PLACE 2026
PLATFORM OF LABORATORIES FOR ADVANCES IN CARDIAC EXPERIENCE

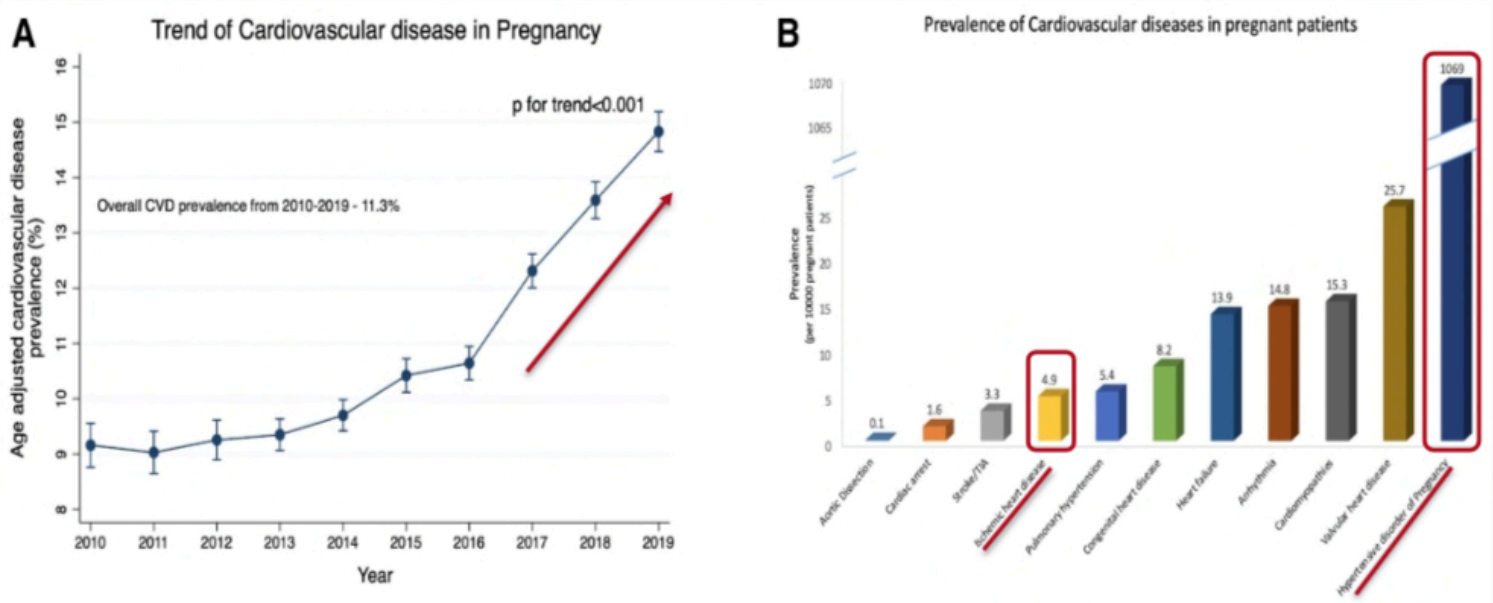
CONGRESSO
ROMA, 25 - 27 Giugno 2026

IL CONTINUUM CARDIOLOGIA D'URGENZA – UTIC

Terapia in gravidanza: dall'ipertensione alle urgenze aritmiche

Dott.ssa Martina Di Iorio
UOC Cardiologia e UTIC
Policlinico Casilino

Trend and prevalence of cardiovascular disease in pregnant patients. Data from the USA.



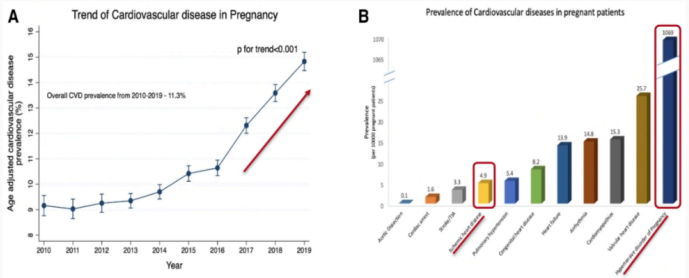
Majmundar et al. 2023 Eurs Heart J 2023 Mar 1;44(9):726-737

- Aumento età materna alla prima gravidanza
- Aumento numero di donne affette da CHD
- Aumento delle comorbilità CV

- A livello globale il 4% delle gravidanze è complicato da malattie CV→ 10 % se consideriamo i disordini ipertensivi

