
New Models of Care project to improve the patient's journey

Initiative Type

Service Improvement

Status

Deliver

Added

14 February 2018

Last updated

19 August 2024

URL

<https://clinicaexcellence.qld.gov.au/improvement-exchange/new-sopd-moc>

Summary

The New Models of Care (NMC) project is the fourth key investment initiative of the Queensland Government's [Specialist Outpatient Strategy – Improving the Patient Journey](#), aiming to improve the patient's journey and reduce patient waiting times for appointments. The NMC project is exploring new ways of providing optimal specialist outpatient care under two programs targeting: (1) proven models of care across selected Hospital and Health Services (the *Spread and Scale Program*), and

(2) 'proof of concept' trials of new and innovative models of care (the *Futures Program*). Both NMC programs will support and facilitate the broader Strategy goals to:

1. reduce the number of Queenslanders waiting longer than clinically recommended for an initial specialist outpatient appointment; and
2. boost the capacity of the public health system to provide additional specialist appointments and healthcare services.

Key dates

Jul 2017

Jun 2019

Implementation sites

Projects are being implemented by the following hospitals/HHSs: Caboolture, Cairns, Gold Coast, Ipswich, Logan, Mater, Princess Alexandra, Redcliffe, Royal Brisbane and Women's, Redcliffe, Redland, Sunshine Coast, Torres and Cape, and Prince Charles.

Partnerships

Projects are being delivered in partnerships between HHSs, general practitioners, primary care networks, and the Department of Health

Key Contacts

Jody Paxton

0021

paul.blee@hiu

Service Improvement Manager

Aim

The aim of the NMC project is to identify new specialist outpatient models of care that can address structural difficulties within existing conventional models in order to increase patient access to specialist outpatient services; reduce the number of patients waiting longer than clinically recommended for an initial appointment; and boost capacity of the public health system to provide appointments in a scalable and sustainable manner.

Benefits

Anticipated benefits of the NMC project include:

- Cultivation of new ideas and innovative solutions in outpatient service delivery
- Accelerated establishment and spread of new models of care, leveraging from knowledge and practices locally, nationally and internationally
- Clinicians enabled to practice to the top of their professional scope
- Increased access pathways for patients to be seen by the most appropriate health professional, at the most appropriate time, in the most appropriate place for their clinical condition
- Establishment, delivery and embedding of best-practice specialist outpatient care
- Establishment of Queensland as a leader in the provision of specialist outpatient service

Background

Every patient journey through the Queensland public hospital system is unique. Currently, specialist outpatient care in the public health system mostly relies on first seeing a specialist at a hospital. There are many examples of models of care where clinical outcomes have been significantly improved by engaging of a broader set of health professionals, such as allied health and nurse practitioners, as a first point of contact with the hospital system. Under the guidance of a specialist, a range of service delivery models can be delivered to patients in a more timely and cost-effective

manner. The Queensland Government's *Specialist Outpatient Strategy – Improving the Patient Journey* commits \$30.0 million over 3 years to deliver the New Models of Care project. NMC is the fourth key investment initiative of the Strategy to improve the patient journey and reduce patient waiting times for appointments.

Solutions Implemented

Spread and Scale Projects

- General Practitioners with Special Interest
- Primary Care Fracture Clinics

Futures Projects

- Advanced -Dietitian Second Gastroenterology Model
- Early and Quick: Improving access and quality of care for Developmental / Behavioural Paediatrics
- A new Model of care for Ear, Nose and Throat service delivery in rural and remote Cape York, Australia
- HEPREACH: Hepatology Community Outreach
- State-wide Oncoplastics Meeting for Breast Reconstruction Patients
- Colon Consent Clinic – telehealth platform
- Development of an intestinal ultrasound service
- Meeting the Local Demand for Specialist Skin Cancer Treatment
- Metro South Neurology SOPD Initiative
- Ophthalmology Clinical Pathways Redesign Program
- WMHHS Ophthalmology Clinic Redesign

Evaluation and Results

Key Performance Indicators identified for all projects; evaluation to occur in 2019.

