

50 Years On

The History of the Oxford Pain Relief Unit 1970 – 2020

This year is the 50th anniversary of the Pain Service in Oxford. It was set up by Dr John Lloyd who was a world class leader in the management of pain. He developed the Oxford Pain Relief Unit, one of the first of its kind in the NHS.



Early Life

John Lloyd (1923 -1999) was born in London and grew up in Carmarthenshire, South Wales, where his father was a General Practitioner in Llandeilo. He trained as a doctor, like his father and grandfather, at The London Hospital Medical School, qualifying in 1946. He worked in The London Hospital and Hackney Hospital before joining the Royal Air Force in 1951. He became a squadron leader and spent time in charge of medical services in Cyprus and then was transferred to the Canadian Air Force from 1954 until 1956.

Anaesthetic Career

When he left the RAF John decided to specialise in anaesthetics so began his training in Morrision Hospital, Swansea. In 1959 he moved to the Radcliffe Infirmary (RI) in Oxford to continue his training. In 1965 he was appointed as a consultant anaesthetist at the Nuffield Department of Anaesthetics in Oxford, specialising in heart and chest surgery. He also developed and led the new Intensive Care Unit (ICU) at the RI, and he started to become interested in pain management.

The Management of Chest Injuries

Around this time, the A34 was being extended with the Oxford Ring Road completed in 1962. The faster traffic speeds led to more car accidents and more serious injuries. Cars at that time did not need to have seatbelts fitted, and wearing a seatbelt only became law in 1983. This caused many patients to suffer chest injuries and fractured ribs as they were thrown forwards onto the steering wheel. The pain of the fractured ribs meant that patients couldn't breathe or cough properly, so they often developed chest infections. If their oxygen levels dropped dangerously low, patients were admitted to the small ICU for artificial ventilation, where their breathing was taken over by a machine until their chest infection got better. John Lloyd realised that if he could treat the pain better, patients might be able to breathe more easily and be less likely to develop a chest infection. Together with other anaesthetic and emergency department doctors he wrote an important article on how to notice and treat chest injuries [ref 2].

He started to use epidural analgesia for these patients. After an injection into the patient's back, local anaesthetic was given to numb the painful nerves and reduce the pain. This was a brand-new use of epidurals and turned out to be a very successful treatment for severe chest injuries. Patients were now comfortable and could breathe more easily, so were less likely to develop a chest infection.

John said he "became interested in the trauma side of things because... [he] was much more interested in the people than actually putting them to sleep."

His idea is still important today where we use local anaesthetic blocks and other pain medicine to keep patients comfortable and able to cough.

Interest in Intractable (Chronic) Pain

Dr Lloyd had become interested in helping patients in hospital with acute pain – short-lived pain after surgery or trauma. His next project was to start helping patients with chronic (long-term) pain, or intractable pain as it was called at the time. Chronic pain is pain that can last for months or years and is due to a damaged pain system. Until then there was not much available to help patients living with long-term pain, such as backache, headache, abdominal pain, neuralgia (nerve pain) or phantom limb pain.



John Lloyd at work at Abingdon Hospital

Establishment of the Pain Relief Unit

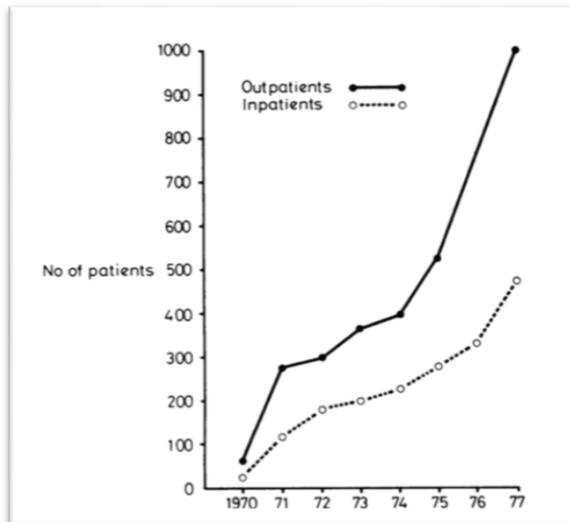
Dr Lloyd joined Dr (later Professor) Ritchie Russell who had set up a pain clinic at the Churchill Hospital. Over time, John took over the running of the clinic. As people heard of Dr Lloyd's interest in pain, more doctors started sending their patients to the pain clinic, creating long waiting lists. John realised that he needed to expand the service.