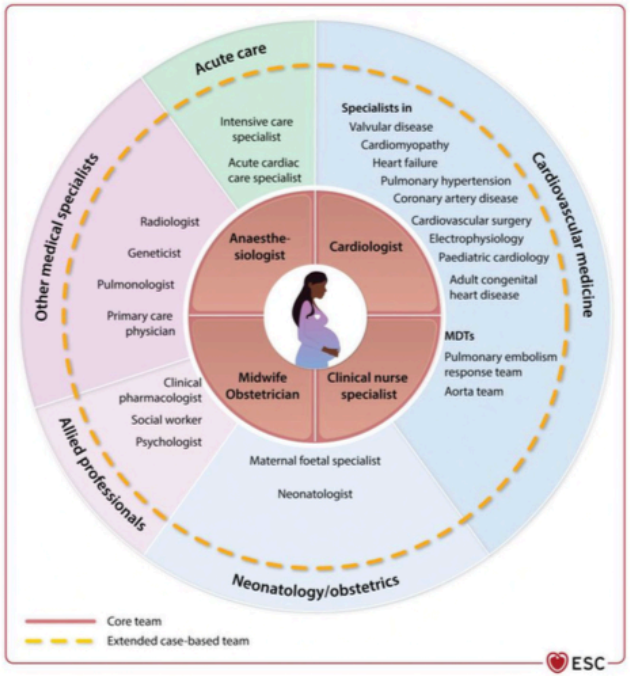
- MCV rappresentano la principale causa di mortalità non ostetrica nelle donne gravide

Trend and prevalence of cardiovascular disease in pregnant patients. Data from the USA.



Majmundar et al. 2023 Eurs Heart J 2023 Mar 1;44(9):726-737

Composition of the core and expanded case-based Pregnancy Heart Team



2025 ESC Guidelines for the management of cardiovascular disease and pregnancy

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DISORDINI IPERTENSIVI IN GRAVIDANZA

- 5-15% gravide di tutto il mondo
- Principale causa di mortalità materno/fetale/neonatale
- Incidenza aumentata per età avanzata ed obesità
- Rischi: → materni (distacco placenta, ictus, MOF)
  → fetali (IUGR, prematurità)

Olié V. et al. Prevalence of hypertensive disorders during pregnancy in France (2010- 2018): the nationwide CONCEPTION study. J Clin Hypertens (Greenwich) 2021

Hypertensive disorders of pregnancy

ESC

A. Pre-existing (chronic) hypertension

Hypertension which either precedes pregnancy or develops before 20 weeks gestation, usually persisting >6 weeks post-partum, and which may be associated with proteinuria.

1. Primary hypertension;
2. Secondary hypertension;
3. White-coat hypertension;
4. Masked hypertension.

B. Gestational hypertension

Hypertension which develops after 20 weeks gestation and usually resolves within 6 weeks post-partum.

Transient gestational hypertension

Usually detected in the clinic but then settles with repeated BP measurements taken over several hours; associated with a 40% risk of developing true gestational hypertension or pre-eclampsia in the remainder of the pregnancy, thus requiring careful follow-up.

C. Pre-eclampsia

Gestational hypertension accompanied by one or more of the following new-onset conditions at or after 20 weeks gestation:

- Proteinuria (urinary albumin excretion in a 24 h urine sample >0.3 g/day or UACR in a random spot urine sample >30 mg/mmol [0.3 mg/mg]);
- Other maternal organ dysfunction including:
  - Acute kidney injury (serum creatinine ≥90 µmol/L; 1 mg/dL);
  - Liver dysfunction (elevated ALT or AST >40 IU/L; >0.67 µkat/L with or without right upper quadrant or epigastric abdominal pain);
  - Neurological complications (e.g. eclampsia/convulsions, altered mental status, blindness, stroke, clonus, severe headaches, persistent visual scotomata);
  - Haematological complications (platelet count <150 000/µL, disseminated intravascular coagulation, haemolysis);
- Uteroplacental dysfunction (foetal growth restriction, abnormal umbilical artery Doppler waveform analysis, or stillbirth).

D. Pre-existing hypertension + superimposed pre-eclampsia

Pre-existing hypertension associated with any of the above maternal organ dysfunctions consistent with pre-eclampsia or a further increase in BP with new-onset proteinuria.

E. Antenatally unclassifiable hypertension

When BP is first recorded after 20 weeks gestation and hypertension is diagnosed, reassessment is necessary at or after 6 weeks post-partum. If hypertension resolves, it should be reclassified as gestational hypertension, whereas if hypertension persists, it should be reclassified as pre-existing/chronic hypertension.