References

Ament, B. H. L., Wolfs, C. A. G., Kempen, G. I. J. M., Ambergen, T., Verhey, F. R. J., & De Vugt, M. E. (2015). The benefit of a geriatric nurse practitioner in a multidisciplinary diagnostic service for people with cognitive disorders. *BMC Research Notes*, 8, 217-217. doi: 10.1186/s13104-015-1189-6

Askew, D. A., Jackson, C. L., Ware, R. S., & Russell, A. (2010). Protocol and baseline data from The Inala Chronic Disease Management Service evaluation study: a health services intervention study for

diabetes care. *BMC Health Services Research*, 10, 134-134. doi: 10.1186/1472-6963-10-134 Baker, R., Sanderson-Mann, J., Longworth, S., Cox, R., & Gillies, C. (2005). Randomised controlled trial to compare GP-run orthopaedic clinics based in hospital outpatient departments and general practices. *The British Journal of General Practice*, 55(521), 912-917. Bedi, K. K., & Pilling, R. (2014). Service evaluation of child chalazion management: an orthoptist-led clinic. *International Journal of Ophthalmic Practice*, 5(5), 189-192. doi: 10.12968/ijop.2014.5.5.189 Biddle, M. L., Adler, N. R., Heath, M., Streat, S., Wardrop, M., & Watson, J. P. (2014). Nurse-led clinic: effective and efficient delivery of assessment and review of patients with hepatitis B and C. *Internal Medicine Journal*, 44(6), 581-585. doi: 10.1111/imj.12400 Bowman, M., Mackey, A., Wilson, N., & Stott, N. S. (2015). The effect of a non-surgical orthopaedic physician on wait times to see a paediatric orthopaedic surgeon. *Journal Of Paediatrics And Child Health*, 51(2), 174-179. doi: 10.1111/jpc.12696 Buchbinder, R., Staples, M., & Jolley, D. (2009). Doctors with a special interest in back pain have poorer knowledge about how to treat back pain. *Spine*, 34(11), 1218-1226. doi: 10.1097/BRS.0b013e318195d688 Burn, D., & Beeson, E. (2013). Orthopaedic triage: cost effectiveness, diagnostic/surgical and management rates. *Clinical Governance: An International Journal*, 19(2), 126-136. doi: 10.1108/CGIJ-12-2013-0041 Cioffi, J., Wilkes, L., Cummings, J., Warne, B., & Harrison, K. (2010). Multidisciplinary teams caring for clients with chronic conditions: Experiences of community nurses and allied health professionals. *Contemporary Nurse: A Journal for the Australian Nursing Profession*, 36(1/2), 61-70. doi: 10.5172/conu.2010.36.1-2.061 Collier, I. A., & Baker, D. M. (2014). Implementation of a pharmacist-supervised outpatient diabetes treatment clinic. *Am J Health Syst Pharm*, 71(1), 27-36. doi: 10.2146/ajhp130200 Comans, T., Raymer, M., O'Leary, S., Smith, D., & Scuffham, P. (2014). Cost-effectiveness of a physiotherapist-led service for orthopaedic outpatients. *Journal Of Health Services Research & Policy*, 19(4), 216-223. doi: 10.1177/1355819614533675 Comans, T. A., Clark, M. J., Cartmill, L., Ash, S., & Sheppard, L. A. (2011). How do allied health professionals evaluate new models of care? What are we measuring and why? *Journal For Healthcare Quality: Official Publication Of The National Association For Healthcare Quality*, 33(4), 19-28. doi: 10.1111/j.1945-1474.2011.00152.x Davies-Husband, C. R., Harker, C., Davison, T., & Yates, P. D. (2012). Post-surgical tympanostomy tube follow up with audiology: experience at the Freeman Hospital. *The Journal Of Laryngology And Otology*, 126(2), 142-146. doi: 10.1017/S0022215111002982 Desko, L., & Nazario, M. (2014). Evaluation of a clinical video telehealth pain management clinic. *Journal Of Pain & Palliative Care Pharmacotherapy*, 28(4), 359-366. doi: 10.3109/15360288.2014.969875 Desmeules, F., Toliopoulos, P., Roy, J.-S., Woodhouse, L. J., Lacelle, M., Leroux, M., . . . Fernandes, J. C. (2013). Validation of an advanced practice physiotherapy model of care in an orthopaedic outpatient clinic. *BMC Musculoskeletal Disorders*, 14, 162-162. doi: 10.1186/1471-2474-14-162 Dooley, M. J., McGuinness, J. V., Shin, C., Lam-Lan, N.-T., Tong, E., Neave, K., . . . Street, A. (2011). Successful Implementation of a Pharmacist Anticoagulant Dosing Service in Ambulatory Care. *Journal of Pharmacy Practice & Research*, 41(3), 208-211. Doyle, C., Lennox, Laura, & Bell, Derek. (2013). A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. *BMJ Open*, 3(1). doi: 10.1136/bmjopen-2012-001570 Georgiou, E. X., Domoney, C., Marsh, S., & Stafford, M. (2011). Streamlining outpatient urogynaecology: a novel approach. *Journal Of Obstetrics And Gynaecology: The Journal Of The Institute Of Obstetrics And Gynaecology*, 31(2), 156-163. doi: 10.3109/01443615.2010.541569 Gérvas, J., Starfield, B., Violán, C., & Minué, S. (2007). GPs with special interests: unanswered questions. *The British Journal of General Practice*, 57(544), 912-917. Gundersen, G. H., Norekval, T. M., Haug, H. H., Skjetne, K., Kleinau, J. O., Graven, T., & Dalen, H. (2016). Adding point of care ultrasound to assess volume status in heart failure patients in a nurse-led outpatient clinic. A randomised study. *Heart (British Cardiac Society)*, 102(1), 29-34. doi: 10.1136/heartjnl-2015-307798 Happell, B., Hoey, W., & Gaskin, C. J. (2012). Community mental health nurses, caseloads, and practices: A literature review. *International Journal of Mental Health Nursing*, 21(2), 131-137. doi: 10.1111/j.1447-0349.2011.00777.x Health, Q. (2014). *Ministerial*