He was lucky to have the support of Dr Oddie, the planning officer of the Oxford Regional Hospital Board, who understood how important a bigger and better pain service would be. In 1970, John was allowed to use 8 inpatient beds in Abingdon Hospital. He called it the Oxford Regional Pain Relief Unit (PRU). It was the first pain service in the UK to see patients as outpatients (in clinic) and then admit them as inpatients (to stay overnight or longer) for more tests and treatments.



The Oxford Regional Pain Relief Unit at Abingdon Hospital in 1972

Under Dr Lloyd's care, the Pain Unit became busier and more patients were seen every year (see graph below of 1970 – 1977), reaching 2289 outpatients and 726 admissions by 1989. The unit was supported by Christine Mattock, the ward sister, and Aprille Cornell, John's secretary.



Number of inpatients and outpatients seen at Pain Relief Unit 1970-1977

The unit was unusual at the time. John said, in a 1980 article in the British Medical Journal: “Unfortunately, pain relief units are not yet commonplace, though such units attached to every teaching hospital authority might add much to the management of these patients” [Ref 30].

A Multi-Disciplinary Approach

Dr Lloyd put together a team of people from different medical specialties to set up a multidisciplinary chronic pain service that became internationally famous. Anaesthetists, radiotherapists, oncologists, neurosurgeons, physicians and psychiatrists all joined his ward rounds to help decide what was best for patients.

As well as helping patient care, the mix of experts became a Research Unit to investigate ways of improving pain relief. The research team included pain consultants, a University Reader, a biochemist, a control engineer, research nurses, and laboratory staff, together with input from neuroscience, oncology, orthopaedics, anaesthetics, intensive care, obstetrics and gynaecology.



Pain Relief Unit Team at Abingdon Hospital 1988

Back row:

Dr Henry McQuay (anaesthetics and pain), Dr Jane Porter (anaesthetics), Dr Jill White (anaesthetics), Dr Peter Evans (research fellow), Dr Mike O'Connor (pain trainee), Dr Jack Cherry (GP Abingdon), Dr P Stow (pain trainee)

Front row:

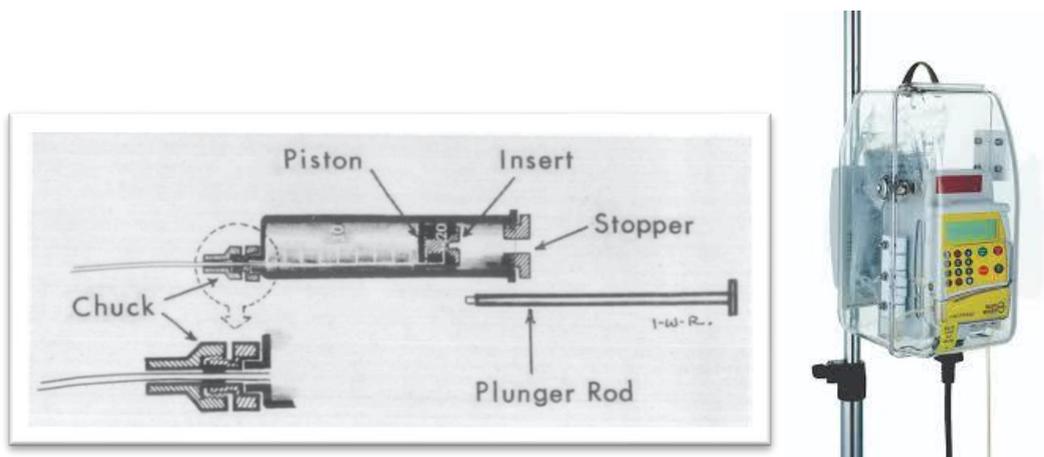
Mr Chris Adams (neurosurgery), Dr Jane Watson (anaesthetics), **Dr John Lloyd**, Dr Chris Glynn (anaesthetics), Dr Keith Durrant (radiotherapy), Mr David Barnard (maxillofacial surgeon), Dr Geoffrey Hanks (palliative care)

