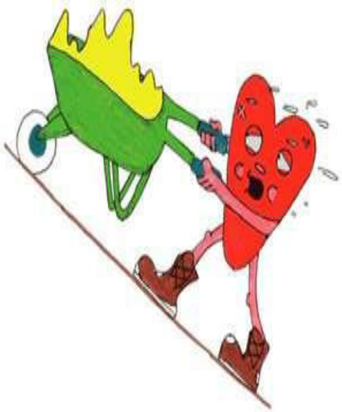
Insuffisance cardiaque et grossesse

Pr Ag Leila Abid Trigui

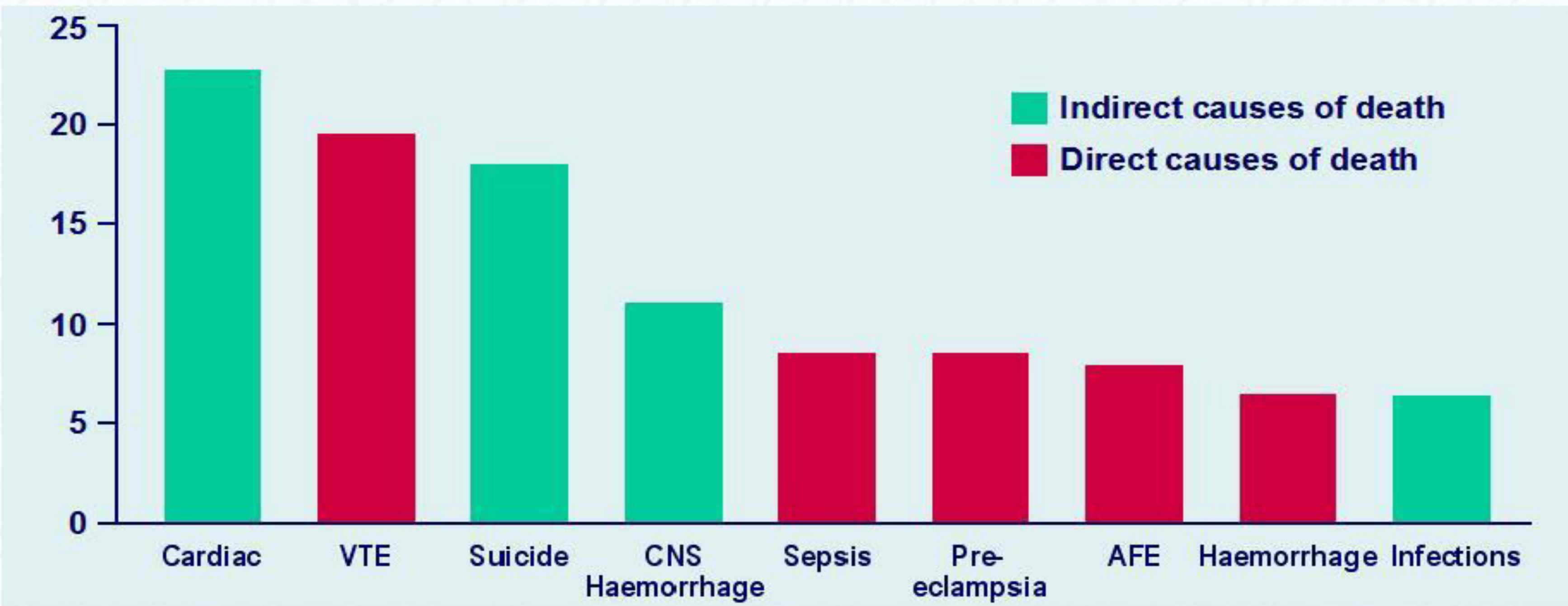
Service de Cardiolgie, CHU Hédi Chaker, Sfax (Tunisie)



Données épidémiologiques

Major Causes of Maternal Death (UK 2003-2005)

Overall death rates per million maternities



Roos-Hesselink Heart 2009;95:680-6

Données épidémiologiques

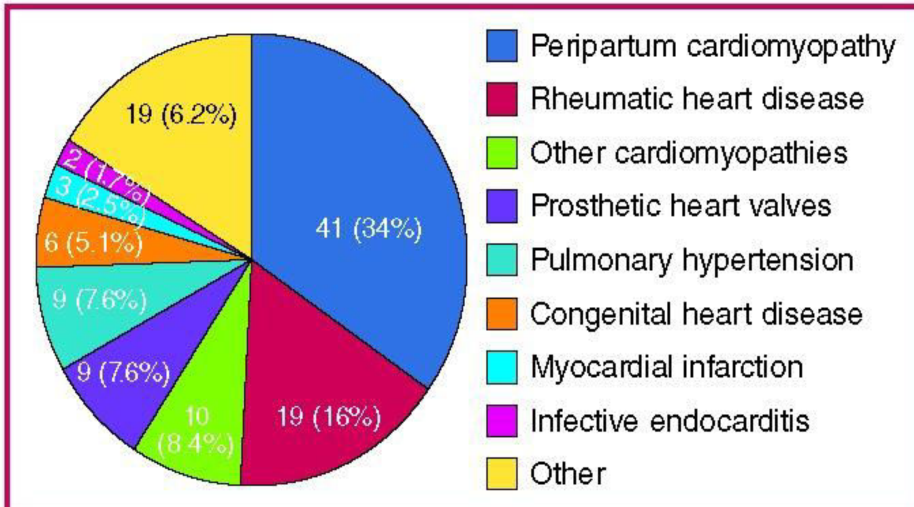


Fig. 3. Cardiovascular conditions contributing to cardiac death (n = 118).

CVJAFRICA CARDIOVASCULAR JOURNAL OF AFRICA • Advance Online Publication, February 2016 1

Cardiovascular Topics

The importance of cardiovascular pathology contributing to maternal death: Confidential Enquiry into Maternal Deaths in South Africa, 2011–2013

Priya Soma-Pillay, J Seabe, Karen Sliwa

PPCM (34%) et complications du RHD (19.6%): causes plus importantes d'insuffisance cardiaque et de décès

Table 3. Factors contributing to death for the two major disease groups

Avoidable factor	*Whole group* n *(%)*	*Peripartum cardiomyopathy* n *(%)*	*Rheumatic heart disease* n *(%)*
Patient delay in seeking help	49 (41.5)	16 (39.0)	16 (45.7)
Lack of expertise by medical staff managing case	35 (29.7)	16 (39.0)	12 (34.3)
Delay in referral to appropriate level of care	31 (26.3)	13 (31.7)	8 (22.9)
Delay in appropriate action	43 (36.4)	15 (36.6)	15 (42.9)

Hospitalisation pour insuffisance cardiaque

- 23% de femme enceinte

European Journal of Heart Failure (2016)
doi:10.1002/ejhf.594

Pulmonary hypertension and pregnancy outcomes: data from the Registry Of Pregnancy and Cardiac Disease (ROPAC) of the European Society of Cardiology

Karen Sliwa[1,2,3,*], Iris M. van Hagen[4], Werner Budts[5], Lorna Swan[6], Gianfranco Sinagra[7], Maryanne Caruana[8], Manuel Vazquez Blanco[9], Lodewijk J. Wagenaar[10], Mark R. Johnson[11], Gary Webb[12], Roger Hall[13], and Jolien W. Roos-Hesselink[4,14], on behalf of the ROPAC investigators

Sliwa et al, Eur Heart J 2016;

Facteurs de contribution à l'IC au cours de la grossesse et du postpartum

Âge maternel

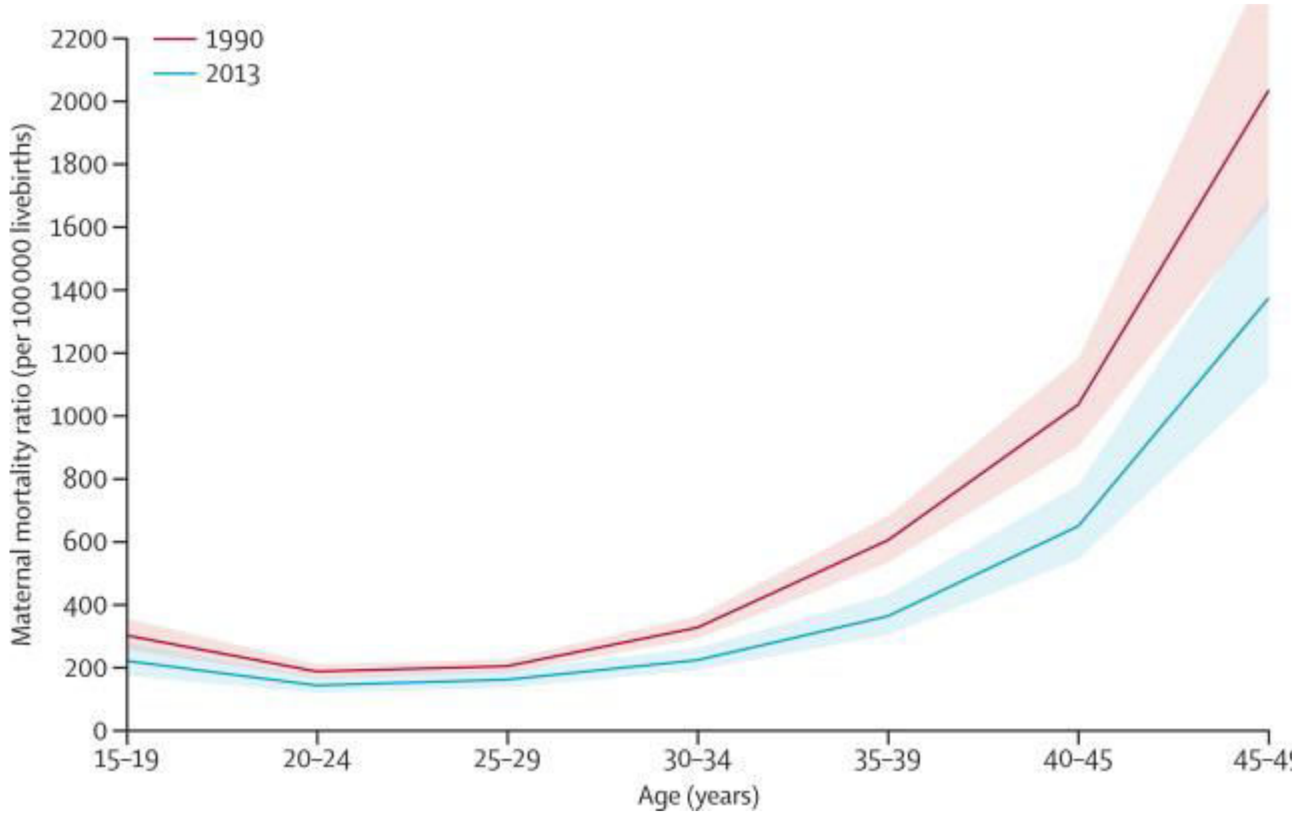
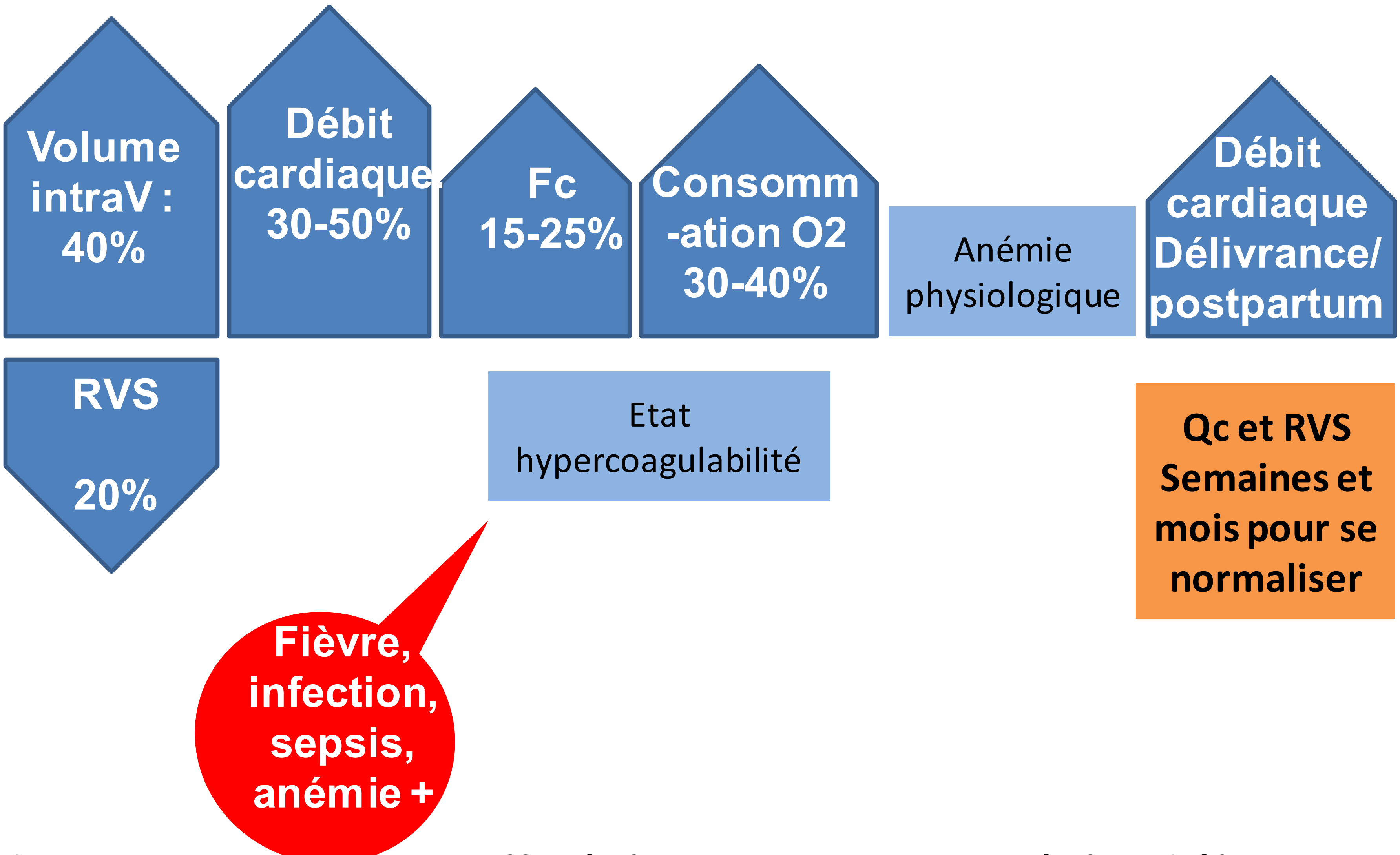


