



Hypertensive disorders in pregnancy

Sources, references, further reading and acknowledgements



Sources of information and support

Action on Pre-eclampsia (APEC)

Expert referral service, study days for midwives

www.apec.org.uk

Tommy's

Pregnancy and birth problems

www.tommys.org

Sands

Stillbirth & neonatal deaths

www.uk-sands.org

About Action on Pre-eclampsia (APEC)

APEC is a UK based charity that aims to:

- **Educate, inform and advise** the public and health professionals about the prevalence, nature and risks of pre-eclampsia
- **Campaign** for greater public awareness of the disease and for action to improve methods of detection and treatment
- **Support** affected women and their families
- **Promote research** into the causes of the disease and the development of appropriate screening techniques and treatment methods
- **Provide information** about pre-eclampsia to pregnant women, affected families and health professionals involved in maternity care
- **Provide professional education** about pre-eclampsia with a programme of conferences and study days.

Further reading

C Nelson-Piercy. Hypertension and pre-eclampsia. In: The Handbook of Obstetric Medicine, CRC press, 2015

National Institute of Clinical Excellence (NICE) Guidelines which can be accessed at <https://www.nice.org.uk/guidance/conditions-and-diseases/fertility--pregnancy-and-childbirth/pregnancy>

Hypertension in pregnancy 2016 <https://www.nice.org.uk/guidance/cg107>

Intrapartum care 2017 <https://www.nice.org.uk/guidance/cg190>

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Tommy's Campaign

The Follett Trust

References

- Pre-eclampsia rates in the United States, 1980-2010: age-period-cohort analysis *BMJ* 2013;347:f6564
- Global causes of maternal death: a WHO systematic analysis Say, Lale et al. *The Lancet Global Health*, Volume 2, Issue 6 , e323 - e333
- American College of Obstetricians and Gynecologists. Task Force on Hypertension in Pregnancy, author. Hypertension in pregnancy /developed by the Task Force on Hypertension in Pregnancy 2013. Can be accessed <http://www.acog.org/Resources-And-Publications/Task-Force-and-Work-Group-Reports/Hypertension-in-Pregnancy>
- American College of Obstetricians and Gynecologists. Task Force on Hypertension in Pregnancy, author. Hypertension in pregnancy developed by the Task Force on Hypertension in Pregnancy 2013 Can be accessed <http://www.acog.org/Resources-And-Publications/Task-Force-and-Work-Group-Reports/Hypertension-in-Pregnancy>
- Pathogenesis and genetics of preeclampsia. Roberts, JM et al. *The Lancet*, Volume 357, Issue 9249 , 53 - 56
- Chamberlain G. British maternal mortality in the 19th and early 20th centuries. *Journal of the Royal Society of Medicine*. 2006;99(11):559-563.
- Lazard E M. The intravenous use of magnesium sulphate in puerperal eclampsia. *Am J Obstet Gynaecol* 1925;9: 178-88
- Campbell J. Maternal Mortality in London, Report 25, vol.25. London: Ministry of Health 1924: 9-1
- Global causes of maternal death: a WHO systematic analysis Say, Lale et al. *The Lancet Global Health*, Volume 2, Issue 6 , e323 - e333
- Maternal deaths in the UK: pre-eclampsia deaths are avoidable Shennan, Andrew H et al. *The Lancet*, Volume 389 Issue 10069, 582 - 584
- Maternal Mortality and Morbidity in the UK 2009–12: Surveillance and Epidemiology Marian Knight, Manisha Nair, Anjali Shah, Nudrat Noor and Collen Acosta on behalf of MBRACE-UK. Saving Lives, Improving Mothers' Care - Lessons learned to inform future maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009–12. Oxford: National Perinatal Epidemiology Unit, University of Oxford 2014: p45-55.
- Goldenberg RL, McClue EM, MacGuire ER, Kamath BD, Jobe AH. Lessons for low-income regions following the reduction in hypertension- related maternal mortality in high-income countries. *Int J Gynecol Obstet* 2011;113:91-5
- Jeyabalan A. Epidemiology of pre-eclampsia: Impact of obesity. *Nutrition reviews*. 2013;71(0 1):10.1111/nure.12055.
- Roberts JM: Pre-eclampsia: What we know and what we do not know. *Semin Perinatol*24 :24– 28,2000