Taskforce Report Health practioner extended scope of practice. Brisbane: Queensland government.

Homeming, L. J., Kuipers, P., & Nihal, A. (2012). Orthopaedic podiatry triage: process outcomes of a skill mix initiative. *Australian Health Review, 36*(4), 11-460. doi: 10.1071/AH11102

Humphreys, J., & Marthi, U. (2013). GPwSIs and ITPs in general practice: a case study in gynaecology. *The British Journal Of General Practice: The Journal Of The Royal College Of General Practitioners, 63*(607), 99-100. doi: 10.3399/bjgp13X663181

Jackson, C., Tsai, J., Brown, C., Askew, D., & Russell, A. (2010). GPs with special interests - impacting on complex diabetes care. *Australian Family Physician, 39*(12), 972-974.

Jakimowicz, S., Stirling, C., & Duddle, M. (2015). An investigation of factors that impact patients' subjective experience of nurse-led clinics: a qualitative systematic review. *Journal of Clinical Nursing, 24*(1/2), 19-33. doi: 10.1111/jocn.12676

Kasbekar, A. V., Mullin, N., Morrow, C., Youssef, A. M., Kay, T., & Lesser, T. H. (2014). Development of a physiotherapy-led balance clinic: the Aintree model. *The Journal Of Laryngology And Otology, 128*(11), 966-971. doi: 10.1017/S0022215114002060

Kilpatrick, K., Kaasalainen, S., Donald, F., Reid, K., Carter, N., Bryant-Lukosius, D., . . . DiCenso, A. (2014). The effectiveness and cost-effectiveness of clinical nurse specialists in outpatient roles: a systematic review. *Journal Of Evaluation In Clinical Practice, 20*(6), 1106-1123. doi: 10.1111/jep.12219

Koksvik, H. S., Hagen, K. B., Rødevand, E., Mowinckel, P., Kvien, T. K., & Zangi, H. A. (2013). Patient satisfaction with nursing consultations in a rheumatology outpatient clinic: a 21-month randomised controlled trial in patients with inflammatory arthritides. *Annals Of The Rheumatic Diseases, 72*(6), 836-843. doi: 10.1136/annrheumdis-2012-202296

Lee, A., Jones, G., Corcoran, J., Premachandra, P., & Morrison, G. A. J. (2011). A UK hospital based multidisciplinary balance clinic run by allied health professionals: first year results. *The Journal Of Laryngology And Otology, 125*(7), 661-667. doi: 10.1017/S0022215111000624 . *Literature-Review-Medication-Safety-in-Australia-2013.pdf*.

(2013). Darlinghurst NSW: Quality Use of Medicines and Pharmacy Research Centre.