Innovation

Dr Lloyd was able to look beyond the usual ways of providing pain relief and used control engineering skills, brought to the team by his friend and engineer, R H Salt, to solve the problems of giving drugs to patients.

Dick Salt was the chief technician in the Nuffield Department of Anaesthetics (NDA) and made many of the original machines for anaesthesia and pain medicine. Together, John Lloyd and Dick Salt developed the technique of continuous epidural (also called extradural) analgesia: giving repeated doses of local anaesthetics through a small tube placed in the epidural space (in the patient's back) to provide pain relief after surgery [ref 1].

Continuous epidural analgesia is still used today, but we use more advanced pumps.



The Lloyd-Salt Apparatus (left) and a modern epidural pump (right)

The Development of Cryoanalgesia

Numbing nerves with local anaesthetics was useful but the effects didn't last long. This was fine for patients with acute pain after surgery or trauma, but it didn't help those patients with chronic (long-term) pain. John studied a technique called cryoanalgesia, where nerves are frozen to minus 70°C (colder than ice). He found that freezing the nerves could give pain relief that lasted for weeks or months. Together with Spemby Medical Ltd, Dr Lloyd developed the Lloyd Neurostat SL 2000, a cryoanalgesia machine to freeze the nerves that are causing chronic pain. John published his results in a paper in the Lancet in 1976 [ref 16].

The Lancet publication led to interest from all over the world. Dr Lloyd was interviewed on the BBC World Service and appeared on BBC TV's "Tomorrow's World" to talk about the cryoprobe. Duncan Flockhart Ltd made a film about the work of the Pain Relief Unit.

Dr Lloyd said: "Cryoanalgesia does not have the disadvantages of drugs which can cause addiction and have side effects..."



Spemby Lloyd Neurostat: early and late versions

Further Pain Research

By having a biochemist and laboratory staff as part of the team, Dr Lloyd and his colleagues were able to investigate how drugs were absorbed into the body. Now drugs could be given at the right dose, by the safest route (either by taking a tablet or having an injection), giving the patient the best outcome.

He was ahead of his time by saying that people should be careful with opioid drugs like morphine and pethidine, as he felt that large doses are clearly undesirable and that other pain relief measures “...may allow reduction in the [opioid] dose and an improvement in the level of consciousness”.

John had good relationships with other doctors including Professor Henry McQuay (pictured), Dr Tim Jack and Dr Chris Glynn.



They worked together at the Pain Relief Unit and were important in developing and improving the pain service. Henry McQuay developed an ‘on demand’ analgesia machine, so that patients could control how much opioid (like morphine) they used after surgery [ref 23]. Henry later became Nuffield Professor of Clinical Anaesthetics in the University of Oxford, and he carried on his research looking into the best drugs to treat pain.

Professor Henry McQuay and Dr Andrew Moore, who was originally a biochemist, researched pain and pain studies for over 30 years and started the Pain Research Group. They also started Bandolier, a newsletter and website that has helped doctors and nurses across the world to give the safest and most effective pain relief to patients.

John Lloyd retired in 1989. In 1991, the Pain Relief Unit (PRU) moved to a specially built unit at the Churchill Hospital, using money raised by the team led by Dr Chris Glynn. The PRU is now known as the Pain Management Centre. It is still an international centre of excellence, teaching many of today's leading pain specialists.