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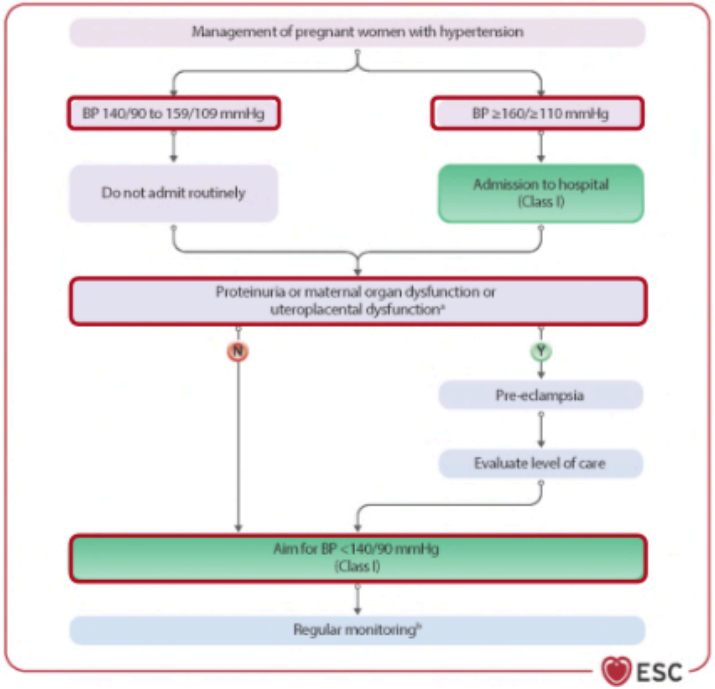
Management of hypertension and pre-eclampsia in the emergency ward



SBP ≥160 or DBP ≥110 mmHg is an emergency

Aim for SBP <140 mmHg and DBP <90 mmHg

European Heart Journal; 2025 – doi: 10.1093/eurheartj/ehaf193

Recommendations for hypertensive disorders and pregnancy (1)

ESC

Recommendations	Class	Level
It is recommended to aim for systolic BP <140 mmHg and diastolic BP <90 mmHg in pregnant women.	I	B
Systolic BP ≥160 mmHg or diastolic BP ≥110 mmHg in a pregnant woman is an emergency, and treatment in a hospital setting is recommended.	I	C
Low-dose aspirin (75–150 mg daily) is recommended in women at moderate or high risk of pre-eclampsia (i.e. at least one high risk factor or two moderate risk factors for pre-eclampsia) from weeks 12–36/37.	I	A
In women with gestational hypertension, initiation of drug treatment is recommended at systolic BP ≥140 mmHg or diastolic BP ≥90 mmHg[c].	I	B
Methyldopa is recommended for the treatment of hypertension in pregnancy.	I	B
Labetalol, metoprolol, and dihydropyridine calcium channel blockers are recommended for the treatment of hypertension in pregnancy.	I	C

Recommendations cont.	Class	Level
In severe hypertension, drug treatment with i.v. labetalol, urapidil, nicardipine, or oral short acting nifedipine or methyldopa is recommended for acute reduction in blood pressure. I.v. hydralazine is a second-line option.	I	C
In pre-eclampsia associated with pulmonary oedema, nitroglycerine given as an i.v. infusion is recommended.	I	C
In women with pre-eclampsia without severe features, delivery is recommended at 37 weeks.	I	B
It is recommended to expedite delivery in women with pre-eclampsia associated with adverse markers such as haemostatic disorders.	I	C
In women with gestational hypertension, delivery is recommended at 39 weeks.	I	B
Ambulatory BP or home BP monitoring should be considered to exclude white-coat and masked hypertension, which are common in pregnancy.	IIa	C
Home BP monitoring may be considered as an adjunct to office BP measurements in pregnant women to detect new-onset hypertension or for monitoring BP control.	IIb	B