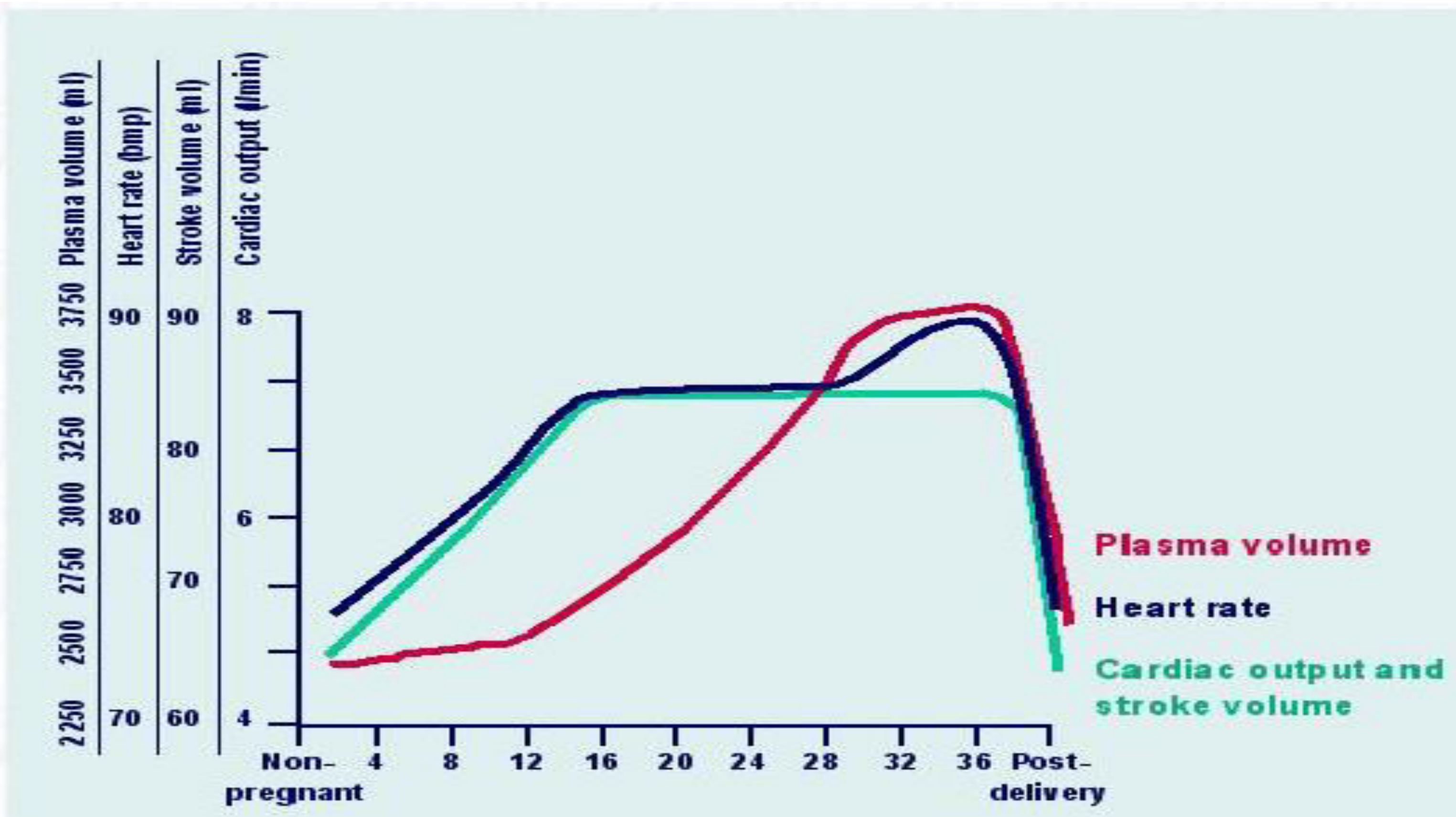
Figure: Global maternal mortality ratio in 1990 and 2013, by age. Shaded areas show 95% uncertainty intervals.
Kassebaum NJ, Bertozzi-Villa A, Coggeshall MS, Sliwa K, Lozano R, et al. Global, regional, and national levels and causes of maternal mortality during 1990–2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2014

Physiologie: changement hémodynamiques au cours de la grossesse



Adaptation maternelle à la grossesse et à la délivrance

Physiologie: changement hémodynamiques au cours de la grossesse



European Heart Journal 2011, doi: 10.1093/eurheartj/ehr218

Mode de Presentation: **Signes d'Appel?**

Les plus communs:
* Dyspnée (NYHA III-IV)
* Toux
* Fatigue

Communs:
*OMI
*Orthopnée
*Dyspnée paroxystique nocturne
*Palpitations
* Vertiges

Les moins communs
*Nycturie
*Douleur hypochondre droit
*Douleur thoracique
*Hypotension orthostatique
*Syncope

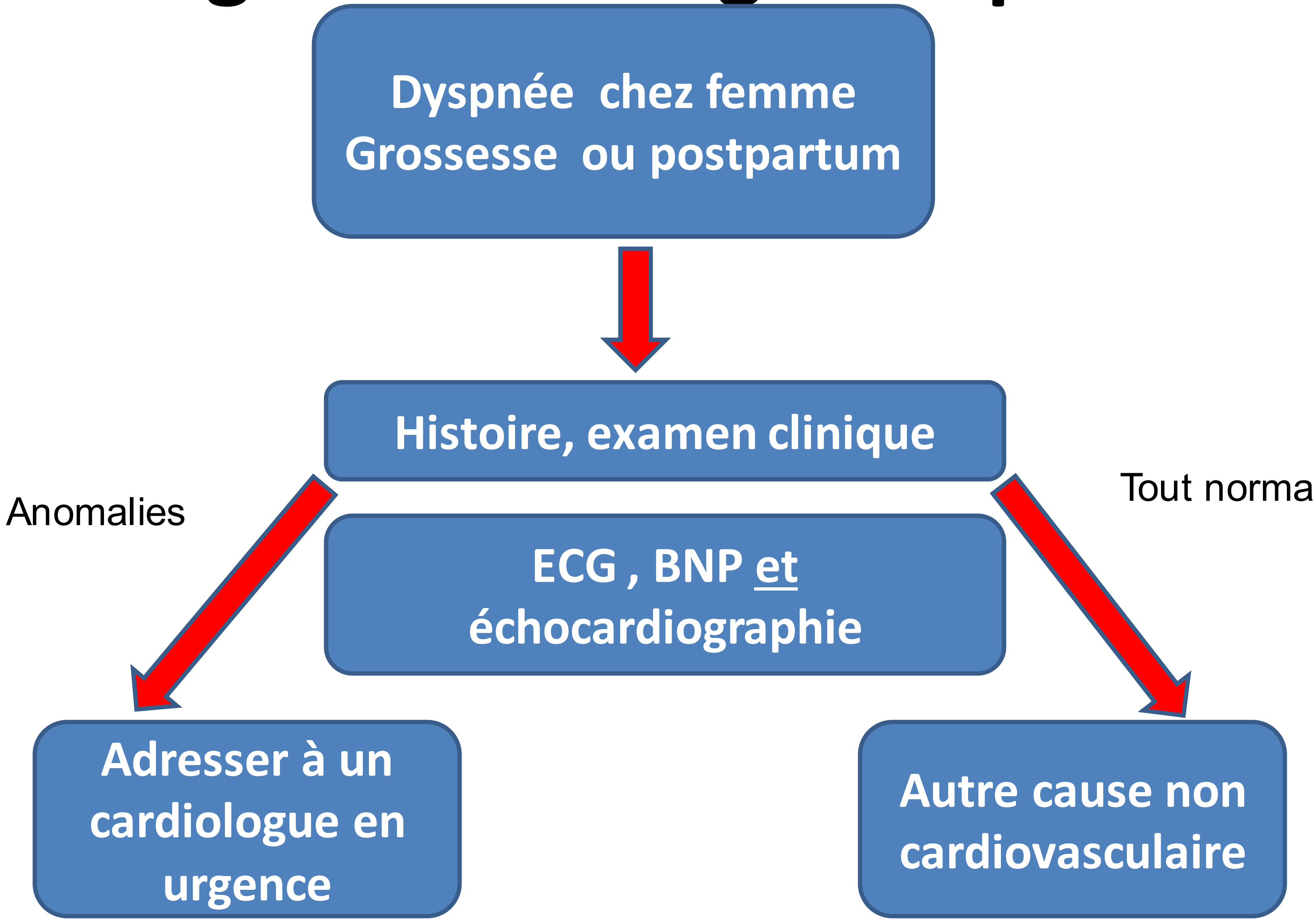
***Symptômes légers à dramatiques**

***Présentation très variable**

***Souvent ignorés par les patients , infirmiers et médecins**

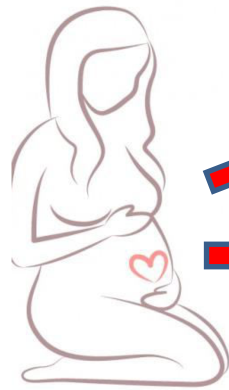
Sliwa K

Algorithme Diagnostique



Sliwa K

L’approche de la femme en **péripartum se présentant pour insuffisance cardiaque**



Questions importantes ?

Histoire de cardiopathie sous jacente?

- **Non** Suivre l’algorithme diagnostic
- **Oui** Prise en charge selon la cardiopathie

comorbidités? Facteurs aggravants?

Sévérité de l’IC?

Terme de gestation (SA)?

- **>16 SA:** Patiente stabilisée
  - ➢Intervention nécessaire?
  - ➢Délivrance précoce?
- **<16 SA:** Grossesse désirée? Arrêt?

