

National Institute for Health and Care Excellence

Draft for consultation

Antenatal care

Supplement 2: Health economics

NICE guideline TBC

Health economics

February 2021

Draft for consultation

Developed by the National Guideline Alliance which is a part of the Royal College of Obstetricians and Gynaecologists

Disclaimer

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or service users. The recommendations in this guideline are not mandatory and the guideline does not override the responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or their carer or guardian.

Local commissioners and/or providers have a responsibility to enable the guideline to be applied when individual health professionals and their patients or service users wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with compliance with those duties.

NICE guidelines cover health and care in England. Decisions on how they apply in other UK countries are made by ministers in the [Welsh Government](#), [Scottish Government](#), and [Northern Ireland Executive](#). All NICE guidance is subject to regular review and may be updated or withdrawn.

Copyright

© NICE 2021. All rights reserved. Subject to [Notice of Rights](#).

ISBN:

Contents

Contents	4
Search strategy	5
Health economics global search	5
Economic evidence study selection	7
Health economics global search	7
Excluded studies	8
Excluded studies following full text review	8

1 Search strategy

Health economics global search

3 One global search was conducted for economic evidence. Date limited to 2006 onwards as
4 an update of the previous version of the NICE guideline on antenatal care.

5

6 **Database(s): CRD: NHS Economic Evaluation Database (NHS EED), HTA Database**

7 Date of last search: 9th July 2020

#	Searches
1	MeSH DESCRIPTOR Pregnancy IN NHSEED,HTA
2	MeSH DESCRIPTOR Pregnant Women IN NHSEED,HTA
3	MeSH DESCRIPTOR Prenatal Care EXPLODE ALL TREES IN NHSEED,HTA
4	MeSH DESCRIPTOR Prenatal Diagnosis EXPLODE ALL TREES IN NHSEED,HTA
5	((antenatal* or ante natal* or ante-natal* or prenatal* or pre natal* or pre-natal* or maternity or obstetric* or pregnan* or trimester*)) IN NHSEED, HTA
6	#1 OR #2 OR #3 OR #4 OR #5

8

9 **Database(s): Medline & Embase (Multifile)**

10 **Embase Classic+Embase** 1947 to 2020 July 08, **Ovid MEDLINE(R) and Epub Ahead of**
11 **Print, In-Process & Other Non-Indexed Citations and Daily** 1946 to July 07, 2020

12 Date of last search: 9th July 2020

13 *Multifile database codes: emczd = Embase Classic+Embase; ppez= MEDLINE(R) and Epub*

14 *Ahead of Print, In-Process & Other Non-Indexed Citations and Daily*

#	Searches
1	Pregnancy/ use ppez
2	Pregnant Women/ use ppez
3	exp Prenatal Care/ use ppez
4	exp Prenatal Diagnosis/ use ppez
5	pregnancy/ use emczd
6	pregnant woman/ use emczd
7	exp prenatal care/ use emczd
8	exp prenatal diagnosis/ use emczd
9	(antenatal\$ or ante natal\$ or ante-natal\$ or prenatal\$ or pre natal\$ or pre-natal\$ or maternity or obstetric\$ or pregnan\$ or trimester\$).tw.
10	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9
11	Economics/ use ppez
12	"Costs and Cost Analysis"/ use ppez
13	"Cost Allocation"/ use ppez
14	Cost-Benefit Analysis/ use ppez
15	"Cost Control"/ use ppez
16	"Cost Savings"/ use ppez
17	"Cost of Illness"/ use ppez
18	"Cost Sharing"/ use ppez
19	Health Care Costs/ use ppez
20	Direct Service Costs/ use ppez
21	Drug Costs/ use ppez
22	Employer Health Costs/ use ppez
23	Hospital Costs/ use ppez
24	Health Resources/ use ppez
25	"Health Services Needs and Demand"/ use ppez
26	Health Priorities/ use ppez
27	Health Expenditures/ use ppez
28	Capital Expenditures/ use ppez
29	Financial Management/ use ppez
30	Financial Management, Hospital/ use ppez
31	Quality-Adjusted Life Years/ use ppez
32	"Deductibles and Coinsurance"/ use ppez
33	Medical Savings Accounts/ use ppez
34	Economics, Hospital/ use ppez
35	Economics, Medical/ use ppez
36	Economics, Nursing/ use ppez
37	Economics, Pharmaceutical/ use ppez