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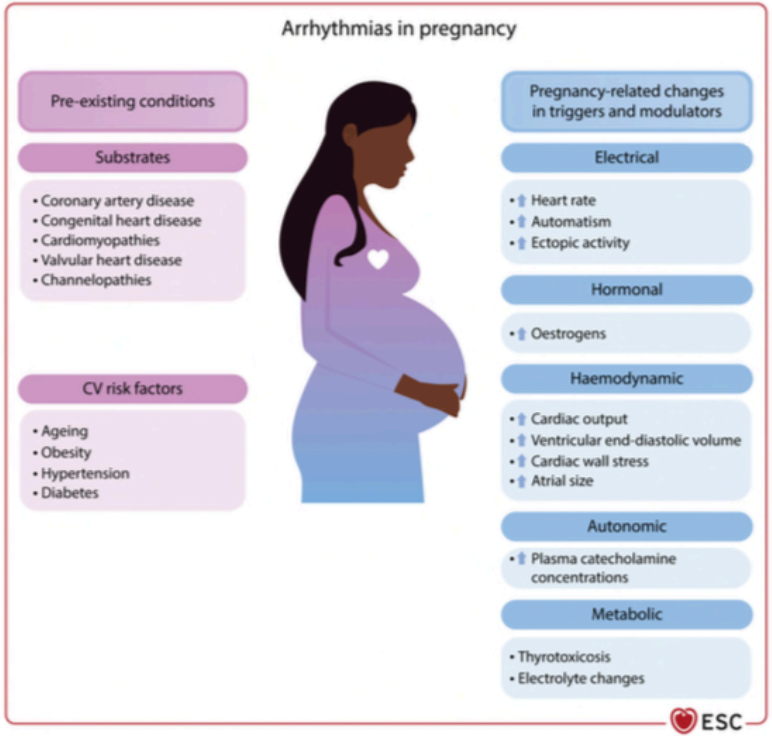
- La gestione dell'ipertensione in gravidanza dipende dai valori pressori, dall'età gestazionale, presenza dei FRCV materni e fetali associati
- Target PA < 140/90 mmHg
- Per valori di PA > 160/110 mmHg è raccomandata ospedalizzazione
- Con valori borderline eseguire sempre esami di laboratorio (emocromo, proteinuria)
- Follow up post partum → stima del rischio CV
- Farmaci di scelta: metildopa/BB (labetalolo)/CCB (nifedipina)

Arrhythmogenesis in pregnant women



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Il trattamento generale delle aritmie nelle pz gravide non differisce da quello della popolazione generale

Obiettivo → trattare la mamma senza compromettere la salute del feto

Priorità → ripristinare il ritmo
→ emodinamica materna

Dal 2015 FDA
- BB continuato nella gravidanza e nel post partum (sindromi aritmiche ereditarie) [1]
- Verapamil sicuro sullo sviluppo fetale[2] (diltiazem effetto teratogeno)
- Amiodarone controindicato[2] (disf tiroidea fetale, effetti teratogeni, IUGR, neurotossicità)

1. Senarath S et al. Diagnosis and managment of arrhythmyas in pregnancy. Europace 2022;24:1041-51

2. HRS expert consensus statement on the management of arrhythmyas in pregnancy. Heart Rythm 2023;20:e175-264

Tabella 1. Sicurezza di alcuni farmaci antiaritmici durante la gravidanza e l'allattamento.

Durante…	Propranololo	Metoprololo	Nadololo	Bisoprololo	Atenololo	Labetalolo	Flecainide	Propafenone	Procainamide	Mexiletina	Quinidina	Amiodarone	Sotalolo	Adenosina	CCB non-DHP	Procainamide	Digossina
la gravidanza	👍	👍	👍	👍	👎	👎	👍	👍	👍	👎	👍	👎	👍	👍	👎	👎	👍
l'allattamento	👍	👍	👎	👍	👎	👎	👍	👍	👍	👎	👍	👎	👍	👍	👎	👎	👍

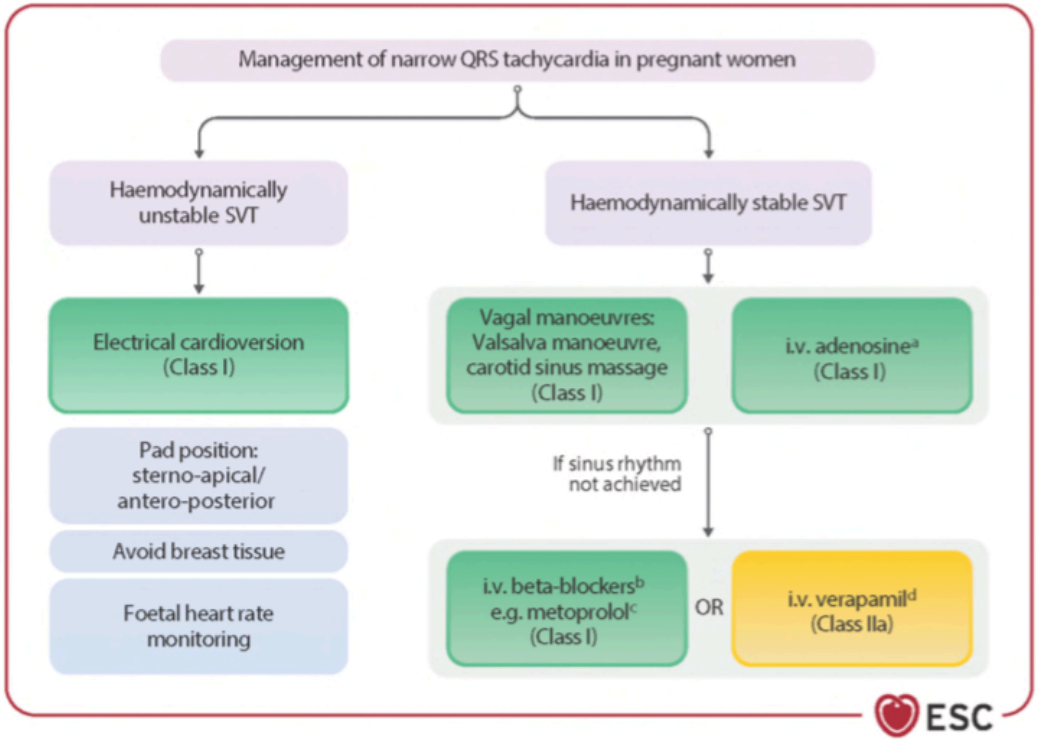
CCB non-DHP, calcio-antagonista non diidropiridinico.
Pollice verde: sicuro; pollice giallo: stretto controllo della paziente e del feto/neonato; pollice rosso: rischio per la paziente e il feto/neonato.

