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Curso TEAF

TEMA 1 Alcohol y embarazo

Trastorno del Espectro Alcohólico Fetal (TEAF)

Alcohol y embarazo

Óscar García-Algar

Servicio de Neonatología, Hospital Clínic-Maternitat,
ICGON, IDIBAPS, BCNatal, Barcelona

Embarazo y sustancias de abuso

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Efectos de la exposición prenatal a sustancias de abuso

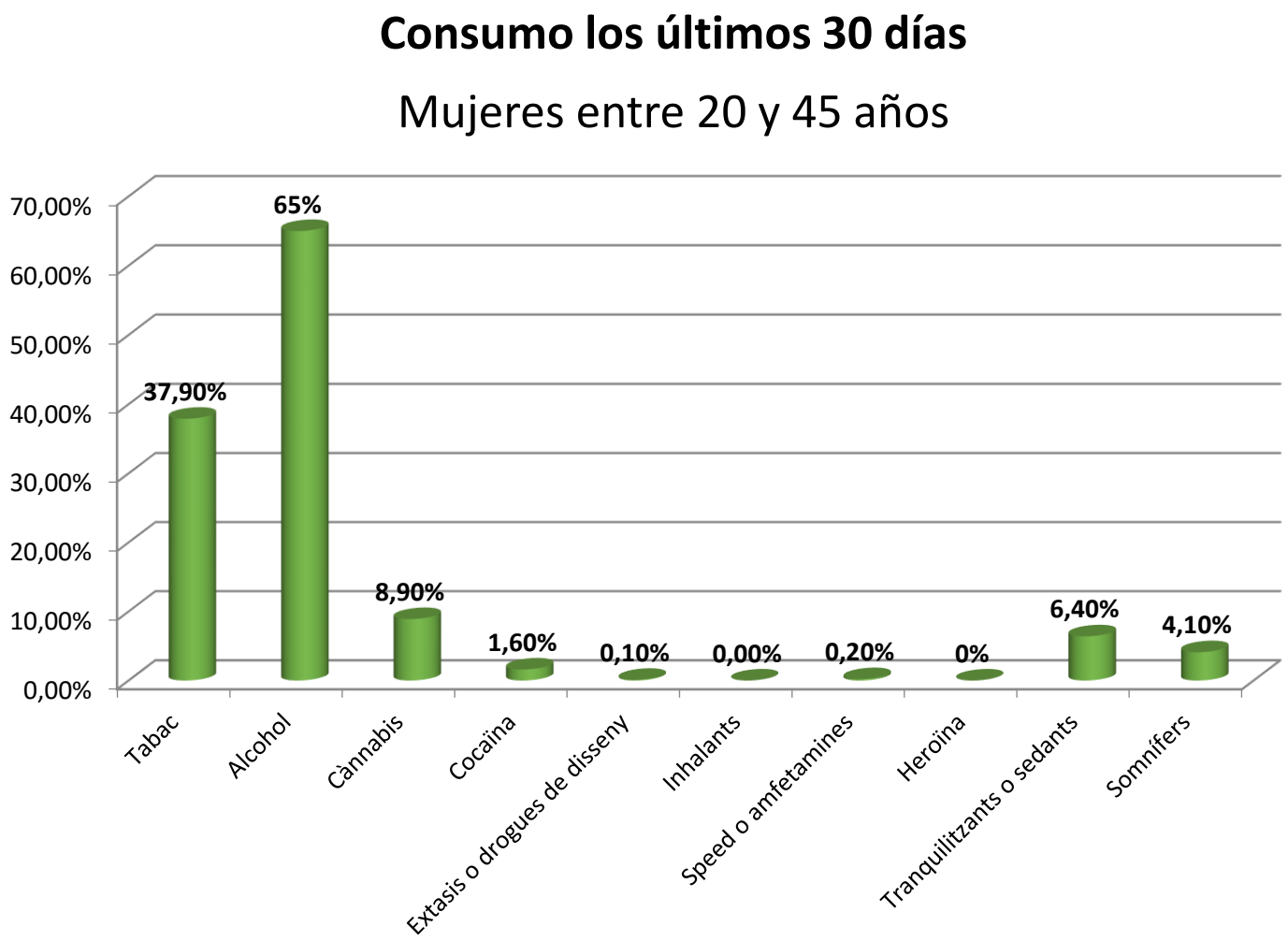
TABLE 2 Summary of Effects of Prenatal Drug Exposure

	Nicotine	Alcohol	Marijuana	Opiates	Cocaine	Methamphetamine
Short-term effects/birth outcome						
Fetal growth	Effect	Strong effect	No effect	Effect	Effect	Effect
Anomalies	No consensus on effec	Strong effect	No effect	No effect	No effect	No effect
Withdrawal	No effect	No effect	No effect	Strong effect	No effect	*
Neurobehavior	Effect	Effect	Effect	Effect	Effect	Effect
Long-term effects						
Growth	No consensus on effec	Strong effect	No effect	No effect	No consensus on effect	*
Behavior	Effect	Strong effect	Effect	Effect	Effect	*
Cognition	Effect	Strong effect	Effect	No consensus on effect	Effect	*
Language	Effect	Effect	No effect	*	Effect	*
Achievement	Effect	Strong effec	Effect	*	No consensus on effect	*

* Limited or no data available.

