Chronic renal diseases and pregnancy

The guideline was approved by DSOG (Danish Society of Obstetric and Gynecology) in January 2019.

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Summary of clinical recommendations:

Chronic Kidney Disease and pregnancy: CKD

Recommendation	Level of evidence	Recommendation
Preconception		
Counseling in cooperation with nephrologist and an obstetrician with special interest in nephrology		A
Level of renal impairment, presence of hypertension and proteinuria are the strongest prognostic for the outcome of the pregnancy as well as the risk of progression of the renal disease /progression of renal impairment		A
Pregnancy		
Depending of CKD stage there is a considerable risk of severe preeclampsia, IUGR, preterm delivery and perinatal death. The woman should be monitored closely with ultrasonic assessment's of fetal growth and flows, blood pressure and renal function	2a	A
Daily intake of 150 mg of aspirin taken at bedtime is recommended from early pregnancy (from 10 GA) and before 16. GA. Aspirin is cease at 37+0 GA.	2b	B
Hypertension should be treated with a target at ≤130/80. Hypertension and CKD accelerate decline of renal function and increases the risk of IUGR and preterm delivery.		
If the level of creatinine is 110 to 220 a half maintenance dose of magnesium sulfate (1g/hour) is recommended. Level of creatinine >220 consider only loading dose.		C
Monitoring closely the uremic metabolic condition including hgb, D-vitamine, parathyroid hormone, pH status etc.		
There is a risk of permanent worsening of renal function during pregnancy depending on CKD stage.	2b	B
Thrombosis prophylactic (LMWH) can be consider when proteinuria >5 g/d		B

Renal transplant recipients

Recommendation	Level of evidence	Recommendation
Preconception		
Pregnancy should be postponed until: • > 1 year after kidney transplant • Pre-pregnant s-creatinine < 133 umol/L • No or minimal proteinuria. • No episodes of graft rejection within recent year. • No present fetal toxics infection such as CMV • Change of immunosuppressive teratogenic therapy to immunosuppressive therapy that is compatible with pregnancy. • Immunosuppressive regime is stable on maintenance treatment	2b-3	B-C
Counseling in cooperation with nephrologist and obstetrician with a knowledge within nephrology		
Immunosuppressive therapy that is potential teratogenic should be ceased before pregnancy: Mycophenolate (MMF) at least 6 weeks before, sirolimus at least 12 weeks before and everolimus at least 8 weeks before.	2b-3	B
Pregnancy		
Daily intake of 150 mg of aspirin taken at bedtime is recommended from early pregnancy (from 10 GA) and before 16. GA. Aspirin is cease at 37+0 GA.	2b	A
ACE-inhibitors and angiotensine II receptor antagonists should be ceased when the pregnancy is perceived, i.e. before GA 12, since a higher risk of fetal irreversible kidney damage early in 2nd trimester.	2b	B
Pregnancy do not increase the risk of graft rejection	2b	B
The risk of preterm delivery is increased	2b	B
Target blood pressure ≤130/80, start treatment with methyldopa	2b	B
Increased risk of IUGR, monitor with ultrasound assessments of fetal growth	2b	B
Risk of infections is increased in renal transplant recipients, especially CMV and urinary tract infections.	2b-3	B
Vaginal delivery do not harm the renal allograft		
Anemia is frequently occurring	2b	B
Induction of labour no later than GA 40 and earlier in case of complications		B
Parenteral steroids to cover labour or caesarean section among those women on maintenance steroids		B
Post partum		
Breast feeding is safe when treated with Tacrolimus, Azathioprine and Ciclosporin	2b	B

Pregnancy after kidney donation

Recommendation	Level of evidence	Recommendation
Pregnancy after kidney donation have a higher risk of preeclampsia	3	C
Pregnancy after kidney donation with preeclampsia have a risk of developing ESRD, proteinuria and/or hypertension later in life.	3	C
Pregnancy after kidney donation have a risk of GDM	3	C

Pregnancy and ESRD (End Stage Renal Disease: dialysis)

Rekommendation	Level of evidence	Recommendation
Preconception		
Counselling in cooperation with nephrologist and obstetrician with a knowledge within nephrology. The counselling should contain information about a extremely high risk pregnancy		A
The woman is advised to postpone pregnancy to at least one year after receiving renal transplant		B
The woman should be informed of a substantial increase in dialysis treatment	2b	B
Pregnancy		
The risk of perinatal death, preeclampsia, preterm delivery and IUGR is substantial.	2b	B
An intensified dialysis (time, flow and filter) is correlated to substantial improvement of obstetric and neonatal outcomes	2b	B
PAPP-A and hCG has high levels in pregnant women with ESRD why the double test can not be used in screening for Downs syndrome. Nuchal translucency, NIPT and chorion villous biopsy are recommended.	3	C
Daily intake of 150 mg of aspirin taken at bedtime is recommended from early pregnancy (from 10 GA) and before 16. GA. Aspirin is cease at 37+0 GA	2b	B
A thorough review of the drug treatment including immunosuppressive therapy, as well as cessation of ACE-inhibitors /ARB and statins. Attention to timing of drug doses and rise in blood pressure between dialysis, since a part of drugs is dialysed out during treatment	3	B
Double doses of water-soluble vitamin. Dobbelt dosis af vandopløselig vitaminer, supplement of folat 5 mg/dag	2b	B
Ultrasonic fetal weight scan every 2^{nd} to 3^{rd} week including amniotic fluid index due to a high risk of polyhydramnios due to uremic toxicity	3	C
Vaginal delivery is not contraindicated. Inducing labour no later than GA 37	3	C
Target blood pressure ≤130/80	2b	B
Increased anemia tendency. IV iron and erythropoietin is recommended	3	C
Lower dose of LMWH in dialysis patients due to renal excretion		B

Postpartum		
Breastfeeding is safe on ACE inhibtors: Captopril and Enalapril. Thrombose prophylaxis with LMWH for 6 weeks	3	C

Acute kidney injury

Recommendation	**Level of evidence**	**recommendation**
Acute kidney injury is defined by a rise in creatinine above 26.5 µmol from baseline among women with normal creatinine levels or above 1.5 x baseline level during 48 hours	2	**A**
It is recommended to examine if there is a pre-existing renal impairment	2a	**A**
Management: measurements of fluid input and output hourly, bladder catheter to measure hourly urine output, blood pressure, weight. Daily blood samples with kidney function and salt balance		**A**
In case of oliguria or anuria should patient comply fluid restriction. Acute dialysis can be necessary, but only very rarely a deterioration towards chronic dialysis		**A**