Dati del registro ROPAC scoraggiano interruzione dei farmaci antiaritmici durante la gravidanza e sottolineano l'importanza di un controllo adeguato e precoce del dolore per dominare effetto trigger pro-aritmico legato all'attività simpatica

Pregnancy Outcome in women witch Cardiovascular Disease: evolving trends over 10 years in the ESC Registry of Pregnancy And Cardiac Disease (ROPAC). EUR Heart J 2019;40:3848-55.

Management of narrow QRS tachycardia in pregnant women

- 20% pz con aritmie SV preesistenti presenta esacerbazione durante la gravidanza
- Manovre vagali ed adenosina sono tp di prima linea
- CVE se instabilità emodinamica



HRS expert consensus statement on the management of arrhythmyas in pregnancy.

Hear Rythm 2023;20:e175-264

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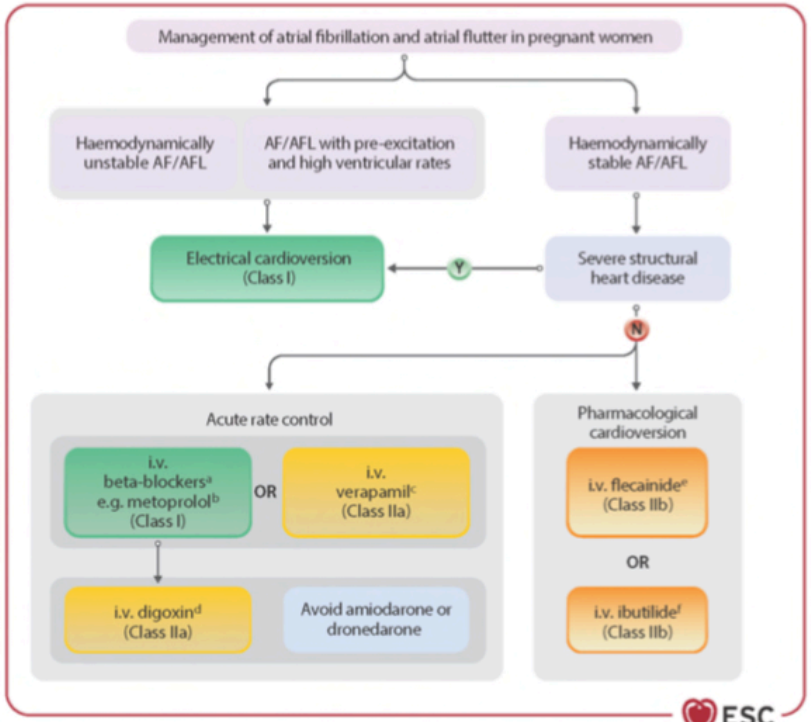
Management of atrial fibrillation and atrial flutter in pregnancy