Sliwa K

Diagnostic Différentiel

❶ **Cardiopathie sous jacente connue:** cardiopathie congénitale, Syndrome de Marfan, cardiomyopathie, atteinte valvulaire rhumatismale, prothèse valvulaire

❷ **Cardiopathie de découverte fortuite démasquée par la grossesse:** atteinte valvulaire rhumatismale ou cardiomyopathie familiale non encore diagnostiquée

❸ **Cardiopathies nouvellement développées:** cardiomyopathie du péripartum, SCA, HTA gravidique , préeclampsie ou HTA sévère responsible d'insuffisance cardiaque

❹ **Insuffisance cardiaque droite prédomiannte**:

Embolie pulmonaire

Dyspnée aigue péripartum: Diagnostic Différentiel

Table 1 Peripartal acute dyspnoea: differential diagnosis of acute peripartum cardiomyopathy

	PPCM	Pre-existing CMP, valve disease or congenital heart disease	Pregnancy-associated myocardial infarction	Pulmonary embolism/ amniotic liquid embolism	Myocarditis
History	Most commonly post-partal onset of dyspnoea	Earlier onset (during second trimester) Sometimes family history	Retrosternal chest pain, abdominal discomfort, nausea	Pleuritic chest pain	Infection
Biomarkers	Elevated natriuretic peptides	Elevated natriuretic peptides	Elevated troponin	Elevated D-dimer, troponin, natriuretic peptides	Elevated troponin Possibly. elevated natriuretic peptides
Echocardiography	Left and/or right ventricular dysfunction	Evidence of pre-existing valve disease or congenital defect	Regional hypokinesis/akinesis	RV dysfunction, elevated RV pressure, McConnell's sign	Regional or general hypokinesis
Additional tests	Consider MRI	Consider MRI Consider genetic test	Coronary angiography	CT-scan or. V/Q scintigraphy; consider angiography	MRI Consider myocardial biopsy

EUROPEAN SOCIETY OF CARDIOLOGY®

Practical guidance from the Heart Failure European Journal of Heart Failure (2016) **18, 1096–1105**

Cardiomyopathie du péri-partum (PPCM): Définition

1. Cardiomyopathie idiopathique: bilan étiologique négatif

L'absence de cardiopathie connue avant l'apparition des premiers symptômes

2. Echocardiographie FEVG < 45 %

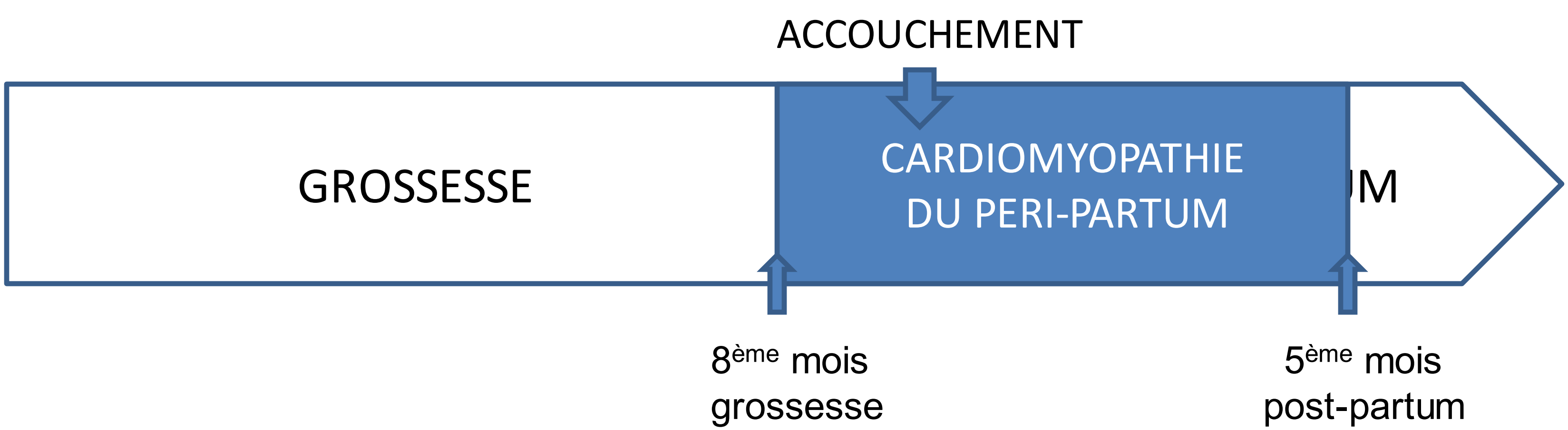
3. La survenue d'une insuffisance cardiaque congestive à la fin de la grossesse ou dans les mois suivant l'accouchement

Sliwa K. Heart Failure Association of the European Society of Cardiology Working Group on peripartum cardiomyopathy. *Eur J Heart Fail* 2010;**12:767–778.**

Cardiomyopathie du péri-partum

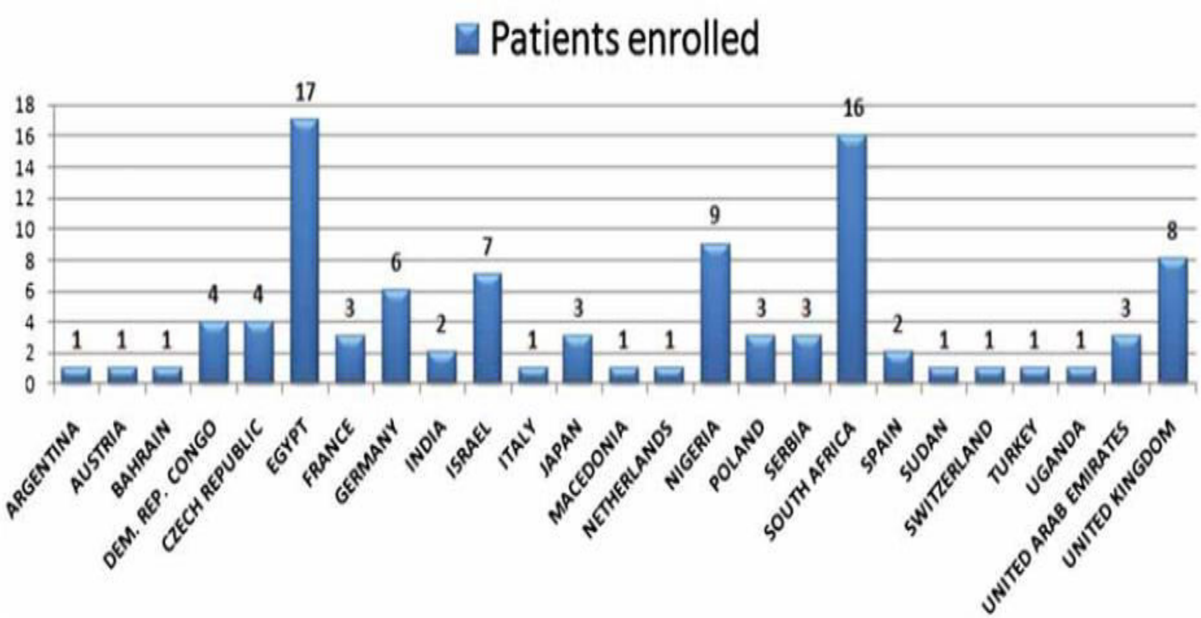
« Cardiomyopathie du péri-partum »
(après mais aussi avant l'accouchement)

et non « ~~Cardiomyopathie du post-partum~~ »



Epidemiologie de PPCM

- **Incidence:**
- 1/299 : Haiti
- 1/1000 : Afrique du Sud
- 1/3186 : USA
- Europe: **ESC PPCM-Registre**



EUROPEAN SOCIETY OF CARDIOLOGY
European Journal of Heart Failure (2014) **16**, 583–591
doi:10.1002/ejhf.68

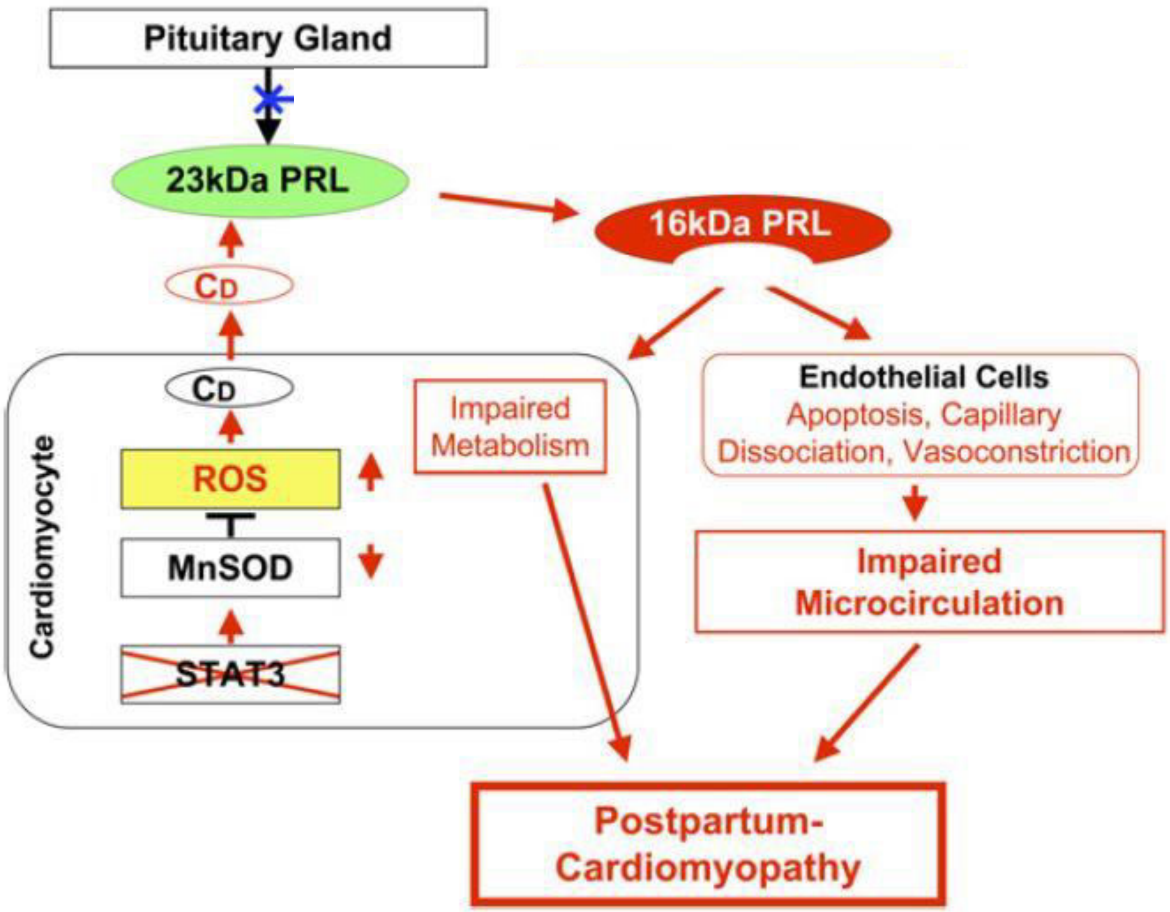
EURObservational Research Programme: a worldwide registry on peripartum cardiomyopathy (PPCM) in conjunction with the Heart Failure Association of the European Society of Cardiology Working Group on PPCM

Sliwa et al., EJHF, 2014

Facteurs de risque

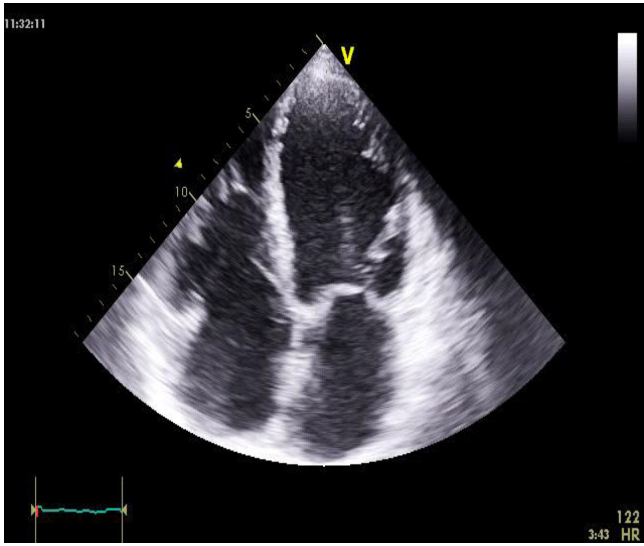
âge maternel > 30 ans   multiparité,
grossesse multiple   obésité,
hypertension artérielle   pré-éclampsie,
Race noire
30% sans aucun facteur de risque…

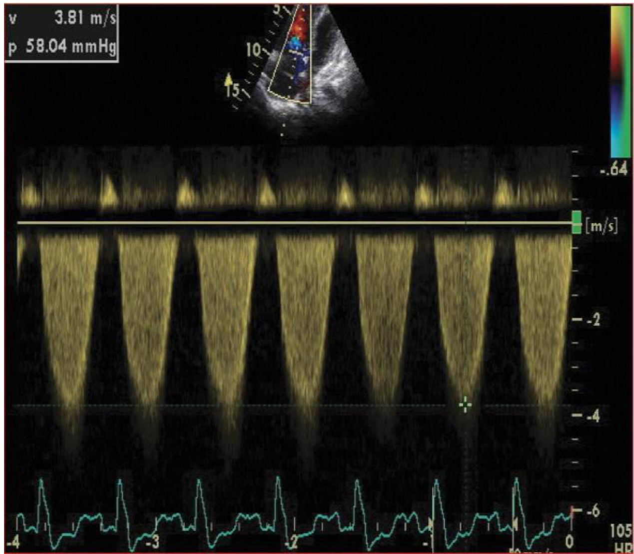
Physiopathologie ??