Madden, J., Barnard, A., & Owen, C. (2013). Utilisation of multidisciplinary services for diabetes care in the rural setting. *Australian Journal of Rural Health, 21*(1), 28-34. doi: 10.1111/ajr.12006

Manski-Nankervis, J. (2016). Evolution of health professional roles: GPs with a special interest in diabetes *Diabetes & Primary Care Australia, 1*, 52-54.

Marks, D., Comans, T., Thomas, M., Ng, S. K., O'Leary, S., Conaghan, P. G., . . . Bisset, L. (2016). Agreement between a physiotherapist and an orthopaedic surgeon regarding management and prescription of corticosteroid injection for patients with shoulder pain. *Manual Therapy, 26*, 216-222. doi: 10.1016/j.math.2016.10.001

McKenzie, K., & Chang, Y.-P. (2015). The effect of nurse-led motivational interviewing on medication adherence in patients with bipolar disorder. *Perspectives In Psychiatric Care, 51*(1), 36-44. doi: 10.1111/ppc.12060

McLeod, H., Heath, G., Cameron, E., Debelle, G., & Cummins, C. (2015). Introducing consultant outpatient clinics to community settings to improve access to paediatrics: an observational impact study. *BMJ Quality & Safety, 24*(6), 377-384. doi: 10.1136/bmjqs-2014-003687

Minakakis, T. (2016). Easing the Economic Burden of Atrial Fibrillation: Making the Case for a Structured Clinical Nurse Specialist-Led Outpatient Clinic. *Canadian Journal of Cardiovascular Nursing, 26*(3), 14-21.

Morgado, M., Rolo, S., & Castelo-Branco, M. (2011). Pharmacist intervention program to enhance hypertension control: a randomised controlled trial. *International Journal Of Clinical Pharmacy, 33*(1), 132-140. doi: 10.1007/s11096-010-9474-x

Morris, J., Grimmer-Somers, K., Kumar, S., Murphy, K., Gilmore, L., Ashman, B., . . . Coulter, C. (2011). Effectiveness of a physiotherapy-initiated telephone triage of orthopedic waitlist patients. *Patient Related Outcome Measures, 2*, 151-159. doi: 10.2147/PROM.S2373

Najafi, S. S., Shaabani, M., Momennassab, M., & Aghasadeghi, K. (2016). The Nurse-Led Telephone Follow-Up on Medication and Dietary Adherence among Patients after Myocardial Infarction: A Randomized Controlled Clinical Trial. *International Journal Of Community Based Nursing And Midwifery, 4*(3), 199-208.

O'Donnell, M., de Siun, A., O'Mullane, M., Smith, D., Bradley, C., Finucane, F. M., & Dinneen, S. F. (2013). Differences in the structure of outpatient diabetes care between endocrinologist-led and general physician-led services. *BMC Health Serv Res, 13*, 493. doi: 10.1186/1472-6963-13-493