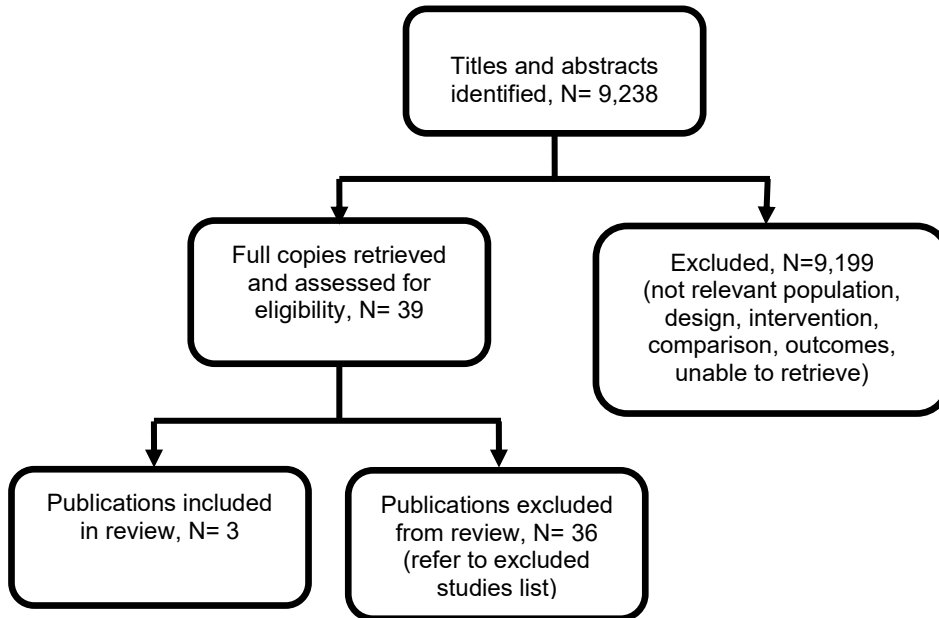
#	Searches
38	Models, Economic/ use ppez
39	Models, Econometric/ use ppez
40	Resource Allocation/ use ppez
41	Health Care Rationing/ use ppez
42	"Fees and Charges"/ use ppez
43	Budgets/ use ppez
44	"Value of Life"/ use ppez
45	economics/ use emczd
46	health economics/ use emczd
47	economic evaluation/ use emczd
48	"cost benefit analysis"/ use emczd
49	"cost control"/ use emczd
50	"cost effectiveness analysis"/ use emczd
51	"cost minimization analysis"/ use emczd
52	"cost of illness"/ use emczd
53	"cost utility analysis"/ use emczd
54	"cost"/ use emczd
55	"health care cost"/ use emczd
56	"drug cost"/ use emczd
57	health care financing/ use emczd
58	"hospital cost"/ use emczd
59	socioeconomics/ use emczd
60	economic aspect/ use emczd
61	quality adjusted life year/ use emczd
62	financial management/ use emczd
63	pharmacoeconomics/ use emczd
64	resource allocation/ use emczd
65	(financ\$ or fiscal\$ or funding).ti.
66	(QALY\$ or life?year\$).ti.
67	(econom\$ or cost\$).ti.
68	pharmacoeconomic\$.ti.
69	11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54 or 55 or 56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68
70	10 and 69
71	limit 70 to english language

1

1 Economic evidence study selection

Health economics global search

3 **Figure 1: Flow diagram of economic article selection for global health economic**
4 **search**



