurol Disord 2018. 11:11:1756286418759493. doi: [10.1177/1756286418759493](https://doi.org/10.1177/1756286418759493)

Malfertheiner MV, Pimenta LP, von Bahr V, **Millar JE**, Obonyo NG, Suen JY, Pellegrino V, Fraser JF. Acquired von Willebrand syndrome in respiratory extracorporeal life support: a systematic review of the literature.

Crit Care Resusc 2017. 19(1):45-52.

Millar JE, Fanning JP, McDonald CI, McAuley DF, Fraser JF. The inflammatory response to extracorporeal membrane oxygenation (ECMO): a review of the pathophysiology.

Crit Care 2016. 20(1):387. doi: [10.1186/s13054-016-1570-4](https://doi.org/10.1186/s13054-016-1570-4)

Devaney J, Smyth R, Lutton S, McLaughlin R, **Millar JE**. The soda dipstick: A convenient and cost-effective means of identifying the sugar content of soft drinks.

Journal of Diabetes 2016. 8(6):877-878. doi: [10.1111/1753-0407.12431](https://doi.org/10.1111/1753-0407.12431)

Lowe DJ, **Millar JE**, Dignon N, Ireland A. Top 10 lessons from the Glasgow major incidents.

Emerg Med J 2016. 33(8):596-597. doi: [10.1136/emered-2015-205626](https://doi.org/10.1136/emered-2015-205626)

Fitzgerald M, **Millar J**, Blackwood B, Davies A, Brett S, McAuley DF, McNamee J. Extracorporeal carbon dioxide removal for patients with acute respiratory failure secondary to the Acute Respiratory Distress Syndrome: a systematic review.

Crit Care 2014. 18:222. doi: [10.1186/cc13875](https://doi.org/10.1186/cc13875)

Millar J, Lutton S, O'Connor P. The use of high flow nasal oxygen in the management of hypercarbic respiratory failure.

Ther Adv Respir Dis 2014. 8(2): 63-64. doi: [10.1177/1753465814521890](https://doi.org/10.1177/1753465814521890)

Millar J, Sadasivan S, Weatherup N, Lutton S. Lyrica nights Recreational Pregabalin abuse in an urban Emergency Department.

Emerg Med J 2013. 30:874. doi: [10.1136/emered-2013-203113.20](https://doi.org/10.1136/emered-2013-203113.20)

LETTERS

Millar JE, Lutton S, McLaughlin R. Need for a systematic audit of trauma care in Northern Ireland.

BMJ 2016. 353:i2025. doi: [10.1136/bmj.i2025](https://doi.org/10.1136/bmj.i2025)

SELECTED PUBLISHED ABSTRACTS

Millar J, Bartnikowski N, Obonyo N, Malfertheiner MV, von Bahr V, Yang M, Redd M, Passmore M, Ki K, Pedersen S, Palpant N, Suen J, McAuley D, Fraser J. The sticking point: Challenges associated with clinical-grade mesenchymal stem cell therapy in an ovine model of ARDS and ECMO.

J Intensive Care Soc 2019. 20(2 Suppl):EP171.

Fanning JP, Obonyo NG, Tung JP, Byrne L, Siminova G, Diab S, Dunster K, Passmore M, Boon AC, See Hoe L, Engkilde-Pedersen S, Esguerra-Lallen A, Fauzi MH, Pimeta LP, **Millar J**, Anstey C, Van Haren F, Cullen L, Suen J, Shekar K, Maitland K, Fraser JFF. Packed red cell age associated with adverse cardiovascular changes in an ovine model of septic shock resuscitation.

Circulation 2018. 138(Suppl 1):A17116.

Bartnikowski N, Obonyo N, Pedersen S, Wells M, **Millar J**, Raffel O, Suen J, Gregory S, Haqqani H, Fraser J. Development of an ovine model of dilated cardiomyopathy to facilitate clinically translational research.

Heart Lung Circ 2018. 27:S92.

Fraser JF, Tung JP, Simonova G, Engkilde-Pedersen S, Esguerra-Lallen A, Sultana A, Hewlett E, Obonyo N, **Millar JE**, Flower R. Point-of-care testing in an ovine model of transfusion-related acute lung injury.

Pathology 2017. 49:S107-108.

Obonyo N, Bartnikowski N, Haqqani H, Pedersen S, **Millar JE**, He C, Shiino K, Chan J, Platts D, Raffel O, Gregory S, Fraser JF. Heart Failure Pre-Clinical Model Development: Echocardiography and Cardiac Strain Evaluation.

Heart Lung Circ 2017. 26:S136.

Millar J, McPeake J, Fulton R, Kinsella J. Not all cirrhotics are equal: acute-on-chronic liver failure in the ICU.

J Intensive Care Soc 2015.16(1):24-26.

Millar J, Adamson F, O'Connor P, Wilson R, Ferrie E, McLaughlin R. Use of propofol for procedural sedation reduces length of stay in the Emergency Department.

Crit Care 2013. 17(Suppl 2):P390.

Millar J, O'Connor P, Wilson R, McLaughlin R. Shunts, bumps and scrapes: The burden of injury following minor road traffic collisions.

Acad Emerg Med 2012. 19(6):710–780.

INVITED LECTURES

2020 **Critical Care Updates Series, Royal College of Physicians & Surgeons Glasgow.** Emerging therapies in ARDS. Glasgow, United Kingdom.

2019 **EuroELSO Expert Webinar Series.** The future of anticoagulation during ECMO. Online.

2019 **International ECMONet Annual Scientific Meeting.** Identifying phenotypes of acute hypoxaemic respiratory failure during ECMO. London, United Kingdom.

2019 **EuroELSO Annual Scientific Meeting.** Where it went wrong for mesenchymal stem cells in ECMO. Barcelona, Spain.

2019 **EuroELSO Annual Scientific Meeting.** Anticoagulation during VA ECMO: Complexity made simple. Barcelona, Spain.

2018 **5th Annual Korean ECMO Symposium.** Mesenchymal stem cells during ECMO. Gwangju, Republic of Korea.

2018 **European Society of Emergency Medicine Annual Scientific Meeting.** Applications for high flow nasal oxygen in the Emergency Department. Glasgow, United Kingdom.

2018 **International ECMONet Annual Scientific Meeting.** The CELTIC study. Rome, Italy.

2017 **Asia-Pacific ELSO Bi-annual Scientific Meeting.** Novel monitoring techniques during ECMO. Gold Coast, Australia.

2017 **ANZICS Annual Scientific Meeting.** Swimming outside the flags: Cell therapy during ECMO. Gold Coast, Australia.

2017 **5th International ARDS Conference.** Mesenchymal stem cells and ECMO. Paris, France.

REFEREES

Prof Danny McAuley

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