Oakley, C., & Shacklady, C. (2015). The Clinical

Effectiveness of the Extended-Scope Physiotherapist Role in Musculoskeletal Triage: A Systematic Review. *Musculoskeletal Care*, 13(4), 204-221. doi: 10.1002/msc.1100 Parfitt, N., Smeatham, A., Timperley, J., Hubble, M., & Gie, G. (2012). Direct listing for total hip replacement (THR) by primary care physiotherapists. *Clinical Governance: An International Journal*, 17(3), 210-216. doi: 10.1108/14777271211251327 Philip, A., Green, M., Hoffman, T., Gautreaux, S., Wallace, D., Roux, R., & Garey, K. W. (2015). Expansion of clinical pharmacy through increased use of outpatient pharmacists for anticoagulation services. *American Journal Of Health-System Pharmacy: AJHP: Official Journal Of The American Society Of Health-System Pharmacists*, 72(7), 568-572. doi: 10.2146/ajhp140404 Phillips, L. S., Barb, D., Yong, C., Tomolo, A. M., Jackson, S. L., Olson, D. E., . . . Long, Q. (2015). Translating What Works: A New Approach to Improve Diabetes Management. *Journal Of Diabetes Science And Technology*, 9(4), 857-864. doi: 10.1177/1932296815576000 Poot, B. (2014). NURSE-LED CHRONIC COUGH CLINIC: WHAT IS THE IMPACT ON PATIENT WAITING TIMES? *Kai Tiaki Nursing Research*, 5(1), 17-20. Practitioners, R. C. o. G. (2016). GP with a Special Interest (GPwSI) accreditation Retrieved November 4, 2016, from <http://www.rcgp.org.uk/clinical-and-research/clinical-resources/gp-with-a-special-interest-gpws-i-accreditation.aspx> Ramelet, A.-S., Fonjallaz, B., Rapin, J., Gueniat, C., & Hofer, M. (2014). Impact of a telenursing service on satisfaction and health outcomes of children with inflammatory rheumatic diseases and their families: a crossover randomized trial study protocol. *BMC Pediatrics*, 14, 151-151. doi: 10.1186/1471-2431-14-151 Razmjou, H., Robarts, S., Kennedy, D., McKnight, C., Macleod, A. M., & Holtby, R. (2013). Evaluation of an advanced-practice physical therapist in a specialty shoulder clinic: diagnostic agreement and effect on wait times. *Physiotherapy Canada. Physiotherapie Canada*, 65(1), 46-55. doi: 10.3138/ptc.2011-56 Reddy, V. M., Sargent, H., & Prior, M. J. (2011). Benign paroxysmal positional vertigo nurse-led follow-up clinic. *European Archives Of Oto-Rhino-Laryngology: Official Journal Of The European Federation Of Oto-Rhino-Laryngological Societies (EUFOS): Affiliated With The German Society For Oto-Rhino-Laryngology - Head And Neck Surgery*, 268(6), 829-832. doi: 10.1007/s00405-010-1319-7 Reifels, L., Bassilios, B., King, K. E., Fletcher, J. R., Blashki, G., & Pirkis, J. E. (2013). Innovations in primary mental healthcare. *Australian Health Review: A Publication Of The Australian Hospital Association*, 37(3), 312-317. doi: 10.1071/AH12203 Ridsdale, L., Doherty, J., McCrone, P., & Seed, P. (2008). A new GP with special interest headache service: observational study. *British Journal of General Practice*, 58(552), 478-483. doi: 10.3399/bjgp08X319440 Rogers, L. C., Andros, G., Caporusso, J., Harkless, L. B., Mills, J. L., Sr., & Armstrong, D. G. (2010). Toe and flow: essential components and structure of the amputation prevention team. *Journal Of Vascular Surgery*, 52(3 Suppl), 23S-27S. doi: 10.1016/j.jvs.2010.06.004 Rose, R., & Probert, S. (2009). Development and implementation of a hand therapy extended scope practitioner clinic to support the 18-week waiting list initiative. *Hand Therapy*, 14(4), 95-104. doi: 10.1258/ht.2009.009016 Schapel, A. (2015). *State Coroner South Australia*. Coroners Retrieved from <http://www.courts.sa.gov.au/CoronersFindings/Lists/Coroners%20Findings/Attachments/620/ASTON%20Marjorie%20irene.pdf>. Sechi, A., Sawyer, E., Ng, W., & Connor, S. (2016). Proving cost-effectiveness through implementation of a nurse-led inflammatory bowel disease (IBD) patient advice line and virtual clinic (CHEAP). *J.GENCA*, 26(2), 4-6. Shaw, R. J., McDuffie, J. R., Hendrix, C. C., Edie, A., Lindsey-Davis, L., Nagi, A., . . . Williams, J. W., Jr. (2014). Effects of nurse-managed protocols in the outpatient management of adults with chronic conditions: a systematic review and meta-analysis. *Ann Intern Med*, 161(2), 113-121. doi: 10.7326/M13-2567 Singh, L. G., Accursi, M., & Korch Black, K. (2015). Implementation and outcomes of a pharmacist-managed clinical video telehealth anticoagulation clinic. *American Journal Of Health-System Pharmacy: AJHP: Official Journal Of The American Society Of Health-System Pharmacists*, 72(1), 70-73. doi: 10.2146/ajhp130750 Smith, H. E., Wade, J., & Frew, A. J. (2016). What proportion of adult allergy referrals to secondary care could be dealt with in primary care by a GP with special interest? *Clinical and Translational Allergy*, 6(1), 3. doi: 10.1186/s13601-016-0091-1 Spurling, G. a. J., Claire. (2009). GPs with Special Interests - Benefits to Patients, GPs and the Community [online]. *Australian Family*