The current Pain Management Centre (formerly known as the Pain Relief Unit) at the Churchill Hospital, where there is a plaque commemorating John Lloyd's contribution to pain medicine in Oxford.

The Pain Management Centre

Pain management is now seen as important in its own right. It is taught to nursing and medical students to help them understand that pain involves nerves, emotions, stresses and other things that can affect how a patient feels. In the Pain Management Centre today there are doctors, specialist nurses and clinical psychologists who support patients to manage their pain. We also work with other departments including:

- the Optimise team of physiotherapists and psychologists at the Nuffield Orthopaedic Centre who help patients with Pain Management Programmes
- neurosurgeons who look after patients with trigeminal neuralgia, and can insert spinal cord stimulators for back pain and other conditions
- neurologists for patients with headache
- gynaecologists and urologists for patients with pelvic pain
- the Oxford Centre for Enablement at the Nuffield Orthopaedic Centre for patients with phantom limb pain and spinal injury pain

Chronic pain remains difficult to treat with no easy solutions. What we do now is to support patients to cope with their pain and to have a good quality of life despite their pain, using exercise and self-management.

In 1970 there was no internet to support this. Now the PMC has a [website with more information](#) to encourage this approach.

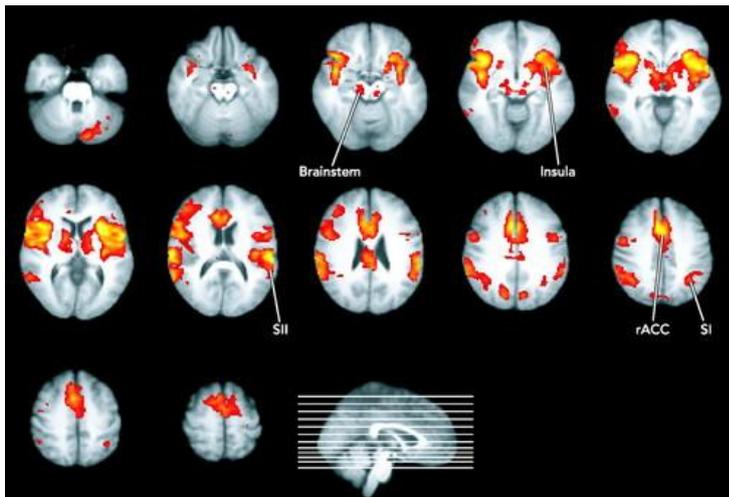
The research done by Dr John Lloyd and his colleagues has helped patients and has helped doctors and nurses to understand their patients. We know more now about how pain works, the effect pain has on patient's lives, and how we can help patients live a better quality of life with their pain.

Continuing Pain Research in Oxford

Oxford pain research and new ideas, started by John Lloyd fifty years ago, is now being carried on by Professor Irene Tracey (pictured).



She set up the Oxford Centre for Functional MRI of the Brain (FMRIB, now part of the Wellcome Centre for Integrative Neuroimaging - [Wellcome Centre](#)). She and her research team carry out internationally respected research on the science of pain, particularly in the effect of pain on the brain.



Functional MRI scan of the parts of the brain activated by a painful stimulus

Professor Tracey was born in the Radcliffe Infirmary around the time that Dr Lloyd was developing his interest in pain there, and she took over the position of Nuffield Professor of Anaesthetic Science from Professor Henry McQuay.

[Irene Tracey](#) .

Dr John Lloyd's International Reputation

Dr Lloyd taught local doctors about the management of chronic pain, and specialists from around the United Kingdom and from around the world came to Oxford to learn from him. They then returned to set up pain services in their own regions and countries. Because of this, John Lloyd had a global impact on pain medicine but also made lifelong friends.