5

1 Excluded studies

Table 1: Excluded studies following full text review

Study	Reason for exclusion
Effects of weight management interventions on maternal and fetal outcomes in pregnancy: Individual patient data (IPD) meta analysis of randomised trials and model based economic evaluation (Project record), Health Technology Assessment Database, 2014	Not an economic evaluation
Ahmed, R. J., Gafni, A., Hutton, E. K., The Cost Implications in Ontario, Alberta, and British Columbia of Early Versus Delayed External Cephalic Version in the Early External Cephalic Version 2 (EECV2) Trial, Journal of Obstetrics and Gynaecology Canada, 38, 235-245, 2016	Not an economic evaluation
Ahmed, R. J., Gafni, A., Hutton, E. K., Early, E. C. V. Trial Collaborative Group, The Cost Implications in Ontario, Alberta, and British Columbia of Early Versus Delayed External Cephalic Version in the Early External Cephalic Version 2 (EECV2) Trial, Journal of Obstetrics & Gynaecology Canada: JOGCI Obstet Gynaecol Can, 38, 235-245.e3, 2016	Costing analysis
Ahmed, R. J., Gafni, A., Hutton, E. K., Hu, Z. J., Pullenayegum, E., Von Dadelszen, P., Rey, E., Ross, S., Asztalos, E., Murphy, K. E., Menzies, J., Sanchez, J. J., Ganzevoort, W., Helewa, M., Lee, S. K., Lee, T., Logan, A. G., Moutquin, J. M., Singer, J., Thornton, J. G., Welch, R., Magee, L. A., The Cost Implications of Less Tight Versus Tight Control of Hypertension in Pregnancy (CHIPS Trial), Hypertension, 68, 1049-1055, 2016	Costing analysis

Alarid-Escudero, F., Jalal, H., Trikalinos, T. A., Opportunity cost of non-rigorous or non-transferable research: Implications for cost-effectiveness analysis, <i>Value in Health</i> , 20 (9), A863, 2017	Not relevant to protocol
Albright, C. M., MacGregor, C. A., Sutton, D. M., Theva, M., Werner, E. F., Group B streptococcus screening in women planning repeat cesarean deliveries: A cost-effectiveness analysis, <i>American Journal of Obstetrics and Gynecology</i> , 214, S184-S185, 2016	Not relevant to protocol
Albright, C. M., MacGregor, C., Sutton, D., Theva, M., Hughes, B. L., Werner, E. F., Group B Streptococci Screening Before Repeat Cesarean Delivery: A Cost-Effectiveness Analysis, <i>Obstetrics & Gynecology</i> , 129, 111-119, 2017	Outside scope of guideline
Ameel, B. M., Lee, V. R., Chauhan, S. P., Caughey, A. B., Cost-effectiveness of third trimester ultrasound screening for SGA & LGA, <i>American journal of obstetrics and gynecology</i> , 1), S105-S106, 2016	Not a full economic evaluation
Ammerman, R. T., Mallow, P. J., Rizzo, J. A., Putnam, F. W., Van Ginkel, J. B., Cost-effectiveness of In-Home Cognitive Behavioral Therapy for low-income depressed mothers participating in early childhood prevention programs, <i>Journal of Affective Disorders</i> , 208, 475-482, 2017	Outside scope of guideline
Aviram, A., Humphrey, W., Ameel, B., Wetzel, S., Senz, K., Yogev, Y., Caughey, A. B., Antiphospholipid antibody screening following pregnancy with iugr or preeclampsia: A costeffectiveness analysis, <i>American Journal of Obstetrics and Gynecology</i> , 216 (1 Supplement 1), S381-S382, 2017	Outside scope of guideline