Physician, Vol. 38, No. 5, , 337-339. Stanhope, J., Grimmer-Somers, K., Milanese, S., Kumar, S., & Morris, J. (2012). Extended scope physiotherapy roles for orthopedic outpatients: an update systematic review of the literature. *Journal Of Multidisciplinary Healthcare*, 5, 37-45. doi: 10.2147/JMDH.S28891

Stergiopoulos, V., Schuler, A., Nisenbaum, R., deRuiter, W., Guimond, T., Wasylenki, D., . . . Dewa, C. (2015). The effectiveness of an integrated collaborative care model vs. a shifted outpatient collaborative care model on community functioning, residential stability, and health service use among homeless adults with mental illness: a quasi-experimental study. *BMC Health Services Research*, 15, 348-348. doi: 10.1186/s12913-015-1014-x

Townsend, A. (2014). Patients' views on a nurse-led prostate clinic. *Nursing Times*, 110(9), 22-23.

Townsend, J. (2015). Developing a nurse-led urodynamics clinic. *International Journal of Urological Nursing*, 9(3), 173-176. doi: 10.1111/ijun.12090

Unger, C. C., Warren, N., Canway, R., Manderson, L., & Grigg, K. (2011). Type 2 diabetes, cardiovascular disease and the utilisation of primary care in urban and regional settings. *Rural And Remote Health*, 11(4), 1795-1795.

Vahedi Nikbakht-Van de Sande, C. V. M., Braat, C., Visser, A. P., Delnoij, D. M. J., & van Staa, A. L. (2014). Why a carefully designed, nurse-led intervention failed to meet expectations: the case of the Care Programme for Palliative Radiotherapy. *European Journal Of Oncology Nursing: The Official Journal Of European Oncology Nursing Society*, 18(2), 151-158. doi: 10.1016/j.ejon.2013.11.005

van der Voort, M. R., van Wijngaarden, J., Janssen, S., Berden, B., & van Merode, F. (2014). Sustainability of improvements in access to outpatient specialist care in the Netherlands. *J Health Serv Res Policy*, 19(2), 94-101. doi: 10.1177/1355819613509083

van Hoof, S. J., Spreeuwenberg, M. D., Kroese, M. E., Steevens, J., Meerlo, R. J., Hanraets, M. M., & Ruwaard, D. (2016). Substitution of outpatient care with primary care: a feasibility study on the experiences among general practitioners, medical specialists and patients. *BMC Fam Pract*, 17, 108. doi: 10.1186/s12875-016-0498-8

Verret, L., Couturier, J., Rozon, A., Saudrais-Janecek, S., St-Onge, A., Nguyen, A., . . . de Denus, S. (2012). Impact of a pharmacist-led warfarin self-management program on quality of life and anticoagulation control: a randomized trial. *Pharmacotherapy*, 32(10), 871-879. doi: 10.1002/j.1875-9114.2012.01116

Walsh, T. P., Pilkington, D. C., Wong, E. J., Brown, C. H., & Mercer, G. E. (2014). Orthopaedic triaging by podiatrists: a prospective study of patient satisfaction and service efficiency. *Australian Health Review*, 38(4), 406-411. doi: 10.1071/AH13243

Weber, Z. A., Skelley, J., Sachdev, G., Kliethermes, M. A., Haydon-Greatting, S., Patel, B., & Schmidt, S. (2015). Integration of pharmacists into team-based ambulatory care practice models. *American Journal Of Health-System Pharmacy: AJHP: Official Journal Of The American Society Of Health-System Pharmacists*, 72(9), 745-751. doi: 10.2146/ajhp140576

Weston-Simons, J. S., McClatchie, W., & Ricketts, D. (2012). The role of the ESP in orthopaedics. *International Musculoskeletal Medicine*, 34(3), 87-91. doi: 10.1179/1753615412Y.0000000006

Zhang, J., Donald, M., Baxter, K. A., Ware, R. S., Burridge, L., Russell, A. W., & Jackson, C. L. (2015). Impact of an integrated model of care on potentially preventable hospitalizations for people with Type 2 diabetes mellitus. *Diabetic Medicine: A Journal Of The British Diabetic Association*, 32(7), 872-880. doi: 10.1111/dme.12705