Dr Lloyd helped set up the Pain Societies of South Africa, Egypt and Belgium. In 1983 he became chairman of the Intractable Pain Society of Great Britain and Ireland, now known as the British Pain Society. He was later awarded its highest honour: an honorary membership.

Quote from his obituary in the Telegraph:

John Lloyd was a charming and amusing man with many interests outside of medicine. He was the owner of a 1926 3-litre Bentley and at Silverstone acted as medical officer for the Bentley Driver Club.

He captained the London Hospital rugby team and played for Wasps and London Counties. During his service career he was Captain of the Cyprus RAF rugby team (reputedly made up of 14 New Zealanders and John Lloyd) and Commodore of the RAF Cyprus Yacht Club.

He was essentially a 'team' man, giving and receiving loyalty from this staff and countless friends.

John loved his sport, whether playing squash or tennis, watching international rugby and hoping that Wales would win, or encouraging his children from the side-lines when they played sport at school.

In 1988 Dr Lloyd was awarded an OBE by the Queen for his services to pain medicine.

Many of John Lloyd's ideas and inventions are still important now, and pain medicine across the world is very grateful to him. Without his compassion, kindness, intellect and ideas, the pain community, and the patients it cares for, would be a poorer place.



John in his vintage Bentley outside Abingdon Hospital

As one patient put it: *“how very lucky I feel to have been treated by someone who obviously cares so deeply about his fellow human beings.”*

Written by Dr Jane Quinlan, Consultant in Anaesthesia and Pain Management in Oxford, and Mary Lloyd, John's widow.

With thanks to:

- Joe Lloyd
- Professor Henry McQuay
- Dr Peter Evans
- Jennifer Beinhart. *A History of the Nuffield Department of Anaesthetics, Oxford 1937-1987* Oxford University Press, 1987
- Peter Cole. *Spotlight on Oxford*. Transmitter, Spring 2016. (The newsletter for the Faculty of Pain Medicine)
- Photographs from the Lloyd family

John Lloyd's publications:

1. [A new method for providing continuous extradural analgesia.](#) Salt RH, **Lloyd JW**. Br J Anaesth. 1964 Nov;36:740-1.
2. [Classification of chest injuries as an aid to treatment.](#) **Lloyd JW**, Smith AC, O'Connor BT. Br Med J. 1965 Jun 12;1(5449):1518-23.
3. [A method of treating renal colic.](#) **Lloyd JW**, Carrie LE. Proc R Soc Med. 1965 Aug;58(8):634.
4. [Practical points in the treatment of chest injuries.](#) Collie JA, **Lloyd JW**. Anaesthesia. 1967 Jul;22(3):392-9.
5. [The management of closed chest injuries.](#) **Lloyd JW**, Rucklidge MA. Br J Surg. 1969 Oct;56(10):721-2.
6. [The management of the patient with severe multiple injuries. Immediate resuscitation.](#) **Lloyd JW**. Br J Oral Surg. 1971 Nov;9(21):73-5.
7. [The problem of pain.](#) **Lloyd JW**. Dist Nurs. 1972 Feb;14(11):229-30.
8. [Relief of severe intractable pain by barbotage of cerebrospinal fluid.](#) **Lloyd JW**, Hughes JT, Davies-Jones GA. Lancet. 1972 Feb 12;1(7746):354-5.
9. [Barbotage of the cerebrospinal fluid.](#) **Lloyd JW**. Proc R Soc Med. 1973 Jun;66(6):543.
10. [The rôle of pain relief in terminal care.](#) **Lloyd JW**. Nurs Mirror Midwives J. 1973 Aug 24;137(8):36-7.
11. [Pupillary constriction following extradural analgesia.](#) Mohan J, **Lloyd JW**, Potter JM. Injury. 1973 Nov;5(2):151-2.
12. [Deliberate profound hypotension induced with halothane: studies of haemodynamics and pulmonary gas exchange.](#) Prys-Roberts C, **Lloyd JW**, Fisher A, Kerr JH, Patterson TJ. Br J Anaesth. 1974 Feb;46(2):105-16.
13. [A portable self-inflator-nebuliser.](#) Fodor I, **Lloyd JW**. Anaesthesia. 1975 May;30(3):360-1.
14. [The diurnal variation in perception of pain.](#) Glynn CJ, **Lloyd JW**. Proc R Soc Med. 1976 May;69(5):369-72.
15. [Diurnal variation and individual differences in the perception of intractable pain.](#) Folkard S, Glynn CJ, **Lloyd JW**. J Psychosom Res. 1976;20(4):289-301.
16. [Cryoanalgesia. A new approach to pain relief.](#) **Lloyd JW**, Barnard JD, Glynn CJ. Lancet. 1976 Oct 30;2(7992):932-4.