<p>Ayres, Ac, Whitty, Ja, Ellwood, Da, A cost-effectiveness analysis comparing different strategies to implement noninvasive prenatal testing into a Down syndrome screening program (Provisional abstract), Australian and New Zealand Journal of Obstetrics and Gynaecology, 54, 412-417, 2014</p>	<p>Outside scope of guideline</p>
<p>Barnes, J., Stuart, J., Allen, E., Petrou, S., Sturgess, J., Barlow, J., Macdonald, G., Spiby, H., Aistrop, D., Melhuish, E., Kim, S. W., Elbourne, D., Randomized controlled trial and economic evaluation of nurse-led group support for young mothers during pregnancy and the first year postpartum versus usual care, Trials, 18 (1) (no pagination), 2017</p>	<p>Outside scope of guideline</p>
<p>Butel, T., Nicolian, S., Durand, M., Filipovic-Pierucci, A., Kone, M., Gambotti, L., Mallet, A., Durand-Zaleski, I., Dommergues, M., Cost-effectiveness of acupuncture versus standard care for pelvic and low back pain in pregnancy: An analysis of the game randomized trial, Value in Health, 19 (7), A588, 2016</p>	<p>Abstract</p>
<p>Carvalho, B., Tan, J. M., MacArio, A., El-Sayed, Y. Y., Sultan, P., A cost analysis of neuraxial anesthesia to facilitate external cephalic version for breech fetal presentation, Anesthesia and Analgesia, 117, 155-159, 2013</p>	<p>Costing only</p>
<p>Chitty, L. S., Wright, D., Hill, M., Verhoef, T. I., Daley, R., Lewis, C., Mason, S., McKay, F., Jenkins, L., Howarth, A., Cameron, L., McEwan, A., Fisher, J., Kroese, M., Morris, S., Uptake, outcomes, and costs of implementing non-invasive prenatal testing for Down's syndrome into NHS maternity care: Prospective cohort study in eight diverse maternity units, BMJ (Online), 354 (no pagination), 2016</p>	<p>Outside scope of guideline</p>

<p>Danyliv, A., Gillespie, P., O'Neill, C., Tierney, M., O'Dea, A., McGuire, B. E., Glynn, L. G., Dunne, F. P., The cost-effectiveness of screening for gestational diabetes mellitus in primary and secondary care in the Republic of Ireland, <i>Diabetologia</i>, 59, 436-44, 2016</p>	<p>Outside scope of guideline</p>
<p>Dodd, J. M., Ahmed, S., Karnon, J., Umberger, W., Deussen, A. R., Tran, T., Grivell, R. M., Crowther, C. A., Turnbull, D., McPhee, A. J., Wittert, G., Owens, J. A., Robinson, J. S., Limit Randomised Trial Group, The cost-effectiveness of providing antenatal lifestyle advice for women who are overweight or obese: the LIMIT randomised trial, <i>BMC Obesity</i> BMC Obes, 2, 14, 2015</p>	<p>Outside scope of guideline</p>
<p>D'Souza, R., McKelvey, K., Murphy, K., Sander, B., Decision analysis studies involving the management of pregnant women: A systematic review, <i>Obstet Gynecol</i> Obstetrics and gynecology, 129, 186S, 2017</p>	<p>Abstract</p>
<p>Fawsitt, C. G., Bourke, J., Murphy, A., McElroy, B., Lutomski, J. E., Murphy, R., Greene, R. A., A Cost-Benefit Analysis of Two Alternative Models of Maternity Care in Ireland, <i>Applied Health Economics & Health Policy</i> Appl Health Econ Health Policy, 15, 785-794, 2017</p>	<p>Outside scope of guideline</p>
<p>Gordon, L. G., Hyland, C., Hyett, J., O'Brien, H., Millard, G., Flower, R., Gardener, G., Non-invasive fetal RHD genotyping of RhD negative pregnant women for targeted anti-D therapy in Australia: a cost-effectiveness analysis, <i>Prenatal Diagnosis</i>, 02, 02, 2017</p>	<p>Outside scope of guideline</p>