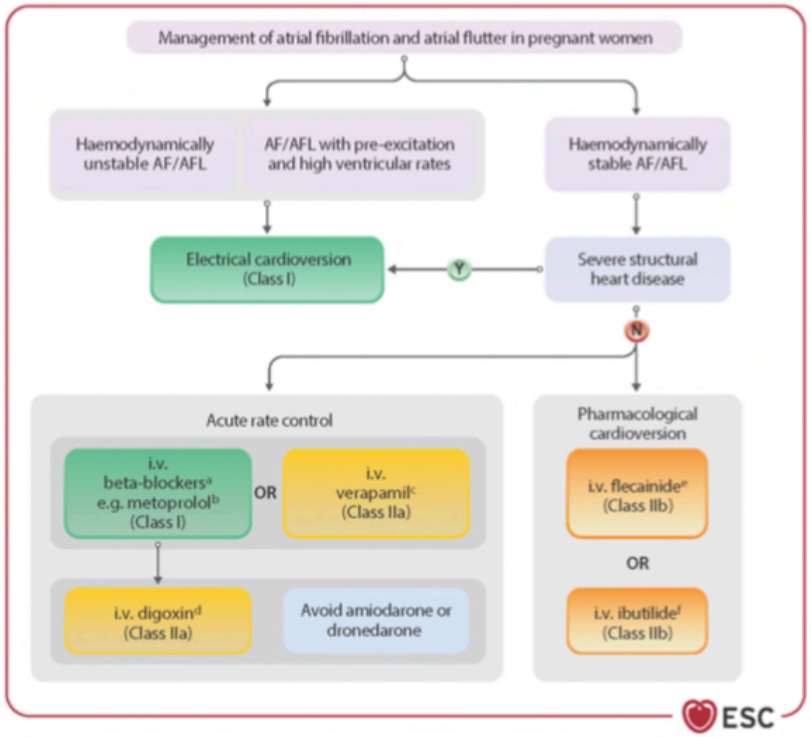


- CC/cardiopatie valvolari
- Anticoagulazione: raccomandata come nella popolazione generale in particolare in pazienti affette da cardiopatia strutturale

2025 ESC Guidelines for the management of cardiovascular disease and pregnancy

Management of atrial fibrillation and atrial flutter in pregnancy

Recommendations	Class	Level
Intravenous beta-blockers (e.g. metoprolol) are recommended as the first-line option for acute rate control in pregnant women with AF or AF with preserved LVEF and rapid ventricular rate.	I	C
Intravenous digoxin or verapamil (if preserved LVEF) should be considered as a second-line option for initial rate control in pregnant women with AF or AFL and rapid ventricular rate.	IIa	C
Ibutilide or flecainide may be considered for termination of AF and AFL in pregnant women without structural heart disease.	IIb	C



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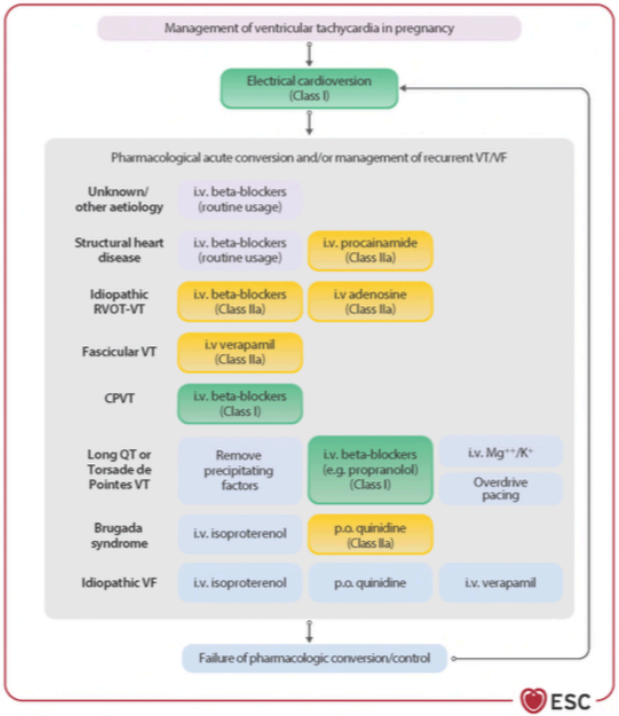
Management of ventricular tachycardias in pregnancy



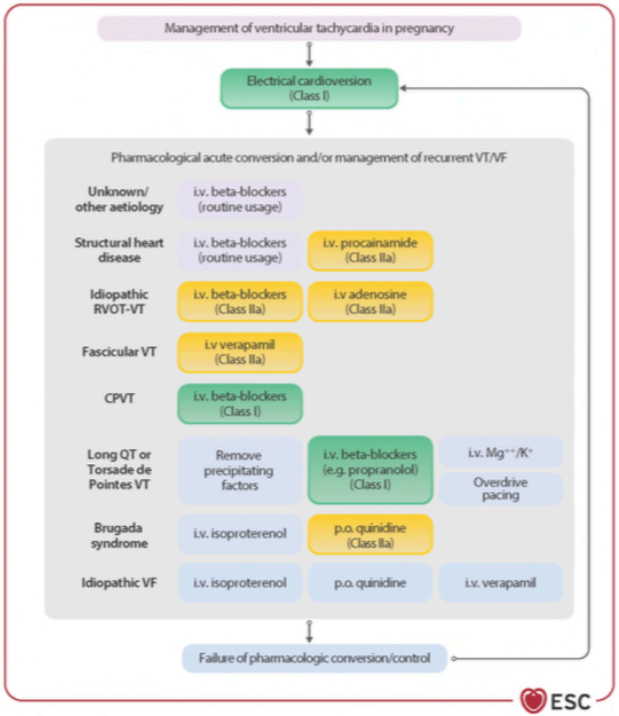
- TV/FV di nuova insorgenza sono rare durante la gravidanza (18/100000 ospedalizzazioni) [1]
- TV idiopatica più comune → RVOT
- Amiodarone controindicato!
- Preferire betabloccanti (flecainide/sotalolo se controindicazione ai bb)
- Follow up a 6 settimane dal parto e ad 1 mese per escludere CMPP