17. [Conservative methods of pain control.](#) **Lloyd JW.** Nurs Mirror Midwives J. 1977 Mar 10;144(10):54-6.
18. [Cryoanalgesia.](#) Barnard JD, **Lloyd JW.** Nurs Times. 1977 Jun 16;73(24):897-9.
19. [Biochemical changes associated with intractable pain.](#) Glynn CJ, **Lloyd JW.** Br Med J. 1978 Feb 4;1(6108):280-1.
20. [The pain of cancer.](#) **Lloyd JW,** Glynn CJ, Adams CB, Durrant KR. Practitioner. 1978 Mar;220(1317):453-6.
21. [Cryosurgery in the management of intractable facial pain.](#) Barnard JD, **Lloyd JW,** Glynn CJ. Br J Oral Surg. 1978 Nov;16(2):135-42.
22. [Cryoanalgesia and day-case herniorrhaphy.](#) Wood GJ, **Lloyd JW,** Evans PJ, Bullingham RE, Britton BJ, Finch DR. Lancet. 1979 Sep 1;2(8140):479.
23. [Demand analgesia to assess pain relief from epidural opiates.](#) McQuay HJ, Bullingham RE, Evans PJ, **Lloyd JW,** Moore RA. Lancet. 1980 Apr 5;1(8171):768-9.
24. [Cryoanalgesia technique.](#) Evans PJ, **Lloyd JW,** Green CJ. Lancet. 1980 May 31;1(8179):1188-9.
25. [Cryoanalgesia in the management of pain after thoracotomy.](#) Glynn CJ, **Lloyd JW,** Barnard JD. Thorax. 1980 May;35(5):325-7.
26. [Use of anaesthesia: the anaesthetist and the pain clinic.](#) **Lloyd JW.** Br Med J. 1980 Aug 9;281(6237):432-4.
27. [Autonomic dysaesthesia due to ergot toxicity.](#) Evans PJ, **Lloyd JW,** Peet KM. Br Med J. 1980 Dec 13;281(6255):1621.
28. [Unexpected complication of successful nerve block. Morphine induced respiratory depression precipitated by removal of severe pain.](#) Hanks GW, Twycross RG, **Lloyd JW.** Anaesthesia. 1981 Jan;36(1):37-9.
29. [Equipment for setting up a pain clinic.](#) **Lloyd JW.** Br J Hosp Med. 1981 Feb;25(2):179, 181-2.
30. [Postoperative analgesia for day-case herniorrhaphy patients. A comparison of cryoanalgesia, paravertebral blockade and oral analgesia.](#) Wood GJ, **Lloyd JW,** Bullingham RE, Britton BJ, Finch DR. Anaesthesia. 1981 Jun;36(6):603-10.
31. [Antidepressants in the treatment of chronic pain.](#) Hanks GW, Evans PJ, **Lloyd JW.** Anaesthesia. 1981 Jul;36(7):717-8.