<p>Hadker, N, Garg, S, Costanzo, C, Miller, Jd, Foster, T, Helm, W, Creeden, J, Financial impact of a novel pre-eclampsia diagnostic test versus standard practice: a decision-analytic modeling analysis from a UK healthcare payer perspective (Structured abstract), <i>Journal of Medical Economics</i>, 13, 728-737, 2010</p>	<p>Abstract</p>
<p>Heintz,E., Brodtkorb,T.H., Nelson,N., Levin,L.A., The long-term cost-effectiveness of fetal monitoring during labour: a comparison of cardiotocography complemented with ST analysis versus cardiotocography alone, <i>BJOG: An International Journal of Obstetrics and Gynaecology</i>, 115, 1676-1687, 2008</p>	<p>Outside scope of guideline</p>
<p>Henrichs, J., Verfaillie, V., Viester, L., Westerneng, M., Molewijk, B., Franx, A., van der Horst, H., Bosmans, J. E., de Jonge, A., Jellema, P., Iris Study Group, Effectiveness and cost-effectiveness of routine third trimester ultrasound screening for intrauterine growth restriction: study protocol of a nationwide stepped wedge cluster-randomized trial in The Netherlands (The IRIS Study), <i>BMC Pregnancy & Childbirth</i> <i>BMC Pregnancy Childbirth</i>, 16, 310, 2016</p>	<p>Abstract</p>
<p>Kingston, D., McDonald, S., Biringer, A., Austin, M. P., McDonald, S. D., Giallo, R., Ohinmaa, A., Lasiuk, G., MacQueen, G., Van Zanten, S., Comparing the acceptability, clinical-,and cost-effectiveness of mental health E-screening to paper-based screening in pregnant women: A randomized, parallel-group, superiority trial, <i>European Psychiatry</i>, 30, 986, 2015</p>	<p>Not an economic evaluation</p>

Lee, V., Little, S., Sparks, T., Caughey, A., Third-trimester growth ultrasound vs fundal height screening for small for gestational age: A decision analysis, American Journal of Obstetrics and Gynecology, 1), S352-S353, 2015	Abstract
Merrill, M., Aviram, A., Niu, B., Kuo, K., Caughey, A. B., Tight versus less tight control of blood pressure in pregnant women with chronic hypertension-a cost-effective analysis, American Journal of Obstetrics and Gynecology, 1), S406-S407, 2016	Abstract
Muslim, I., Tan, I., Rodriguez, P., Tan, T. L., Cost effectiveness of external cephalic version, BJOG: An International Journal of Obstetrics and Gynaecology, 119, 121, 2012	Abstract
Najafzadeh, A., Graves, A., Re: Screening for fetal growth restriction with universal third trimester ultrasonography in nulliparous women in the Pregnancy Outcome Prediction (POP) study: A prospective cohort study. Lancet 2015; 386:2089-97. Sovio U, White IR, Dacey A, Pasupathy D, Smith GC, Sonography, 3, 70-71, 2016	Not an economic evaluation
Neovius, M., Tiblad, E., Westgren, M., Kublickas, M., Neovius, K., Wikman, A., Cost-effectiveness of first trimester non-invasive fetal RHD screening for targeted antenatal anti-D prophylaxis in RhD-negative pregnant women: a model-based analysis, BJOG: An International Journal of Obstetrics and Gynaecology, 123, 1337-1346, 2016	Outside scope of guideline
O'Brien, J. A., Adashi, E. Y., Coming out ahead: the cost effectiveness of external cephalic version using spinal anesthesia, Israel Journal of Health Policy Research/Isr J Health Policy Res, 3, 6, 2014	Abstract