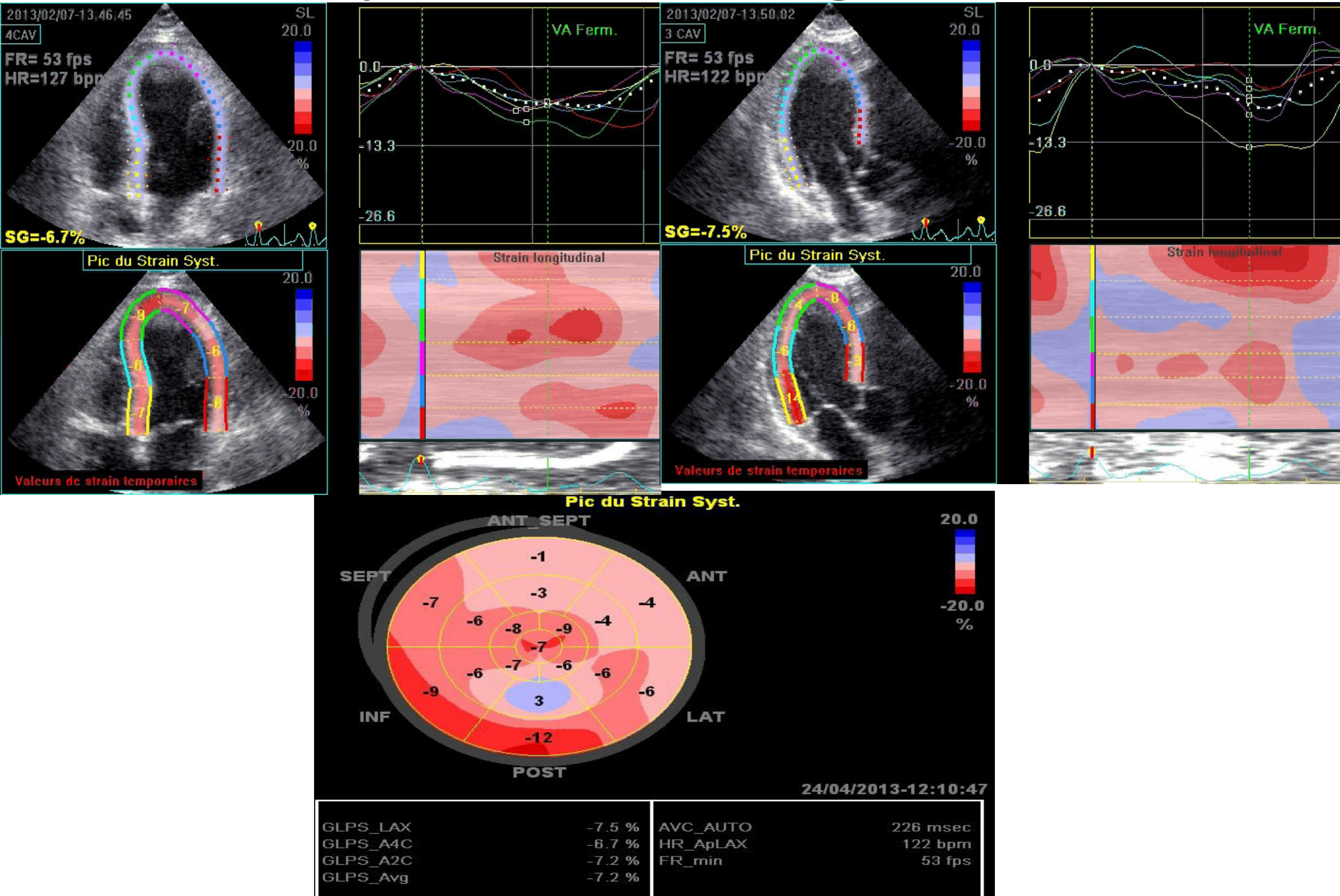
Apport de l'échographie cardiaque

- **Dilatation ventriculaire (rarement pas de dilatation)**
- **Hypokinésie globale sans anomalie <u>localisée</u> de la cinétique segmentaire**
- **Amincissement du myocarde**
- **VD (TAPSE), PAPS**
- **IM par dilatation du VG**
- **Elimine une péricardite et autres causes +++**
- **Recherche de thrombus intra cavitaire**
- **Réduction de la FEVG (parfois normale avec atteinte prédominante diastolique)**





Speckle tracking: SLG



CMPP avec FE normale?

PERIPRATUM HEART FAILURE WITH NORMAL EJECTION FRACTION: A NOVEL ENTITY IN THE SPECTRUM OF PERIPARTUM CARDIOMYOPATHY

N.P. Arora[1], N. Mahajan[2], K. Ballapuram[1], A. Kottam[2], M. Toosi[2], L.C. Afonso[2]
[1]Dept. of Internal Medicine, Wayne State University School of Medicine, Detroit Medical Center, Detroit, MI, USA, [2]Dept. of Internal Medicine, Division of Cardiology, Wayne State University School of Medicine, Detroit Medical Center, Detroit, MI, USA

11 cas en 6 ans

Objectives: To describe the clinical characteristics of patients with peripartum heart failure (HF) without any evidence of systolic dysfunction.
Background: Current definition of peripartum cardiomyopathy (PPCM) is restricted to
eft ventricular (LV) systolic dysfunction (ejection fraction EF <45%).
tum HF with normal ejection fraction (PHFNEF) are scarce.
tronic medical database (2006-2011) of a tertiary medical center was
dentify patients with PHFNEF (defined as EF >55%, meeting
iteria of HF, diagnosed one month prior to 5 months post-delivery).
nd adjudication of confirmed cases by a board-certified cardiologist,
eristics, echocardiograms and outcomes of these patients were then
onsecutive age-matched controls, with traditionally defined PPCM (EF
<45%).
Results: A total of 23 patients with PHFNEF were identified. Exclusion of patients
vith PHFNEF secondary to hypertension (n=9), preeclampsia (n=1) and diabetes-
nellitus (n=2) yielded 11 patients (Group I). Appropriate age-matched traditional
PPCM controls identified during the same time window, formed Group II (n=16).
Patients with PHFNEF had significantly lower B-type-natriuretic peptide (BNP),
ystolic and diastolic LV dimensions, Tei Index, likelihood of having pulmonary
ypertension, left-atrial size, and incidence of HF decompensation during delivery (all p values <0.05). They also exhibited relatively attenuated E'mitral annular velocities. No difference in time of presentation was observed. At follow-up, these patients were more likely to be in lower NYHA functional class.
Conclusions: Peripartum HF with preserved systolic function is a distinct entity that merits recognition and inclusion into the larger spectrum of peripartum cardiomyopathy.

Peripartum Cardiomyopathy Presenting as Diastolic Heart Failure

lescribe a case of peri-
diomyopathy due to
nction. The patient
artum with signs and

Gretchen L. Wells, MD, PhD; William C. Little, MD
From the Section on Cardiology, Wake Forest University School of Medicine, Winston-Salem, NC

Peripartum Cardiomyopathy Presenting with Predominant Left Ventricular Diastolic Dysfunction: Efficacy of Bromocriptine

Piercarlo Ballo,[1] Irene Betti,[1] Giuseppe Mangialavori,[1] Leandro Chiodi,[1] Gherardo Rapisardi,[2] and Alfredo Zuppiroli[3]

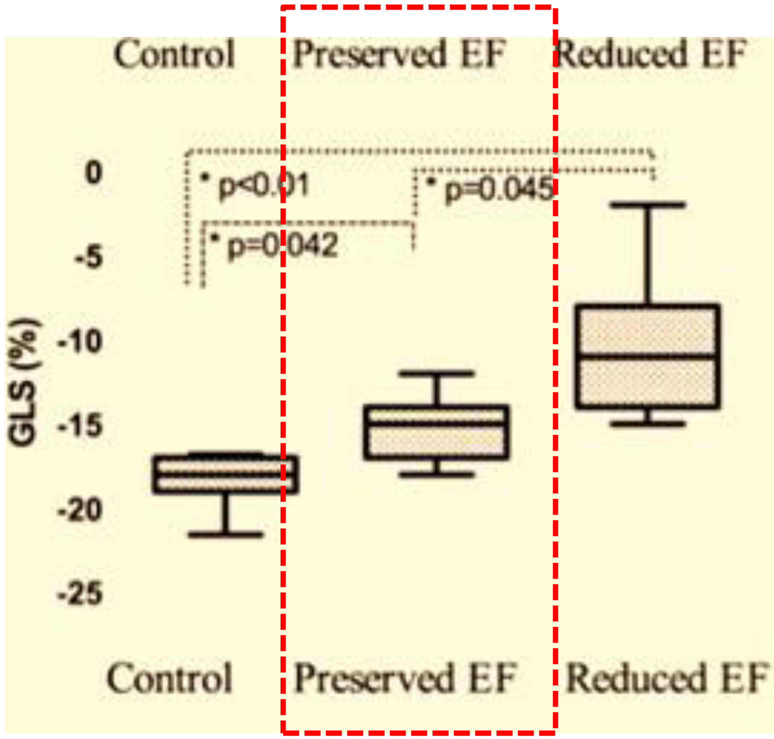
JAOA
CASE REPORT

Peripartum Heart Failure Caused by Left Ventricular Diastolic Dysfunction

Felix J. Rogers, DO
Sarah Cooper, DO

JACC Journals

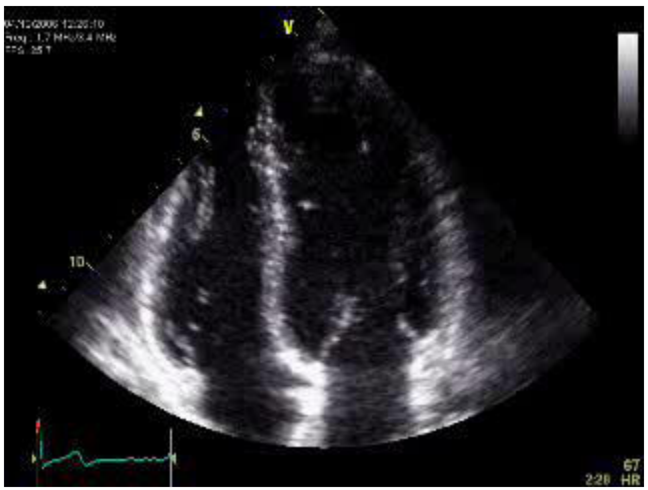
From: LONGITUDINAL SYSTOLIC STRAIN PROFILES IN PERIPARTUM CARDIOMYOPATHY

