# Intrauterin fosterdød

Revidert 2023-2024; Publisert: mars 2024

Fagfelle-evaluert av:
Bjarke Lund Sørensen, MD, PhD, Danmark
Leiv Sandvik, MSc, PhD, OUS

## Epidemiologi

Forekomst av intrauterin fosterdød etter svangerskapsvarighet ≥ 22+0 uker er kraftig redusert over tid i Norge (1). I 1999 var forekomsten 5,4 per 1000 fødsler og i 2022 var forekomsten 2,7 per 1000 fødsler. Forekomsten har vært stabil siden 2017 (2). Over 60% av IUFD skjer før uke 37. I Norge forekommer de fleste intrauterine dødsfall før fødselen. Andelen intrapartum død er også kraftig redusert og utgjør under 5% av IUFD, dvs 0,16 promille av alle fødsler (3,4).
Risiko for IUFD øker gradvis med økende svangerskapsvarighet, kalkulert av pågående svangerskap (fetus at risk; ongoing pregnancy) (5,6).

Forekomsten av IUFD i Norge er lavere enn i de fleste andre land (7). Dette gjenspeiles også når man studerer enkelte risikofaktorer. Studier fra andre land kan rapportere høyere forekomst av IUFD ved enkelt-risikofaktorer enn i Norge. Man bør derfor tolke studier og resultater fra andre land med forsiktighet.

## Risikofaktorer

Risikofaktorer for IUFD kan være pregravide maternelle faktorer eller svangerskapsrelaterte faktorer. Ved å kombinere maternelle faktorer og svangerskapsrelaterte faktorer kan man identifisere gravide med høyest risiko (8–11). Individualisert fødselsomsorg og identifisering av risikofaktorer kan redusere IUFD i høy-inntektsland (8,12).

Maternell alder og kroppsmasseindeks (KMI) er kontinuerlige variabler og risikoen for IUFD øker med økende alder og KMI. Ulike studier bruker ulike verdier i analysene, (for eksempel cut-off 35 år eller 40 år; eller ulike grader av overvekt og fedme), noe absolutt og entydig grense kan dermed ikke fastslås.

Mors opplevelse av reduserte forsterbevegelser/lite liv er assosiert med økt risiko for IUFD, sammenliknet med kvinner som ikke har opplevd/rapportert lite liv, (OR 2.36-5.53) (12–15). Gjentagende episoder med reduserte fosterbevegelser/lite liv er også assosiert med økt risiko for IUFD (OR 2.51-5.11) (14,16). Kombinasjon av lite liv med andre risikofaktorer for IUFD kan øke risikoen ytterligere, vennligst se kapittel «Lite liv». Perinatalkomiteene i Norge har observert sammenheng mellom mors opplevelse av lite liv og IUFD.
Perinatalkomiteene i Norge rapporterer også at suboptimal svangerskaps- og fødselsomsorg kan være medvirkende til IUFD.

## Risikofaktorene med referanselitteratur:

**Maternelle pre-gravid risikofaktorer:**
Lav sosioøkonomisk status/ lav utdanning (17–19)
Mors fødeland i sør Asia eller Afrika sør for Sahara (20,21)
Innvandrere med kort botid i Norge (20)
Høy alder (6,17,19,22)
Ung alder <20 (22)
Overvekt og adipositas (19)
Diabetes type 1 (4,10, 20)
Kronisk hypertensjon (19)
SLE (24–26)
Antifosfolipidsyndrom (27,28)

**Ikke økt risiko for IUFD**
Svangerskapsdiabetes (29–32)
Reumatoid artritt (33–37)
Hypothyreose (38,39)
Hyperthyreose (40,41)

**Obstetrisk anamnese (komplikasjoner ved tidligere svangerskap):**
Intrauterin fosterdød (19,42)
Preterm fødsel (9,17)
Placentaløsning (43)
Multiple spontanaborter (17)
SGA (6,9,17,19)

**Svangerskapsrelaterte risikofaktorer**
Placentaløsning (6,17,19,44)
Overtidig svangerskap (22)
Assistert befruktning (19)
Velamentøs festet navlesnor (45,46)
Single umbilical artery (47)

*Føtale risikofaktorer:*
Føtal veksthemming (6,17,19,48)
Mors opplevelse av reduserte fosterbevegelser (lite liv) (12–16)
Medfødte misdannelser (17,44,49)
Tvillingsvangerskap (6)

*Maternelle risikofaktorer:*
Preeklampsi, svangerskapshypertensjon (6,17)

## Intrauterin fosterdød

Intrahepatisk kolestase (50)
Røyking (17,19)
Narkotikabruk (19)
Hemokonsentrasjon med høy Hb-nivå under svangerskapet (51)
Alvorlige maternelle infeksjoner i svangerskapet (pneumoni, sepsis, primær malaria, Covid-19), korionamnionitt (52)