- The role of the immune system in preeclampsia. [Saito S¹, Shiozaki A, Nakashima A, Sakai M, Sasaki Y. *Mol Aspects Med.* 2007 Apr;28\(2\):192-209. Epub 2007 Mar 4.](#)
- Pathophysiology of the Clinical Manifestations of Pre-eclampsia *California Clin J Am Soc Nephrol* 2: 543-549, 2007.
- Chappell LC, Duckworth S, Seed PT, Griffin M, Myers J, Mackillop L, et al. Diagnostic accuracy of placental growth factor in women with suspected preeclampsia: a prospective multicenter study. *Circulation.* 2013;128(19):2121–31. doi: [10.1161/CIRCULATIONAHA.113.003215](#) . [PubMed]
- PIGF-based testing to help diagnose suspected pre-eclampsia (Triage PIGF test, Elecsys immunoassay sFlt-1/PIGF ratio, DELFIA Xpress PIGF 1-2-3 test, and BRAHMS sFlt-1 Kryptor/BRAHMS PIGF plus Kryptor PE ratio) Diagnostics guidance [DG23] Published date: May 2016 Can be accessed <https://www.nice.org.uk/guidance/dg23/chapter/2-Clinical-need-and-practice>
- English, Fred A, Louise C Kenny, and Fergus P McCarthy. “Risk Factors and Effective Management of Preeclampsia.” *Integrated BP Control* 8 (2015): 7–12. *PMC.* Web. 1 Mar. 2017.
- [Obstet Gynecol.](#) 2012 Feb;119(2 Pt 1):396-407. doi: 10.1097/AOG.0b013e318249ff06.ACOG Practice Bulletin No. 125: Chronic hypertension in pregnancy.[American College of Obstetricians and Gynecologists.](#)
- PMID: 22270315 DOI: [10.1097/AOG.0b013e318249ff06](#)
- [Semin Nephrol.](#) 1995 Nov;15(6):593-602. Mechanisms of calcium's effects on blood pressure. [Hatton DC¹, Yue Q, McCarron DA.](#)
- Role of calcium supplementation during pregnancy in reducing risk of developing gestational hypertensive disorders: a meta-analysis of studies from developing countries, Aamer Imdad, Afshan Jabeen and Zulfiqar A Bhutta *BMC Public Health* 201111(Suppl 3:S18 <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-S3-S18>
- WHO recommendations for prevention and treatment of preeclampsia and eclampsia Authors: WHO 2011V Can be accessed http://apps.who.int/iris/bitstream/10665/44703/1/9789241548335_eng.pdf
- RCOG scientific impact paper 43. Vitamin D in pregnancy June 2014 Can be accessed https://www.rcog.org.uk/globalassets/documents/guidelines/scientific-impact-papers/vitamin_d_sip43_june14.pdf
- Aghajafari F, Nagulesapillai T, Ronksley PE, Tough SC, O’Beirne M, Rabi DM. Association between maternal serum 25-hydroxyvitamin D level and pregnancy and neonatal outcomes: systematic review and meta-analysis of observational studies. *BMJ* 2013;346:f1169.
- De-Regil LM, Palacios C, Lombardo LK, Peña-Rosas JP. Vitamin D supplementation for women during pregnancy. *Cochrane Database of Systematic Reviews* 2016, Issue 1. Art. No.: CD008873. DOI: 10.1002/14651858.CD008873.pub3.
- WHO recommendations on antenatal care for a positive birth experience. WHO 2016 **can be accessed <http://apps.who.int/iris/bitstream/10665/250796/1/9789241549912-eng.pdf?ua=1>**
- BP measurement in pregnancy. Hannah L Nathan, Kate Duhug, Natasha L. Hezelgrave, Lucy C. Chappell, Andrew H. Shennan. *TOG* volume 17 number 2 2015
- Reinders A, Cuckson AC, Lee JT, Shennan AH. An accurate automated blood pressure device for use in pregnancy and pre-eclampsia: the Microlife 3BTO-A. *BJOG* 2005;112:915–20.
- Peek M, Shennan A, Halligan A, Lambert PC, Taylor DJ, De Swiet M. Hypertension in pregnancy: which method of blood pressure measurement is most predictive of outcome? *Obstet Gynecol* 1996;88:1030–3.