32. [Ventilatory response to intractable pain.](#) Glynn CJ, **Lloyd JW**, Folkhard S. Pain. 1981 Oct;11(2):201-11. doi: 10.1016/0304-3959(81)90005-1.
33. [Cryoanalgesia for intractable perineal pain.](#) Evans PJ, **Lloyd JW**, Jack TM. J R Soc Med. 1981 Nov;74(11):804-9.
34. [Cryoanalgesia: the response to alterations in freeze cycle and temperature.](#) Evans PJ, **Lloyd JW**, Green CJ. Br J Anaesth. 1981 Nov;53(11):1121-7.
35. [Selective hypophysectomy for metastatic pain. A review of ethyl alcohol ablation of the anterior pituitary in a Regional Pain Relief Unit.](#) **Lloyd JW**, Rawlinson WA, Evans PJ. Br J Anaesth. 1981 Nov;53(11):1129-33.
36. [Pain relief clinics.](#) **Lloyd JW**. J R Soc Med. 1982 Mar;75(3):151-2.
37. [Maintaining the airway. Was Guedel wrong?](#) Evans PJ, McQuay HJ, Bullingham RE, **Lloyd JW**, Moore RA. Anaesthesia. 1982 Jun;37(6):700-1.
38. [Some patients don't need analgesics after surgery.](#) McQuay HJ, Bullingham RE, Moore RA, Evans PJ, **Lloyd JW**. J R Soc Med. 1982 Sep;75(9):705-8.
39. [Pituitary function following hypophysectomy for pain relief.](#) Evans PJ, **Lloyd JW**, Moore RA, Smith RF. Br J Anaesth. 1982 Sep;54(9):921-5.
40. [Regional hip blockade for chronic orthopaedic pain.](#) Evans PJ, McQuay HJ, **Lloyd JW**, Jack TM, Bullingham RE, Moore RA. Anaesthesia. 1982 Nov;37(11):1133.
41. [Long-term efficacy of surgical cordotomy in intractable non-malignant pain.](#) Jack TM, **Lloyd JW**. Ann R Coll Surg Engl. 1983 Mar;65(2):97-102.
42. [Pain perception and the control of intractable pain.](#) **Lloyd JW**. Practitioner. 1983 Mar;227(1377):413-7.
43. [Comparison of flupirtine maleate and dihydrocodeine in patients following surgery.](#) Moore RA, Bullingham RE, Simpson S, O'Sullivan G, Evans PJ, McQuay HJ, **Lloyd JW**. Br J Anaesth. 1983 May;55(5):429-32.
44. [Increased cortisol excretion in chronic pain.](#) Moore RA, Evans PJ, Smith RF, **Lloyd JW**. Anaesthesia. 1983 Aug;38(8):788-91.
45. [Plasma morphine concentrations and clinical effects after thoracic extradural morphine or diamorphine.](#) Phillips DM, Moore RA, Bullingham RE, Allen MC, Baldwin D, Fisher A, **Lloyd JW**, McQuay HJ. Br J Anaesth. 1984 Aug;56(8):829-36.

46. [Zomepirac, dihydrocodeine and placebo compared in postoperative pain after day-case surgery. The relationship between the effects of single and multiple doses.](#) McQuay HJ, Bullingham RE, Moore RA, Carroll D, Evans PJ, O'Sullivan G, Collin J, **Lloyd JW**. Br J Anaesth. 1985 Apr;57(4):412-9.
47. [Depression and anxiety in pain clinic patients. Rapid assessment by microcomputer.](#) Hanks GW, Trueman T, **Lloyd JW**, Evans PJ, Ancill RJ. Anaesthesia. 1985 Jul;40(7):676-9.
48. [Role of spinal noradrenergic system in transmission of pain in patients with spinal cord injury.](#) Glynn CJ, Jamous MA, Teddy PJ, Moore RA, **Lloyd JW**. Lancet. 1986 Nov 29;2(8518):1249-50.
49. [Kryotherapie.](#) Haag W, **Lloyd JW**. Schmerz. 1990 Dec;4(4):216-7.