**Organisatoriske risikofaktorer**
Suboptimal fødselsomsorg (11,53,54)
Manglende svangerskapskontroller (12)

## Referanser


1. Sarfraz AA, Samuelsen SO, Eskild A. Changes in fetal death during 40 years-different trends for different gestational ages: A population-based study in Norway. BJOG An Int J Obstet Gynaecol. 2011;118(4).
2. The Medical Birth Registry Norway M. The Medical Birth Registry, Norwegian Institute of Public Health [Internet]. Oslo, Norway; Available from: http://statistikkbank.fhi.no/mfr/
3. Laine K, Pay AD, Yli BM. Time trends in caesarean section rates and associations with perinatal and neonatal health: a population-based cohort study of 1 153 789 births in Norway. BMJ Open [Internet]. 2023 Feb 1;13(2):e069562. Available from: http://bmjopen.bmj.com/content/13/2/e069562.abstract
4. Murzakanova G, Räisänen S, Jacobsen AF, Yli BM, Tingleff T, Laine K. Trends in Term Intrapartum Stillbirth in Norway. JAMA Netw Open. 2023;6(9).
5. Yudkin PL, Wood L, Redman CWG. RISK OF UNEXPLAINED STILLBIRTH AT DIFFERENT GESTATIONAL AGES. Lancet. 1987;329(8543).
6. Helgadottir LBR, Skjeldestad FE, Jacobsen AF, Sandset PM, Jacobsen EM. Incidence and risk factors of fetal death in Norway: A case-control study. Acta Obstet Gynecol Scand. 2011;90(4).
7. Gender data, stillbirth [Internet]. The World Bank. 2021. Available from: https://genderdata.worldbank.org/indicators/sh-dyn-stlb/
8. Flenady V, Middleton P, Smith GC, Duke W, Erwich JJ, Khong TY, et al. Stillbirths: The way forward in high-income countries. Vol. 377, The Lancet. 2011.
9. Malacova E, Regan A, Nassar N, Raynes-Greenow C, Leonard H, Srinivasjois R, et al. Risk of stillbirth, preterm delivery, and fetal growth restriction following exposure in a previous birth: systematic review and meta-analysis. BJOG An Int J Obstet Gynaecol. 2018;125(2).
10. Malacova E, Tippaya S, Bailey HD, Chai K, Farrant BM, Gebremedhin AT, et al. Stillbirth risk prediction using machine learning for a large cohort of births from Western Australia, 1980–2015. Sci Rep. 2020;10(1).
11. Sterpu I, Bolk J, Perers Öberg S, Hulthén Varli I, Wiberg Itzel E. Could a multidisciplinary regional audit identify avoidable factors and delays that contribute to stillbirths? A retrospective cohort study. BMC Pregnancy Childbirth. 2020;20(1):1–12.
12. Flenady V, Wojcieszek AM, Middleton P, Ellwood D, Erwich JJ, Coory M, et al. Stillbirths: Recall to action in high-income countries. Vol. 387, The Lancet. 2016.
13. Sterpu I, Pilo C, Koistinen IS, Lindqvist PG, Gemzell-Danielsson K, Itzel EW. Risk factors for poor neonatal outcome in pregnancies with decreased fetal movements. Acta Obstet Gynecol Scand. 2020;99(8):1014–21.
14. Heazell AEP, Budd J, Li M, Cronin R, Bradford B, McCowan LME, et al. Alterations in

maternally perceived fetal movement and their association with late stillbirth: Findings from the Midland and North of England stillbirth case-control study. BMJ Open. 2018 Jul 1;8(7).