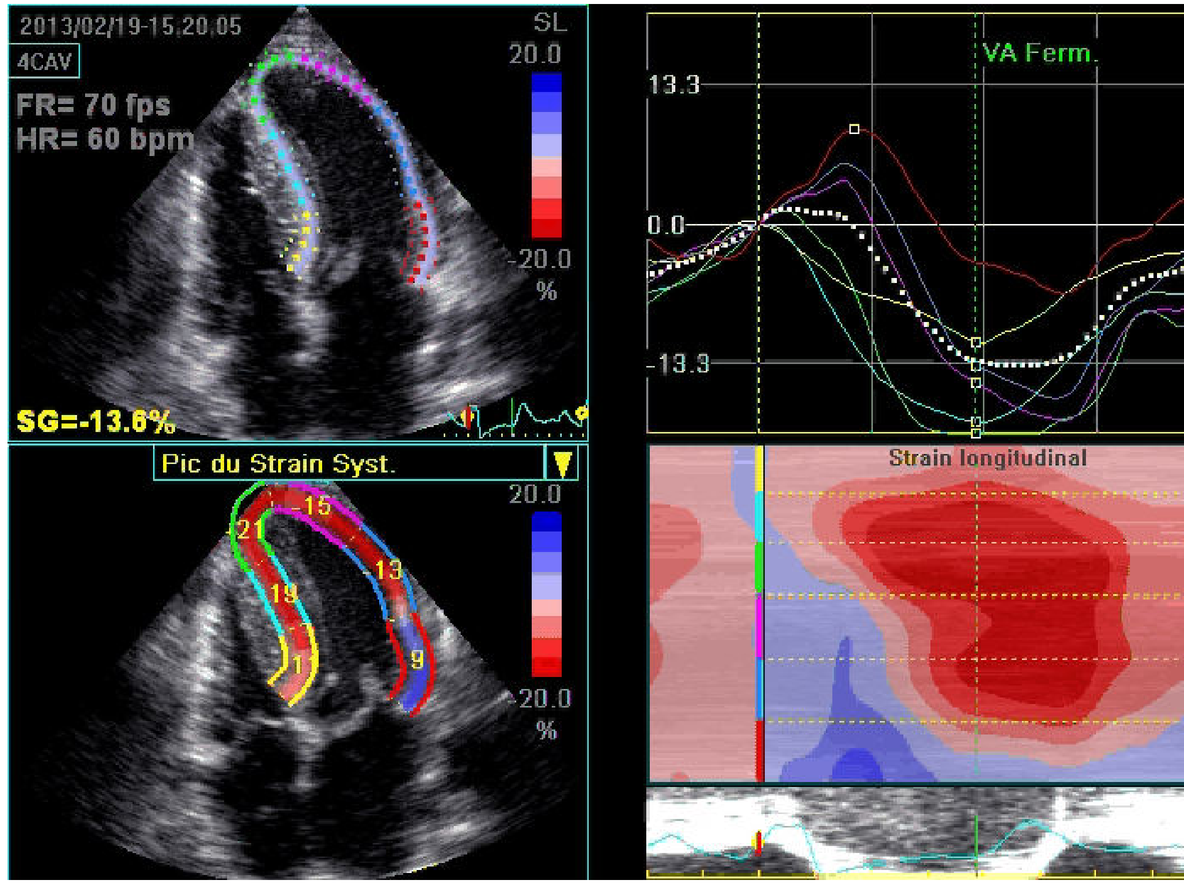


Le strain est modifié dans la MCPP même si la FE est normale (détection des formes frustres ou précoces ?)

Marian Mocanu. **J Am Coll Cardiol. 2015;65 (10_S)**

Exemple: MCPP à FEVG préservée





Autres examens complémentaires

- IRM cardiaque + rehaussement Gadolinium:

Rehaussement +: valeur diagnostic, pronostic

Mesure diamètre, FE, thrombus

- Biopsie myocardique: **Oubliez la biopsie myocardique ?**

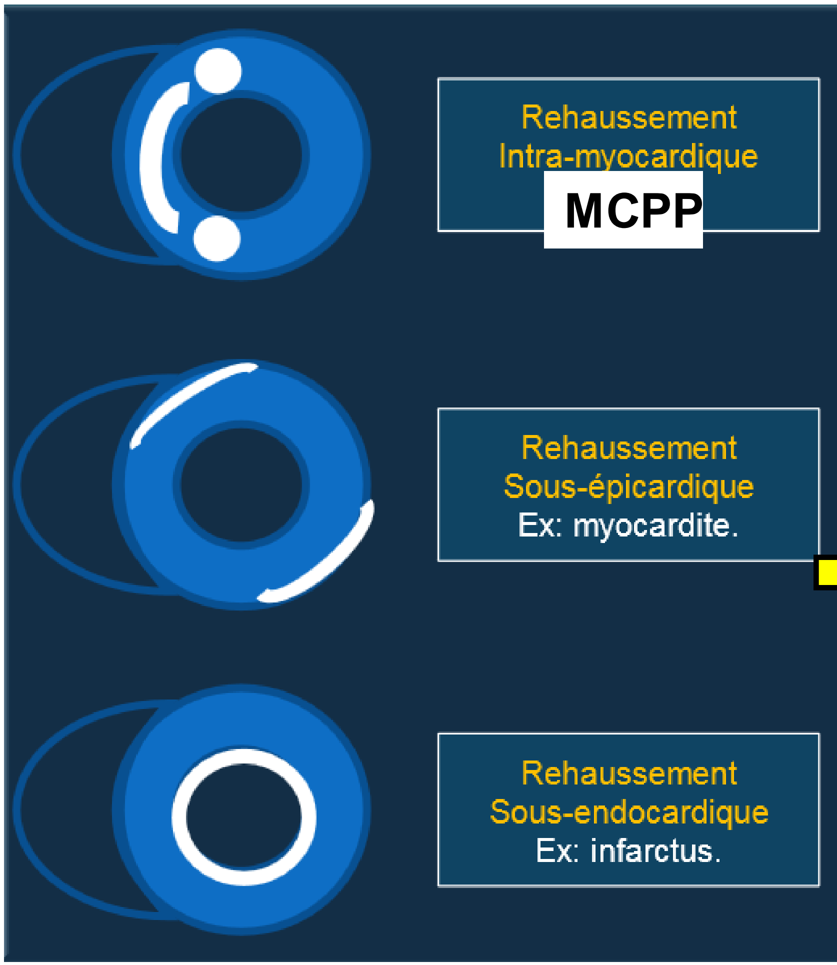
  Selon le moment pendant lequel on réalise la biopsie dans l'histoire de la maladie ou suivant l'endroit où il est effectué, les résultats histologiques sont très variables

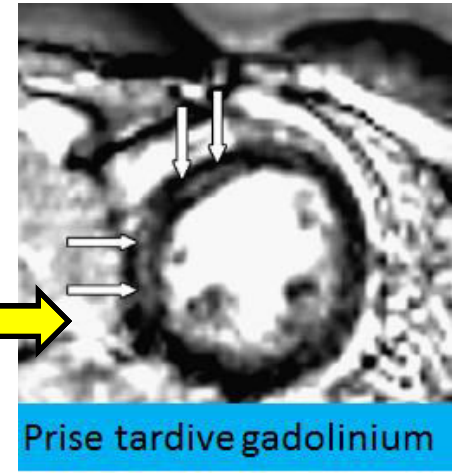
Br Heart J 1986;56:285–91

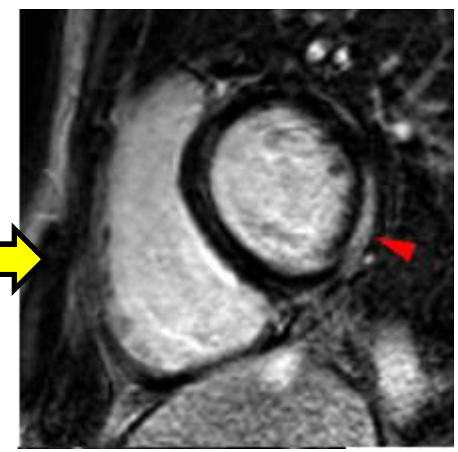
Peripartum heart disease: an endomyocardial biopsy study

J E SANDERSON,* E G J OLSEN,† D GATEI‡

Rehaussement tardif après injection gadolinium







Pronostic: risque mort subite

MCPP

Mortalité
5%-50%
(6 mois)

50%
Guérison totale
(6 mois)**

20-30%
Guérison partielle

50-100%
Récidive

facteurs de mauvais pronostic: variables

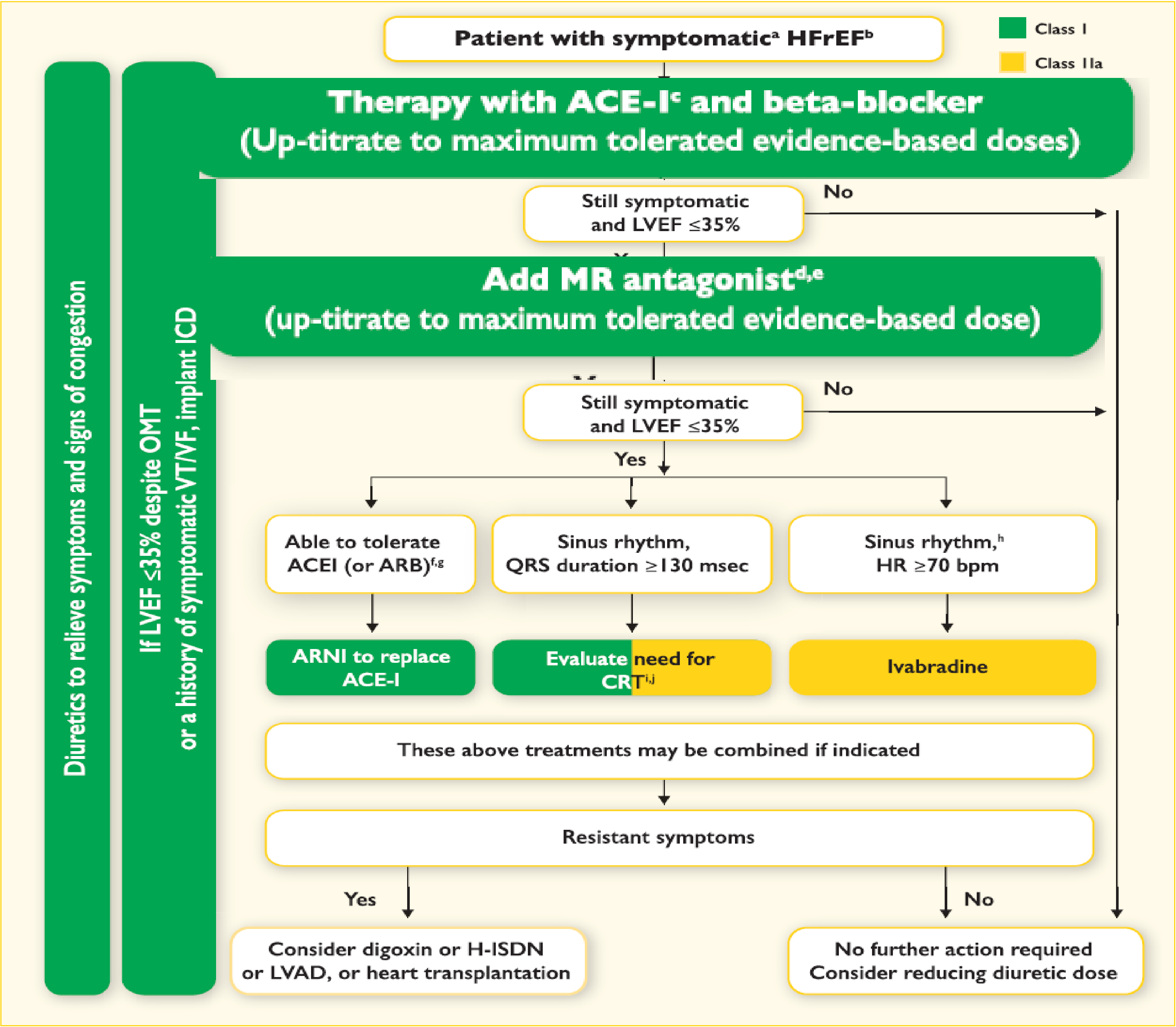
Bahloul, Ann Fr Anesth Reanim 2009

*J Am Coll Cardiol 2011;**58***659–670.