2025 ESC Guidelines for the management of cardiovascular disease and pregnancy

Tateno S, Niwa K, Nakazawa M, Akagi T, Shinohara T, Yasuda T. Arrhythmia and con- duction disturbances in patients with congen- ital heart disease during pregnancy: multi- center study. Circ J 2003;67:992-7.

Management of ventricular tachycardias in pregnancy

- TV in presenza di instabilità emodinamica: la CVE è raccomandata con la stessa energia utilizzata nella popolazione generale (classe 1).
- TV idiopatiche con stabilità emodinamica: BB e adenosina in caso di tachicardie originate negli efflussi ventricolari o verapamil per tachicardie fascicolari (5-10 mg e.v. ripetibili dopo 30 min e successivamente 120-480 mg/die – classe 1).
- TV emodinamicamente stabile: la procainamide, dosaggio 15 mg/kg e.v. in 30 min, poi 1-4 mg/min in infusione, può essere usata come terapia in acuto (classe 1).
- Il magnesio (1-2 g e.v.) può essere utilizzato in caso di torsioni di punta e TV polimorfe[59].



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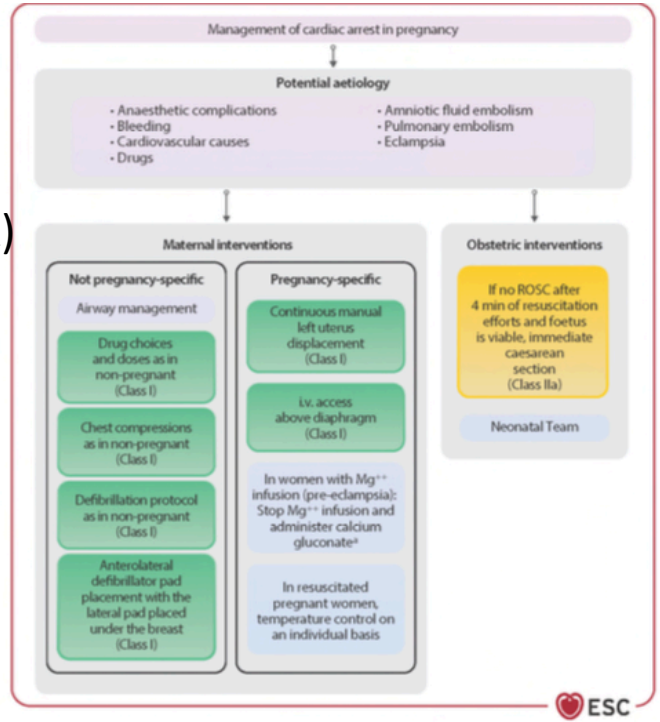
Management of cardiac arrest in pregnancy



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Manifestazione clinica rara (1:12000 USA)

Cause: emorragia, complicanze anestesiologiche, cause CV (embolia polmonare, IMA, dissezione aortica, eclampsia, aritmie)

Compressioni toraciche sopra il diaframma, protocolli RCP come nella popolazione generale

Speciali categorie di pazienti

- Cardiomiopatia aritmogena

Recommendation	Class	Level
Flecainide, in addition to beta-blockers, should be considered as the antiarrhythmic drug of choice in pregnant women with ARVC.	IIa	C
Sotalol may be considered as an antiarrhythmic drug in pregnant women with ARVC, with careful evaluation of QTc and while monitoring for foetal bradycardia and foetal growth and neonate hypoglycaemia.	IIb	C

(European Heart Journal; 2025 – doi: 10.1093/eurheartj/ehaf193)

Speciali categorie di pazienti

- Cardiomiopatia aritmogena
- Cardiomiopatia ipertrofica

(European Heart Journal; 2025 – doi: 10.1093/eurheartj/ehaf193)