<p>O'Donnell, A., McParlin, C., Robson, S. C., Beyer, F., Moloney, E., Bryant, A., Bradley, J., Muirhead, C., Nelson-Piercy, C., Newbury-Birch, D., Norman, J., Simpson, E., Swallow, B., Yates, L., Vale, L., Treatments for hyperemesis gravidarum and nausea and vomiting in pregnancy: A systematic review and economic assessment, Health Technology Assessment, 20, 2016</p>	<p>Reports an economic model structure but parameters are not populated</p>
<p>Paraiso Torras, B., Rodriguez Martin, N., Lazaro Carrasco Delgado, C., Jimenez Fournier, M. C., Canete Palomo, M. L., Economic impact of the introduction of the cephalic external version in a tertiary Hospital, Journal of Perinatal Medicine, 43, 2015</p>	<p>Abstract</p>
<p>Rogozinska, E., Marlin, N., Jackson, L., Rayanagoudar, G., Ruifrok, A. E., Dodds, J., Molyneaux, E., van Poppel, M. N., Poston, L., Vinter, C. A., McAuliffe, F., Dodd, J. M., Owens, J., Barakat, R., Perales, M., Cecatti, J. G., Surita, F., Yeo, S., Bogaerts, A., Devlieger, R., Teede, H., Harrison, C., Haakstad, L., Shen, G. X., Shub, A., Beltagy, N. E., Motahari, N., Khoury, J., Tonstad, S., Luoto, R., Kinnunen, T. I., Guelfi, K., Facchinetti, F., Petrella, E., Phelan, S., Scudeller, T. T., Rauh, K., Hauner, H., Renault, K., de Groot, C. J., Sagedal, L. R., Vistad, I., Stafne, S. N., Morkved, S., Salvesen, K. A., Jensen, D. M., Vitolo, M., Astrup, A., Geiker, N. R., Kerry, S., Barton, P., Roberts, T., Riley, R. D., Coomarasamy, A., Mol, B. W., Khan, K. S., Thangaratinam, S., Effects of antenatal diet and physical activity on maternal and fetal outcomes: individual patient data meta-analysis and health economic evaluation, Health Technology Assessment (Winchester, England)Health Technol Assess, 21, 1-158, 2017</p>	<p>Outside scope of guideline</p>

<p>Rosim, R. P., Carmo, E. V., Cost-effectiveness of breech version by moxibustion associated with acupuncture for women at 33 weeks gestation: A modeling approach by the brazilian public health care system perspective, <i>Value in Health</i>, 20, A924, 2017</p>	<p>Abstract</p>
<p>Savitsky, L. M., Valent, A., Burwick, R., Marshall, N., Caughey, A. B., Cost-effectiveness of exercise for the prevention of preeclampsia and gestational diabetes in obese women, <i>American Journal of Obstetrics and Gynecology</i>, 216 (1 Supplement 1), S260-S261, 2017</p>	<p>Outside scope of guideline</p>
<p>Sharshiner, R., Page, J., Caughey, A. B., Is cervical length screening beyond 24 weeks gestation cost-effective in women with a prior preterm birth?, <i>Reproductive Sciences</i>, 1), 280A, 2016</p>	<p>Abstract</p>
<p>van den Berg, I., Kaandorp, G., Bosch, J. L., Duvekot, J. J., Hunink, M. G. M., The effectiveness and cost-effectiveness of Breech Version Acumoxa compared to standard care to correct breech presentation...13th Annual Symposium on Complementary Health Care, 12th-14th December, 2006, University of Exeter, UK, Focus on Alternative & Complementary Therapies, 11, 5-5, 2006</p>	<p>Not an economic evaluation</p>

Vijgen, S. M., Westerhuis, M. E., Opmeer, B. C., Visser, G. H., Moons, K. G., Porath, M. M., Oei, G. S., Van Geijn, H. P., Bolte, A. C., Willekes, C., Nijhuis, J. G., Van Beek, E., Graziosi, G. C., Schuitemaker, N. W., Van Lith, J. M., Van Den Akker, E. S., Drogdrop, A. P., Van Dessel, H. J., Rijnders, R. J., Oosterbaan, H. P., Mol, B. W., Kwee, A., Cost-effectiveness of cardiotocography plus ST analysis of the fetal electrocardiogram compared with cardiotocography only, <i>Acta Obstetrica et Gynecologica Scandinavica</i> , 90, 772-8, 2011	Outside scope of guideline
Yamasato, K., Kaneshiro, B., Salcedo, J., Neuraxial blockade for external cephalic version: Cost analysis, <i>Journal of Obstetrics & Gynaecology Research</i> , 41, 1023-31, 2015	Costing analysis

1