*J Am Coll Cardiol*2015;**66:905–914.**

*Eur J Heart Fail 2012;**14:895–901***

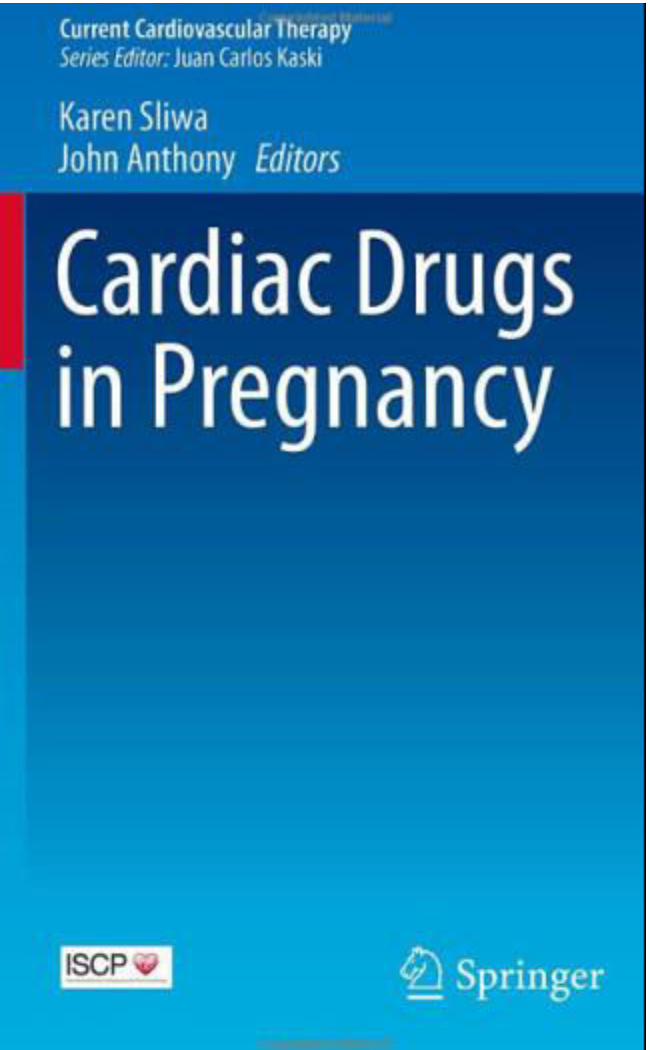
Prise en charge thérapeutique



Patient with symptomatic[a] HFrEF[b]
Class I
Class IIa
Therapy with ACE-I[c] and beta-blocker
(Up-titrate to maximum tolerated evidence-based doses)
Still symptomatic and LVEF ≤35%
No
Add MR antagonist[d,e]
(up-titrate to maximum tolerated evidence-based dose)
Still symptomatic and LVEF ≤35%
No
Yes
Able to tolerate ACEI (or ARB)[f,g]
Sinus rhythm, QRS duration ≥130 msec
Sinus rhythm,[h] HR ≥70 bpm
ARNI to replace ACE-I
Evaluate need for CRT[i,j]
Ivabradine
These above treatments may be combined if indicated
Resistant symptoms
Yes
No
Consider digoxin or H-ISDN or LVAD, or heart transplantation
No further action required
Consider reducing diuretic dose
Diuretics to relieve symptoms and signs of congestion
If LVEF ≤35% despite OMT or a history of symptomatic VT/VF, implant ICD

ESC 2016

Overall **Management**



European Heart Journal (2011) **32**, 3147–3197
doi:10.1093/eurheartj/ehr218

ESC GUIDELINES

ESC Guidelines on the management of cardiovascular diseases during pregnancy

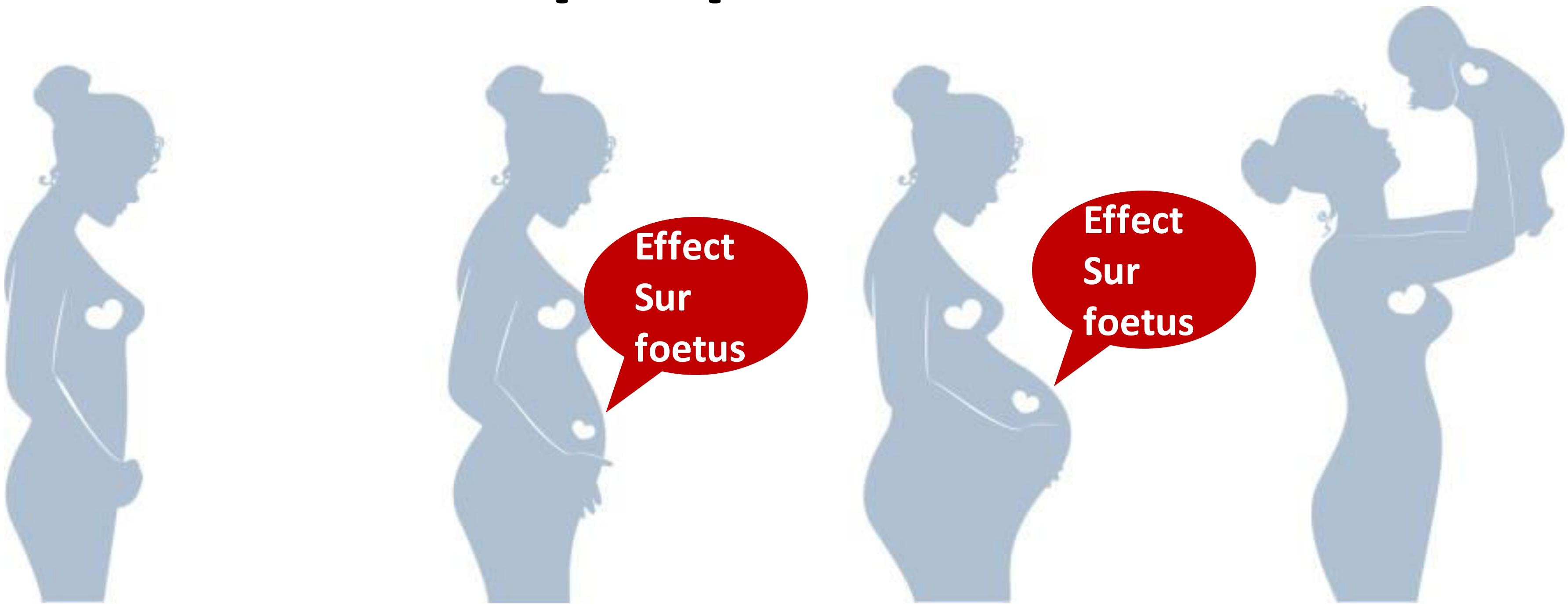
The Task Force on the Management of Cardiovascular Diseases during Pregnancy of the European Society of Cardiology (ESC)

Endorsed by the European Society of Gynecology (ESG), the Association for European Paediatric Cardiology (AEPC), and the German Society for Gender Medicine (DGesGM)

Authors/Task Force Members: Vera Regitz-Zagrosek (Chairperson) (Germany)*, Carina Blomstrom Lundqvist (Sweden), Claudio Borghi (Italy), Renata Cifkova (Czech Republic), Rafael Ferreira (Portugal), Jean-Michel Foidart† (Belgium), J. Simon R. Gibbs (UK), Christa Gohlke-Baerwolf (Germany), Bulent Gorenek (Turkey), Bernard Iung (France), Mike Kirby (UK), Angela H.E.M. Maas (The Netherlands), Joao Morais (Portugal), Petros Nihoyannopoulos (UK), Petronella G. Pieper (The Netherlands), Patrizia Presbitero (Italy), Jolien W. Roos-Hesselink (The Netherlands), Maria Schaufelberger (Sweden), Ute Seeland (Germany), Lucia Torracca (Italy).

ESC Committee for Practice Guidelines (CPG): Jeroen Bax (CPG Chairperson) (The Netherlands), Angelo Auricchio (Switzerland), Helmut Baumgartner (Germany), Claudio Ceconi (Italy), Veronica Dean (France), Christi Deaton (UK), Robert Fagard (Belgium), Christian Funck-Brentano (France), David Hasdai (Israel), Arno Hoes (The Netherlands), Juhani Knuuti (Finland), Philippe Kolh (Belgium), Theresa McDonagh (UK), Cyril Moulin (France), Don Poldermans (The Netherlands), Bogdan A. Popescu (Romania), Zeljko Reiner (Croatia), Udo Sechtem (Germany), Per Anton Sirnes (Norway), Adam Torbicki (Poland), Alec Vahanian (France), Stephan Windecker (Switzerland).

Traitment Médical de l'IC en péripartum



Non Pregnant (cardiomyopathy)	Early Pregnancy	Late Pregnancy	Postpartum
According to standard heart failure guidelines	Diuretics Hydralazine Beta Blocker	Diuretics Hydralazine Beta Blocker	Diuretics Ace-inhibitor Beta blocker

Traitement Medical de l'IC aigue et chronique chez la femme enceinte

Medical Management of Chronic Heart Failure in Pregnancy		
Drug/Class	Purpose	Comment
DIURETICS		
Furosemide	Generally reserved for treatment of pulmonary oedema Use of lowest possible dose	Can result in uteroplacental hypoperfusion, oligohydramnion, milk production can be reduced. FDA class C*
Hydrochloro-thiazide	Diuretic	Oligohydramnion, FDA class B
VASODILATORS		
Hydralazine	Commonly used oral antihypertensive agent in pregnancy Can be substituted for ACE inhibitor during pregnancy	Demonstrated efficacy in hypertension Risk of hypotension; FDA class C

*U.S. Food and Drug Administration (FDA) class: A (controlled studies show no risk), B (no evidence of human risk in controlled studies), C (risk cannot be ruled out), D (positive evidence of risk), X (contraindicated in pregnancy). ACE angiotensin converting enzyme; ARB angiotensin receptor blocker; IUGR intrauterine growth retardation; SVR systemic vascular resistance

Traitement Medical de l'IC aigue et chronique chez la femme enceinte

Drug/Class	Purpose	Comment
Amlodipine	Alternative to ACE inhibitor in pregnancy	Can be used with hydralazine if needed, FDA class C
Nitrates	Might be used to treat decompensated heart failure	Bradycardia, FDA class B
BETA BLOCKERS		
Carvedilol, Labetalol, Metoprolol, Atenolol	Essential component to chronic heart failure therapy Agents that are beta-1 selective are preferable Beta-blockers should be continued throughout pregnancy	Controlled studies in pregnant women not available. Risk stratification. Can cause IUGR, bradycardia in fetus; Infants born to mothers taking beta-blockers should be observed for at least 72 h after birth. FDA class C

*U.S. Food and Drug Administration (FDA) class: A (controlled studies show no risk), B (no evidence of human risk in controlled studies), C (risk cannot be ruled out), D (positive evidence of risk), X (contraindicated in pregnancy). ACE angiotensin converting enzyme; ARB angiotensin receptor blocker; IUGR intrauterine growth retardation; SVR systemic vascular resistance

Traitement médicamenteux IC et grossesse: Données du registre ROPAC

International Journal of Cardiology 177 (2014) 124–128

Contents lists available at ScienceDirect

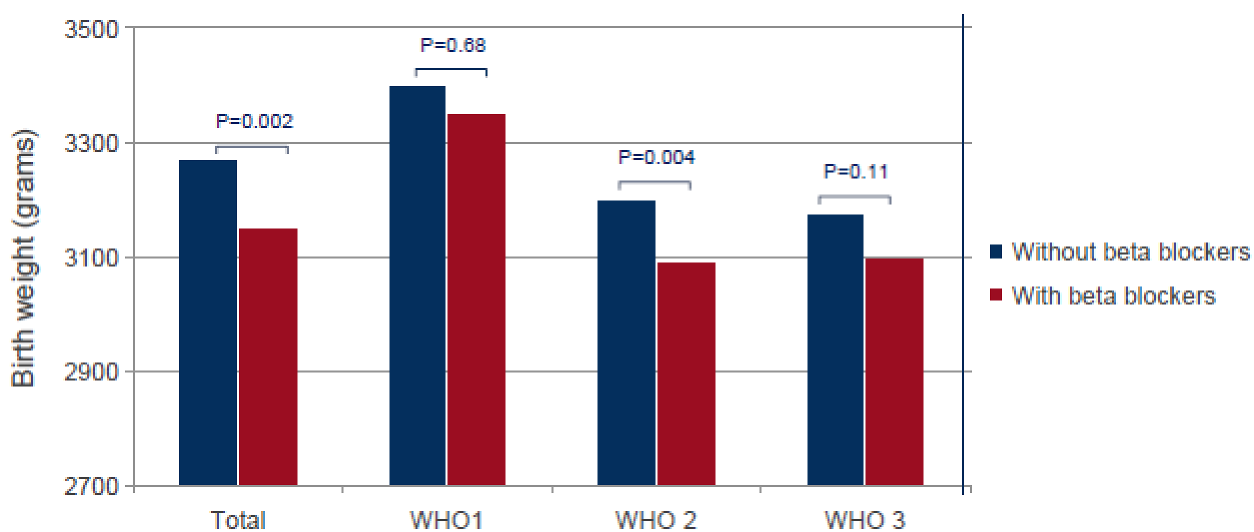
International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