15. Tveit JVH, Saastad E, Stray-Pedersen B, Børdahl PE, Flenady V, Fretts R, et al. Reduction of late stillbirth with the introduction of fetal movement information and guidelines - A clinical quality improvement. BMC Pregnancy Childbirth. 2009;9.
16. Scala C, Bhide A, Familiari A, Pagani G, Khalil A, Papageorghiou A, et al. Number of episodes of reduced fetal movement at term: Association with adverse perinatal outcome. Am J Obstet Gynecol [Internet]. 2015;213(5):678.e1-678.e6. Available from: http://dx.doi.org/10.1016/j.ajog.2015.07.015
17. Räisänen S, Hogue CJR, Laine K, Kramer MR, Gissler M, Heinonen S. A population-based study of the effect of pregnancy history on risk of stillbirth. Int J Gynecol Obstet. 2018;140(1).
18. Jørgensen T, Mortensen LH, Andersen AM. Social inequality in fetal and perinatal mortality in the Nordic countries. Scand J Public Health. 2008 Aug;36(6):635–49.
19. Flenady V, Koopmans L, Middleton P, Frøen JF, Smith GC, Gibbons K, et al. Major risk factors for stillbirth in high-income countries: A systematic review and meta-analysis. Lancet. 2011;377(9774).
20. Vik ES, Aasheim V, Schytt E, Small R, Moster D, Nilsen RM. Stillbirth in relation to maternal country of birth and other migration related factors: a population-based study in Norway. BMC Pregnancy Childbirth. 2019 Jan;19(1):3–5.
21. Ravelli ACJ, Tromp M, Eskes M, Droog JC, van der Post JAM, Jager KJ, et al. Ethnic differences in stillbirth and early neonatal mortality in The Netherlands. J Epidemiol Community Health. 2011;65(8).
22. Haavaldsen C, Sarfraz AA, Samuelsen SO, Eskild A. The impact of maternal age on fetal death: does length of gestation matter? Am J Obstet Gynecol. 2010 Dec;203(6):554.e1-554.e8.
23. Eidem I, Vangen S, Hanssen KF, Vollset SE, Henriksen T, Joner G, et al. Perinatal and infant mortality in term and preterm births among women with type 1 diabetes. Diabetologia. 2011;54(11).
24. Kumar Bundhun P, Zafooruddin M, Soogund S, Huang F. Impact of systemic lupus erythematosus on maternal and fetal outcomes following pregnancy: A meta-analysis of studies published between years 2001e2016. J Autoimmun [Internet]. 2017 [cited 2024 Mar 11];79:17–27. Available from: http://dx.doi.org/10.1016/j.jaut.2017.02.0090896-8411/
25. Ntali S, Nikolopoulos D, Pantazi L, Emmanouilidou E, Papagoras C, Fanouriakis A, et al. Remission or low disease activity at pregnancy onset are linked to improved foetal outcomes in women with systemic lupus erythematosus: results from a prospective observational study. Clin Exp Rheumatol. 2022 Sep 1;40(9):1769–78.
26. Singh M, Wambua S, Lee SI, Okoth K, Wang Z, Fazla F, et al. Autoimmune diseases and adverse pregnancy outcomes: an umbrella review. Lancet (London, England). 2023;402:S84.
27. Saccone G, Berghella V, Maruotti GM, Ghi T, Rizzo G, Simonazzi G, et al. Antiphospholipid antibody profile based obstetric outcomes of primary antiphospholipid syndrome: the PREGNANTS study. Am J Obstet Gynecol [Internet]. 2017;216(5):525.e1-525.e12. Available from: http://dx.doi.org/10.1016/j.ajog.2017.01.026
28. Cervera R, Serrano R, Pons-Estel GJ, Ceberio-Hualde L, Shoenfeld Y, De Ramón E, et al. Morbidity and mortality in the antiphospholipid syndrome during a 10-year period: a multicentre prospective study of 1000 patients. [cited 2024 Mar 11];21. Available from: http://ard.bmj.com/
29. Ye W, Luo C, Huang J, Li C, Liu Z, Liu F. Gestational diabetes mellitus and adverse pregnancy outcomes: systematic review and meta-analysis. BMJ [Internet]. 2022 May 25 [cited 2024 Mar 11];377. Available from: https://www-bmj-com.ezproxy.uio.no/content/377/bmj-2021-067946
30. Koivunen S, Kajantie E, Torkki A, Bloigu A, Gissler M, Pouta A, et al. The changing face of gestational diabetes: The effect of the shift from risk factor-based to comprehensive screening. Eur J Endocrinol. 2015;173(5).
31. Koivunen S, Torkki A, Bloigu A, Gissler M, Pouta A, Kajantie E, et al. Towards national

comprehensive gestational diabetes screening – consequences for neonatal outcome and care. Acta Obstet Gynecol Scand. 2017;96(1).