Recommendations	Class	Level
It is recommended to start beta-blockers in women with HCM who develop symptoms due to outflow tract obstruction or arrhythmia during pregnancy.	I	C
It is recommended that women with HCM with symptomatic LV dysfunction (EF <50%) and or severe LVOTO (≥50 mmHg) wishing to become pregnant are counselled by the Pregnancy Heart Team regarding the high risk of pregnancy-related adverse events.	I	C
Cardioversion for AF should be considered in pregnant women with HCM.	IIa	C
Disopyramide may be considered in pregnant women with HCM only when the potential benefits outweigh the risk of uterine contractions.	IIb	C
Myosin inhibitors are not recommended in women during pregnancy due to lack of safety data.	III	C

(European Heart Journal; 2025 – doi: 10.1093/eurheartj/ehaf193)

23% donne gravide affette da CMI sviluppa eventi aritmici (TV 10%, FA 1,7%)[1]

Essenziale è la prosecuzione della terapia durante la gravidanza soprattutto nel terzo trimestre per il maggior rischio aritmico

29% pz presenza rischio di complicanze o peggioramento dei sintomi[1]

1. Goland S et al. Pregnancy in women with hypertrophic cardiomyopathy: data from the European Society of Cardiology initiated Registry of Pregnancy and Cardiac Disease ROPAC. Eur Heart J 2017;38:2683-90.

Speciali categorie di pazienti

- Cardiomiopatia aritmogena
- CMI
- Canalopatie

Speciali categorie di pazienti

- Cardiomiopatia aritmogena
- CMI
- Canalopatie

Recommendation	Class	Level
Monitoring and treatment of hypokalaemia and hypomagnesaemia is recommended in pregnant women with primary arrhythmia syndromes suffering from hyperemesis.	I	C

(European Heart Journal; 2025 – doi: 10.1093/eurheartj/ehaf193)

Long QT Syndrome

Recommendations	Class	Level
Beta-blockers, with pre-pregnancy dose and with nadolol and propranolol as drugs of choice, are recommended during pregnancy in women with LQTS.	I	B
It is recommended to continue beta-blocker therapy during lactation in women with LQTS to reduce arrhythmic risk.	I	B
Pre-pregnancy beta-blocker dose of nadolol or propranolol, is recommended in women with LQT2, particularly in the post-partum period, which represents a high-risk period for life-threatening arrhythmias.	I	B
In women carrying a LQTS P/LP variant and who are phenotype-negative, use of beta-blockers during pregnancy, post-partum, and lactation should be considered.	IIa	C
Left cardiac sympathetic denervation should be considered before pregnancy in high-risk woman with LQTS who are not adequately protected by pharmacological therapies or who have appropriate ICD shocks despite optimal medical therapy.	IIa	C

European Heart Journal; 2025 doi:10.1093/eurheartj/ehaf193

CPVT

Recommendations	Class	Level
Beta-blockers, with pre-pregnancy dose and with nadolol and propranolol as drugs of choice, are recommended during pregnancy and lactation in women with CPVT.	I	C
Flecainide, in addition to beta-blockers, is recommended in women with CPVT who experience cardiac events such as syncope, VT, or cardiac arrest during pregnancy.	I	C
It is recommended that women with CPVT who are stable on beta-blockers (nadolol or propranolol as drugs of choice) and flecainide before pregnancy, continue both drugs during pregnancy and post-partum.	I	C
The use of beta-blockers during pregnancy and lactation should be considered in phenotype-negative women with a CPVT P/LP variant.	IIa	C
Left cardiac sympathetic denervation should be considered before pregnancy in high-risk women with CPVT who are not adequately protected by pharmacological therapies or with appropriate ICD shocks despite optimal medical therapy.	IIa	C

(European Heart Journal; 2025 – doi: 10.1093/eurheartj/ehaf193)

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Rischio aritmico non aumentato in gravidanza

(European Heart Journal; 2025 – doi: 10.1093/eurheartj/ehaf193)

CONCLUSIONI (1)

- L'aumento dell'età media delle donne in gravidanza, la maggiore frequenza delle donne con cardiopatie strutturali e comorbilità, che decidono di programmare una gravidanza, ha incrementato nelle ultime decadi il numero di ospeedalizzazioni per aritmie

- Diagnosi e gestione delle aritmie in gravidanza richiede una collaborazione tra differenti figure specialistiche (team cardio-ostetrico)

CONCLUSIONI (2)

- E’ raccomandato il riferimento a centri specializzati nelle gravide con eventi aritmici a rischio moderato-alto e con cardiopatie strutturali sottostanti
- In urgenza non deve essere ritardato il trattamento per il timore del rischio fetale
- Terapia antiaritmica può essere utilizzata con efficacia e sicurezza
- La CVE è sicura con alcune peculiarità procedurali

Grazie per l'attenzione