ELSEVIER

Cardiac medication during pregnancy, data from the ROPAC☆,☆☆

Titia P.E. Ruys[a], Aldo Maggioni[b], Mark R. Johnson[c], Karen Sliwa[d], Luigi Tavazzi[e], Markus Schwerzmann[f], Petros Nihoyannopoulos[g], Mirta Kozelj[h], Ariane Marelli[i], Uri Elkayam[j], Roger Hall[k], Jolien W. Roos-Hesselink[a,*]



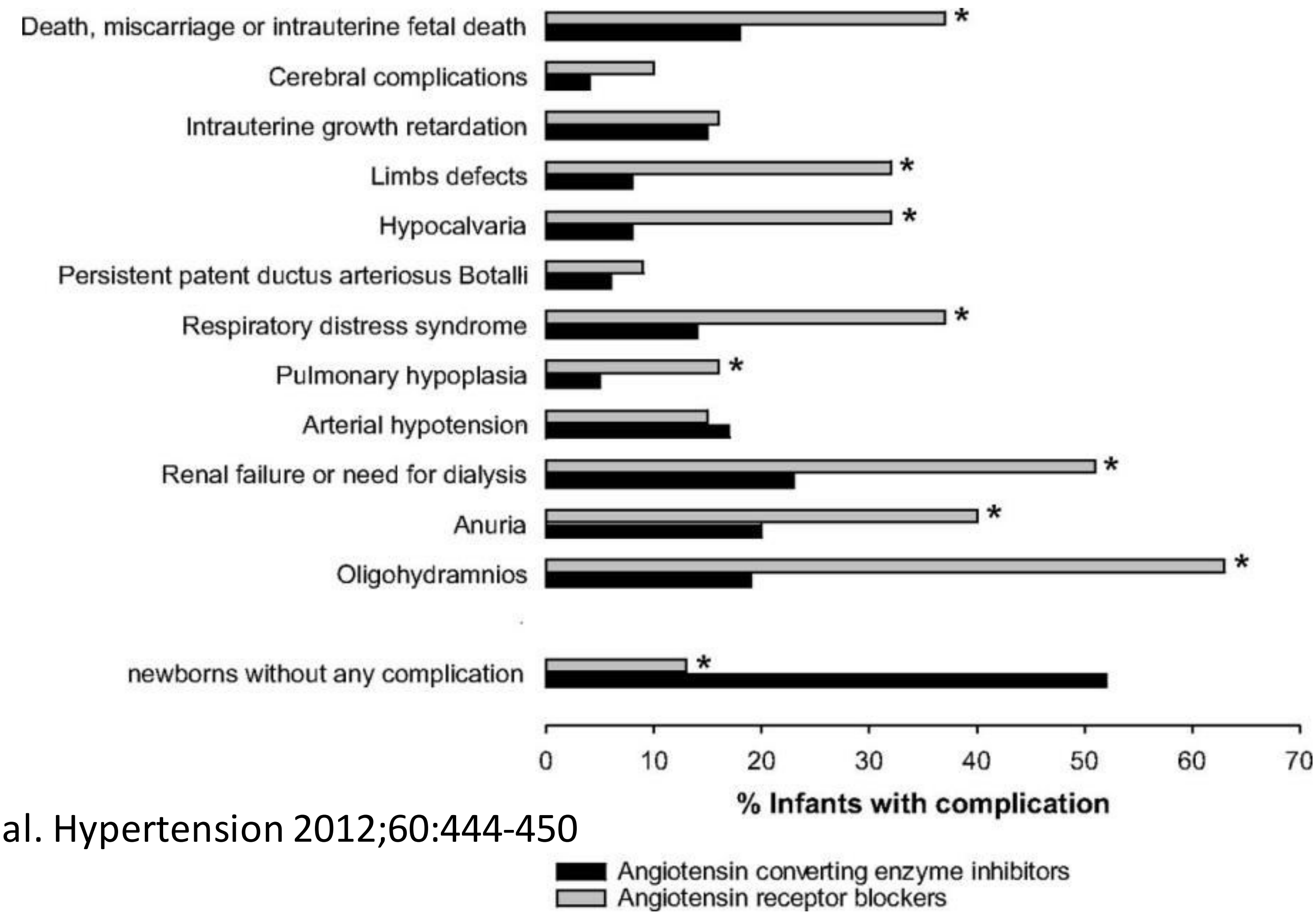
Birth weight in patient with and without beta-blockers per WHO class adjusted for gestational age, smoking, fetal sex, maternal age, diabetes and pre-eclampsia.

Traitement Medical de l'IC aigue et chronique chez la femme enceinte

Drug/Class	Purpose	Comment
ACE-INHIBITORS & ALDOSTERONE ANTAGONISTS		
Spironolactone, Epleronone	Prolong survival in selected heart failure patients	Antiandrogenic effects, oral clefts; No data to support safety in pregnancy FDA class D
All ACE-inhibitors & Angiotensin II receptor blocker	Prolongs survival in heart failure patients	Renal dysplasia, growth retardation, ossification disorder of skull, intrauterine fetal death; FDA class D

*U.S. Food and Drug Administration (FDA) class: A (controlled studies show no risk), B (no evidence of human risk in controlled studies), C (risk cannot be ruled out), D (positive evidence of risk), X (contraindicated in pregnancy). ACE angiotensin converting enzyme; ARB angiotensin receptor blocker; IUGR intrauterine growth retardation; SVR systemic vascular resistance

48% des nouveaux-nés exposés aux IEC-et 87% exposés aux ARAII: pas de complications (P< 0.0001).



Bullo M et al. Hypertension 2012;60:444-450

Traitement Medical de l'IC aigue et chronique chez la femme enceinte

Drug/Class	Purpose	Comment
Digoxin	• Not considered first-line therapy for heart failure in pregnant patients • No improvement in mortality	• Generally considered safe, serum levels unreliable in pregnancy; • FDA class C
Warfarin	Risk/benefit ratio needs to be discussed with the patient for treatment and prophylactic anticoagulation in severe left ventricular dysfunction	• First trimester teratogenesis • Dosing is complicated in pregnancy • FDA class X (contraindicated)

Contre-indication à la grossesse

Conditions in which pregnancy risk is WHO IV (pregnancy contraindicated)
• Pulmonary arterial hypertension of any cause
• Severe systemic ventricular dysfunction (LVEF <30%, NYHA III–IV)
• Previous peripartum cardiomyopathy with any residual impairment of left ventricular function
• Severe mitral stenosis, severe symptomatic aortic stenosis
• Marfan syndrome with aorta dilated >45 mm • Aortic dilatation >50 mm in aortic disease associated with bicuspid aortic valve
• Native severe coarctation

Mode of Présentation: **Aigue, présentation dramatique nécessité de support circulatoire**

European Journal of Heart Failure (2016)
doi:10.1002/ejhf.586

REVIEW

Current management of patients with severe acute peripartum cardiomyopathy: practical guidance from the Heart Failure Association of the European Society of Cardiology Study Group on peripartum cardiomyopathy

Johann Bauersachs[1,†,*], Mattia Arrigo[2,3,†], Denise Hilfiker-Kleiner[1], Christian Veltmann[1], Andrew J.S. Coats[4], Maria G. Crespo-Leiro[5], Rudolf A. De Boer[6], Peter van der Meer[6], Christoph Maack[7], Frederic Mouquet[8], Mark C. Petrie[9], Massimo F. Piepoli[10], Vera Regitz-Zagrosek[11], Maria Schaufelberger[12], Petar Seferovic[13], Luigi Tavazzi[14], Frank Ruschitzka[3], Alexandre Mebazaa[15], and Karen Sliwa[16]

[1]Department of Cardiology and Angiology, Medical School Hannover, Hannover, Germany; [2]Department of Cardiology, AP-HP, Lariboisière University Hospital, Paris, France; [3]Department of Cardiology, University Heart Center, University Hospital Zurich, Zurich, Switzerland; [4]Monash-Warwick Alliance, Monash University, Australia, and University of Warwick, UK; [5]Cardiology Service, Complexo Hospitalario Universitario A Coruña, La Coruña, Spain; [6]Department of Cardiology, University Medical Center Groningen, Groningen, The Netherlands; [7]Klinik für Innere Medizin III, Universitätsklinikum des Saarlandes, Homburg, Germany; [8]Department of Cardiology, Polyclinique du Bois, Lille, France; [9]Department of Cardiology, Golden Jubilee National Hospital and Glasgow University, Glasgow, UK; [10]Department of Cardiology, Guglielmo da Saliceto Hospital, Piacenza, Italy; [11]Institute of Gender in Medicine, Charité Universitaetsmedizin Berlin, and German Center for Cardiovascular Research, Berlin, Germany; [12]Section of Acute and Cardiovascular Medicine, Department of Molecular and Clinical Medicine, Institute of Medicine, Sahlgrenska Academy, University of Gothenburg, Sahlgrenska University Hospital/Östra, Gothenburg, Sweden; [13]University Medical Center, Belgrade, Serbia; [14]Maria Cecilia Hospital, Gruppo Villa Maria Care and Research, Ettore Sansavini Health Science Foundation, Cotignola, Italy; [15]Department of Anesthesiology and Critical Care Medicine, AP-HP, Saint Louis Lariboisière University Hospitals, Paris, France; and [16]Hatter Institute for Cardiovascular Research in Africa & IDM, Inter-Cape Heart Group, Medical Research Council South Africa, Department of Medicine, University of Cape Town, Cape Town, South Africa

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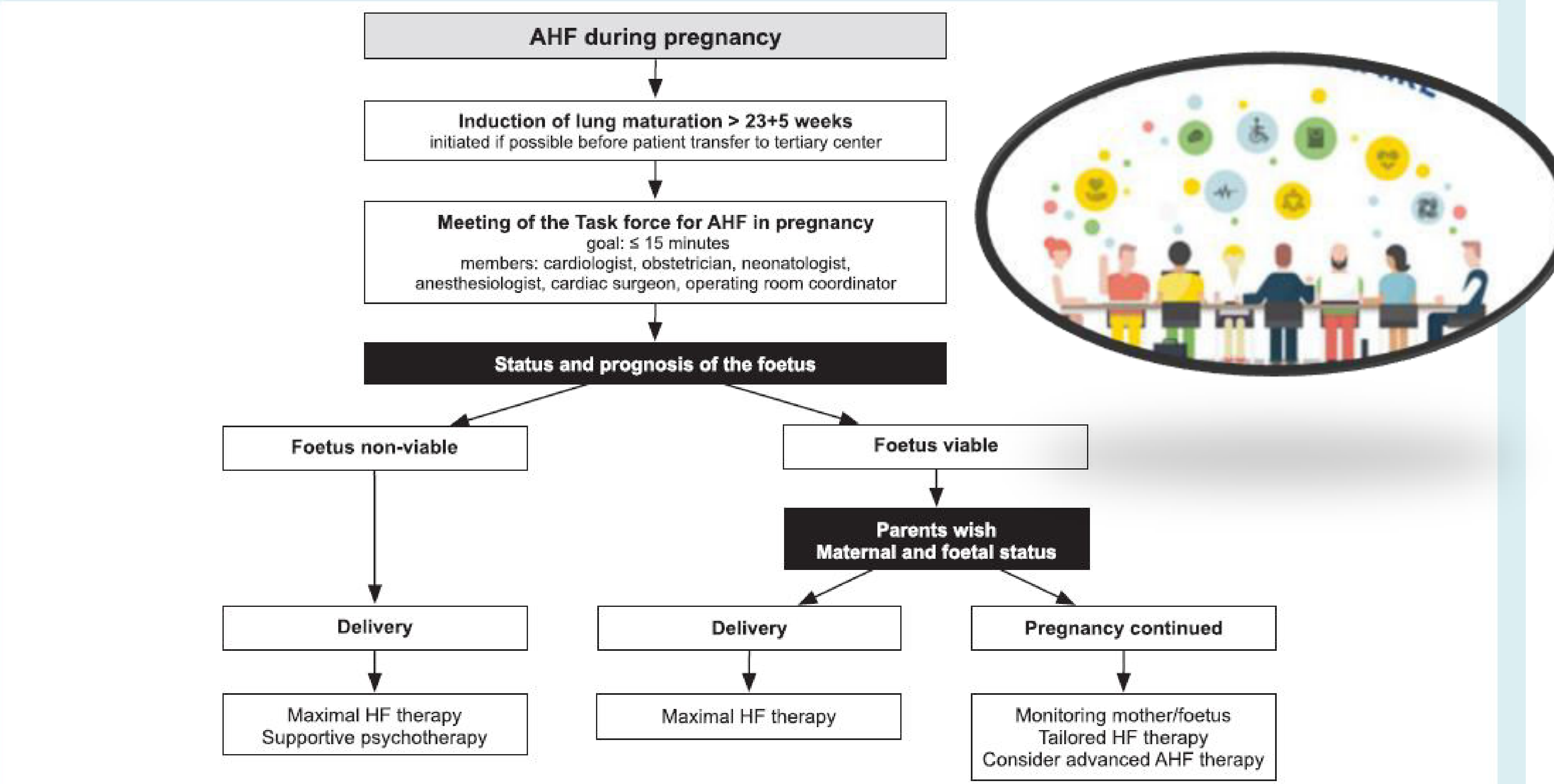

Figure 1 Example of prespecified protocol of interdisciplinary work-up for acute heart failure (AHF) during pregnancy (modified from the protocol of the Medical School Hannover).