32. Ellenberg A, Sarvilinna N, Gissler M, Ulander VM. New guidelines for screening, diagnosing, and treating gestational diabetes – evaluation of maternal and neonatal outcomes in Finland from 2006 to 2012. Acta Obstet Gynecol Scand. 2017;96(3).
33. Wallenius M, Salvesen K, Daltveit AK, Skomsvoll JF. Miscarriage and stillbirth in women with rheumatoid arthritis. J Rheumatol. 2015;42(9).
34. Pina Vegas L, Drouin J, Weill A, Dray-Spira R. Pregnancy outcomes in women with rheumatoid arthritis: an 11-year French nationwide study. [cited 2024 Mar 11]; Available from: http://rmdopen.bmj.com/
35. Nørgaard M, Larsson H, Pedersen L, Granath F, Askling J, Kieler H, et al. Rheumatoid arthritis and birth outcomes: A Danish and Swedish nationwide prevalence study: Original Article. J Intern Med. 2010;268(4).
36. Aljary H, Czuzoj-Shulman N, Spence AR, Abenhaim HA. Pregnancy outcomes in women with rheumatoid arthritis: a retrospective population-based cohort study. J Matern Neonatal Med. 2020;33(4).
37. Keeling□ SO, Bowker SL, Savu□ A, Kaul□ P. A Population-level Analysis of the Differing Effects of Rheumatoid Arthritis and Spondyloarthritis on Peripartum Outcomes. J Rheumatol [Internet]. 2019 [cited 2024 Mar 11];47:197–203. Available from: www.jrheum.org
38. Knøsgaard L, Andersen S, Hansen AB, Vestergaard P, Andersen SL. Maternal hypothyroidism and adverse outcomes of pregnancy. Clin Endocrinol (Oxf). 2023 May 1;98(5):719–29.
39. Andersen SL, Olsen J, Laurberg P. Hypothyroidism and pregnancy loss: comparison with hyperthyroidism and diabetes in a Danish population-based study. Clin Endocrinol (Oxf). 2016 Dec 1;85(6):962–70.
40. Casey BM, Dashe JS, Wells CE, McIntire DD, Byrd W, Leveno KJ, et al. Subclinical hypothyroidism and pregnancy outcomes. Obstet Gynecol. 2005;105(2).
41. Alves Junior JM, Bernardo WM, Ward LS, Villagelin D. Effect of Hyperthyroidism Control During Pregnancy on Maternal and Fetal Outcome: A Systematic Review and Meta-Analysis. Vol. 13, Frontiers in Endocrinology. 2022.
42. Lamont K, Scott NW, Jones GT, Bhattacharya S. Risk of recurrent stillbirth: Systematic review and meta-analysis. Vol. 70, Obstetrical and Gynecological Survey. 2015.
43. Lamont K, Scott NW, Gissler M, Gatt M, Bhattacharya S. Risk of Recurrent Stillbirth in Subsequent Pregnancies. Obstet Gynecol. 2022;139(1):31–40.
44. Pacora P, Romero R, Jaiman S, Erez O, Bhatti G, Panaitescu B, et al. Mechanisms of death in structurally normal stillbirths. Vol. 47, Journal of Perinatal Medicine. 2019.
45. Ebbing C, Kiserud T, Johnsen SL, Albrechtsen S, Rasmussen S. Prevalence, Risk Factors and Outcomes of Velamentous and Marginal Cord Insertions: A Population-Based Study of 634,741 Pregnancies. PLoS One. 2013;8(7).
46. Dagklis T, Siargkas A, Apostolopoulou A, Tsakiridis I, Mamopoulos A, Athanasiadis A, et al. Adverse perinatal outcomes following the prenatal diagnosis of isolated single umbilical artery in singleton pregnancies: A systematic review and meta-analysis. Vol. 50, Journal of Perinatal Medicine. 2022.
47. Ebbing C, Kessler J, Moster D, Rasmussen S. Isolated single umbilical artery and the risk of adverse perinatal outcome and third stage of labor complications: A population-based study. Acta Obstet Gynecol Scand. 2020;99(3):374–80.
48. Pacora P, Romero R, Jung E, Gudicha DW, Hernandez-Andrade E, Musilova I, et al. Reduced fetal growth velocity precedes antepartum fetal death. Ultrasound Obstet Gynecol. 2021;57(6).
49. Flenady V, Frøen JF, Pinar H, Torabi R, Saastad E, Guyon G, et al. An evaluation of classification systems for stillbirth. BMC Pregnancy Childbirth. 2009;9.
50. Ovadia C, Seed PT, Sklavounos A, Geenes V, Di Illio C, Chambers J, et al. Association of adverse perinatal outcomes of intrahepatic cholestasis of pregnancy with biochemical markers: Results of aggregate and individual patient data meta-analyses. Vol. 74, Obstetrical

and Gynecological Survey. 2019.

51. Maghsoudlou S, Cnattingius S, Stephansson O, Aarabi M, Semnani S, Montgomery SM, et al. Maternal haemoglobin concentrations before and during pregnancy and stillbirth risk: a population-based case-control study. BMC Pregnancy Childbirth. 2016 Jun 3;16(1):135-016-0924–x.

52. Tolockiene E, Morsing E, Holst E, Herbst A, Ljungh Å, Svenningsen N, et al. Intrauterine infection may be a major cause of stillbirth in Sweden. Acta Obstet Gynecol Scand. 2001;80(6).

53. Johansen LT, Braut GS, Øian P. Fødselsomsorgen kan bli bedre. Tidsskr den Nor Laegeforening. 2022;142(8).

54. Johansen BK, Braut B, Schou P. Adverse events related to care in obstetric units. Tidsskr den Nor laegeforening. 2007 Oct 18;127(20):2670–2.

55. Am BU, Se LAN. Tid for handling. 2023.