- Obstet Gynecol. 2012 Feb;119(2 Pt 1):396-407. doi: 10.1097/AOG.0b013e318249ff06.ACOG Practice Bulletin No. 125: Chronic hypertension in pregnancy.American College of Obstetricians and Gynecologists.PMID: 22270315 DOI: [10.1097/AOG.0b013e318249ff06](https://doi.org/10.1097/AOG.0b013e318249ff06)
- Diagnostic Accuracy of Placental Growth Factor in Women With Suspected Preeclampsia. A Prospective Multicenter Study Lucy C. Chappell, Suzy Duckworth, Paul T. Seed, Melanie Griffin, Jenny Myers, Lucy Mackillop, Nigel Simpson, Jason Waugh, Dilly Anumba, Louise C. Kenny, Christopher W.G. Redman, Andrew H. Shennan November 4, 2013
- PIGF-based testing to help diagnose suspected pre-eclampsia (Triage PIGF test, Elecsys immunoassay sFlt-1/PIGF ratio, DELFI Xpres PIGF 1-2-3 test, and BRAHMS sFlt-1 Kryptor/BRAHMS PIGF plus Kryptor PE ratio) **National Institute of Clinical Excellence (NICE)** guidelines Hypertension in Pregnancy. National Institute of clinical excellence Diagnostics guidance [DG23] Published date: May 2016
- Management of pregnancy with preeclampsia. National Institute of Clinical Excellence (NICE) Guidelines Hypertension in pregnancy 2016. National Institute of Clinical Excellence. Can be accessed <https://www.nice.org.uk/guidance/cg107/chapter/1-guidance>
- WHO recommendations for prevention and treatment of preeclampsia and eclampsia **Authors:** WHO 201 Can be accessed http://apps.who.int/iris/bitstream/10665/44703/1/9789241548335_eng.pdf
- Which anticonvulsant for women with eclampsia? Evidence from the Collaborative Eclampsia Trial The Eclampsia Trial Collaborative Group, The Lancet, Volume 345 , Issue 8963 , 1455 - 1463
- Pre-eclampsia Prof Ben W J Mol, Prof Claire T Roberts, PhD, Prof Shakila Thangaratinam, PhD, Prof Laura A Magee, MD, Prof Christianne J M de Groot, PhD, Prof G Justus Hofmeyr, DSc Published: 02 September 2015
- Haram, Kjell, Einar Svendsen, and Ulrich Abildgaard. "The HELLP Syndrome: Clinical Issues and Management. A Review." *BMC Pregnancy and Childbirth* 9 (2009): 8. *PMC*. Web. 3 Mar. 2017
- HELLP; best practice. BMJ accessed March 2017. Can be accessed at <http://bestpractice.bmj.com/best-practice/monograph/1000.html>
- Woudstra DM, Chandra S, Hofmeyr GJ, Dowswell T. Corticosteroids for HELLP (hemolysis, elevated liver enzymes, low platelets) syndrome in pregnancy. *Cochrane Database of Systematic Reviews* 2010, Issue 9. Art. No.: CD008148.
- Kattah, A. G., & Garovic, V. D. (2013). The Management of Hypertension in Pregnancy. *Advances in Chronic Kidney Disease*, 20(3), 229–239.
- Breastfeeding, National Institute of Clinical Excellence (NICE) Guidelines Hypertension in pregnancy 2016. National Institute of Clinical Excellence. Can be accessed <https://www.nice.org.uk/guidance/cg107/chapter/1-guidance#breastfeeding>
- C. Nelson-Piercy, Hypertension and preeclampsia; The Handbook of Obstetric Medicine, CRC press, 2015
- Etiology and management of postpartum hypertension-preeclampsia Baha M. Sibai, M AJOG June 2012 DOI: <http://dx.doi.org/10.1016/j.ajog.2011.09.002>
- Breastfeeding, National Institute of Clinical Excellence (NICE) Guidelines Hypertension in pregnancy 2016. National Institute of Clinical Excellence. Can be accessed <https://www.nice.org.uk/guidance/cg107/chapter/1-guidance#breastfeeding>
- Bramham Kate, Nelson-Piercy Catherine, Brown Morris J, Chappell Lucy C. Postpartum management of hypertension *BMJ* 2013; 346 :f894