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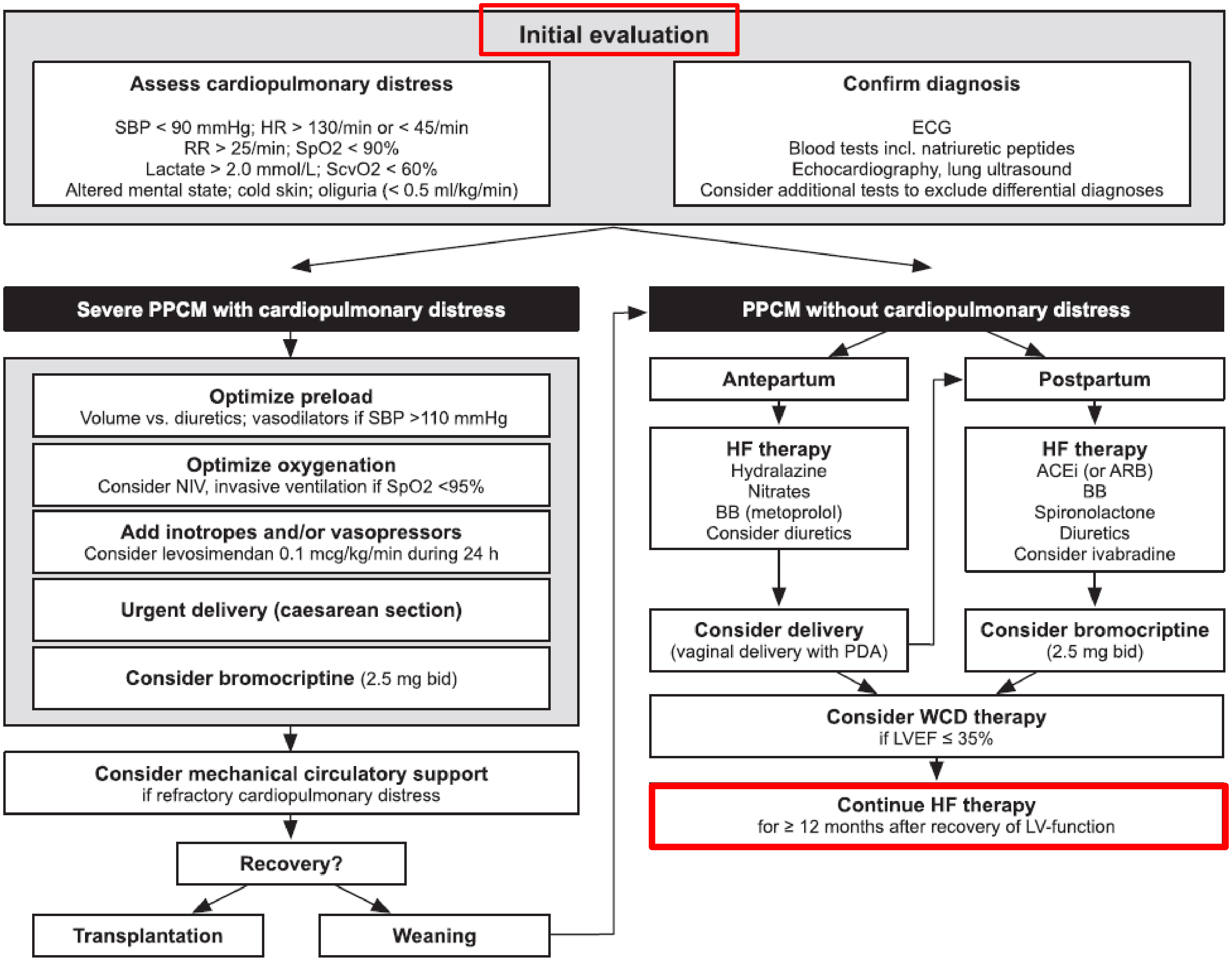

Figure 2 Algorithm for initial management. BB, beta-blocker; HF, heart failure; HR, heart rate; NIV, non-invasive ventilation; PDA, peridural anaesthesia; RR, respiratory rate; SBP systolic blood pressure; SpO2, peripheral oxygen saturation; WCD, wearable cardioverter-defibrillator.

Risque de Mort subite et PPCM

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Risk for ventricular fibrillation in peripartum cardiomyopathy with severely reduced left ventricular function—value of the wearable cardioverter/defibrillator

David Duncker[1*], Arash Haghikia[1], Thorben König[1], Stephan Hohmann[1], Klaus-Jürgen Gutleben[2], Ralf Westenfeld[3], Hanno Oswald[1], Helmut Klein[4], Johann Bauersachs[1], Denise Hilfiker-Kleiner[1], and Christian Veltmann[1]

[1]Department of Cardiology and Angiology, Hannover Medical School, Carl-Neuberg-Strasse 1, Hannover, Germany; [2]Department of Cardiology, Heart, and Diabetes Centre North Rhine–Westphalia, Ruhr University Bochum, Bad Oeynhausen, Germany; [3]Division of Cardiology, Pulmonology, and Vascular Medicine, Medical Faculty, University Düsseldorf, Düsseldorf, Germany; and [4]University of Rochester Medical Centre, Heart Research Follow up Program, Rochester, NY, USA

Wearable cardioverter/defibrillator as « Bridge-to-Decision » for ICD/CRTD-Implantation

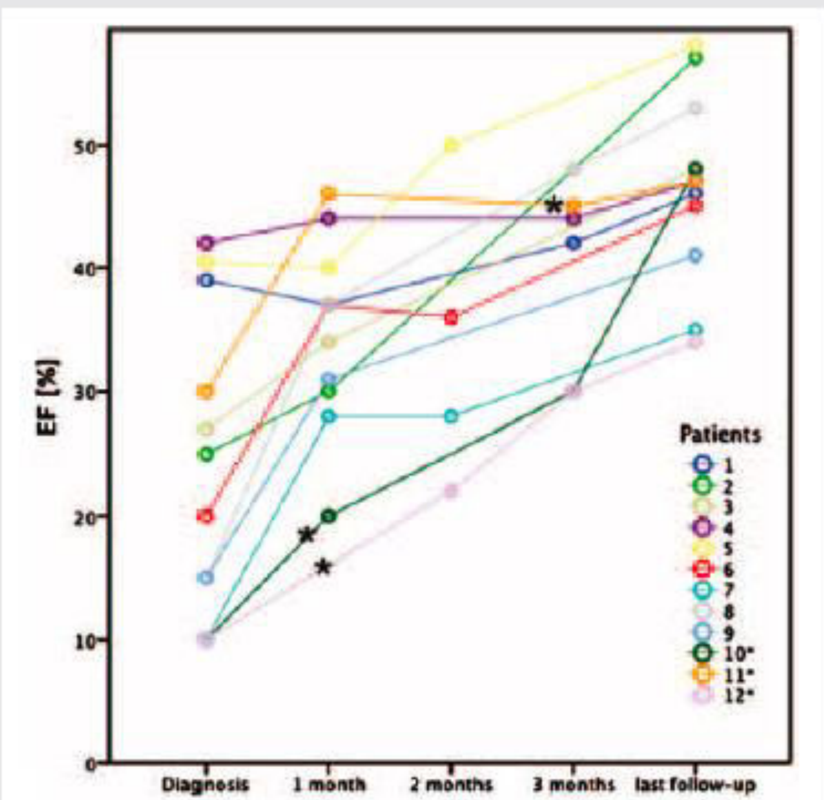
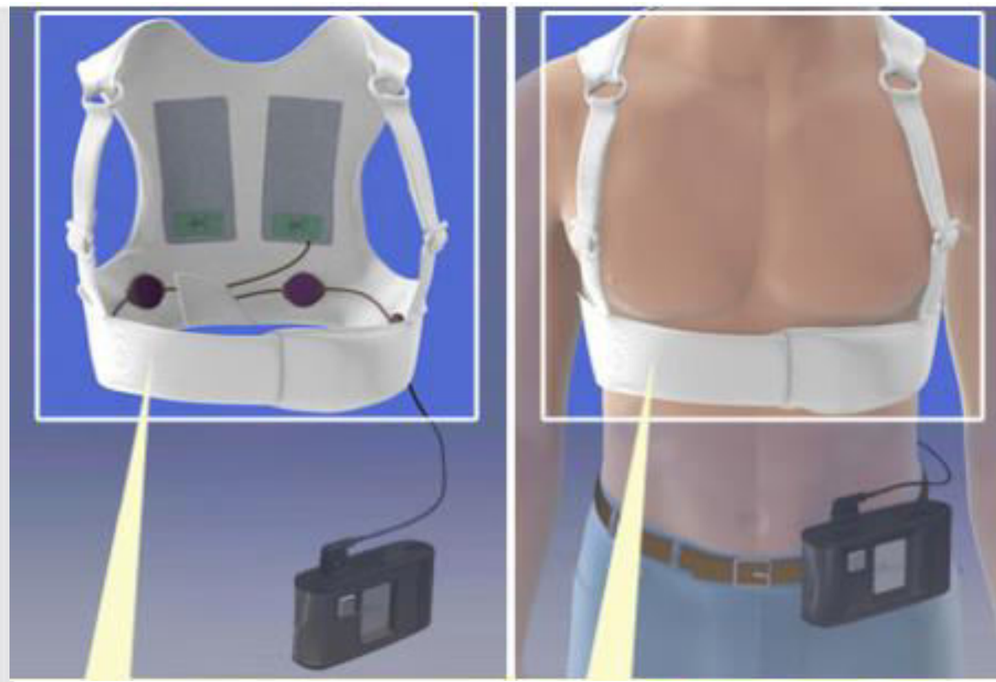


Figure 1 Trends for left ventricular ejection fraction (EF) per patient during follow-up (diagnosis, 1 month, 2 months, 3 months, and last follow-up). *, timing of and patients with wearable cardioverter/defibrillator (WCD) shock.



3 à 6 mois maximum

Duncker et al., EJHF, 2014

Resynchronisation

- FEVG≤35% sous traitement médical optimal (3- 6 mois)
- BBG
- PPCM: pas d'études larges
- 2 cas rapportés

Mouquet F. *Eur J Heart Fail 2012;**14:526–529.***

Recommandations avant nouvelle grossesse???

Subsequent pregnancy is not recommended if LVEF does not normalize in women with PPCM.	III	C

- CI si FEVG < 50%
- Déconseillée même si FE normale (20% récidive)

Conclusion

- Prise en charge multidisciplinaire

- Données épidémiologiques: registre maghrébin

Merci

6-7-8 Avril 2017

Journées de AMCV Sfax