Behnke M et al. Pediatrics. Prenatal Substance Abuse: Short- and Long-term Effects on the Exposed Fetus

Consumo de sustancias



Font: Sub-direcció General de Drogodependències. Agència de Salut Pública de Catalunya. Anàlisi de l'EDADES. Observatori Espanyol sobre la Droga i les Toxicomanies. DGPNSD.

Consumo de alcohol durante el embarazo

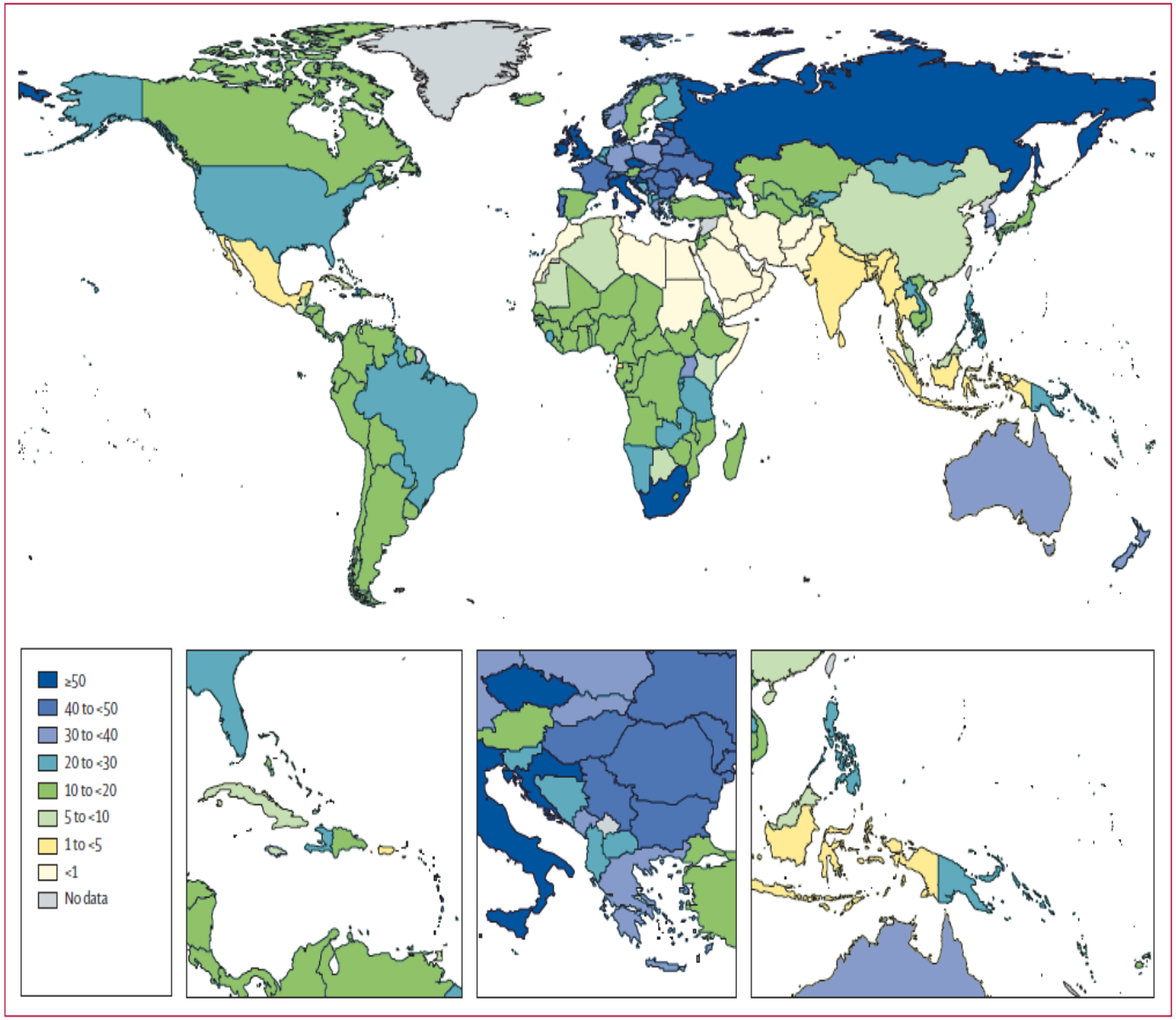
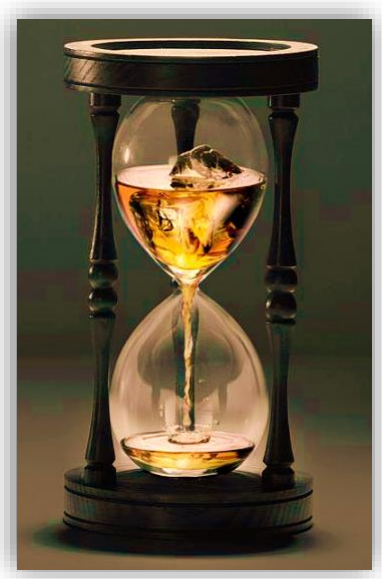


Figure 2: Global prevalence (%) of alcohol use (any amount) during pregnancy among the general population in 2012

¿Confirmación del consumo de alcohol?

- Entrevistas
- Cuestionarios

Biomarcador:
“Característica molecular, genética o bioquímica utilizada como indicador de una condición o proceso biológico particular y que puede ser medida de forma precisa y reproducible”.



Xenobióticos

Tabaco: **Nicotina/cotinina**

Alcohol: **FAEE/ EtG y EtS**

Cocaína: **Benzoilecgonina**

Opiáceos: **6-MAM**

Cannabinoides: **THC, OH-THC, THC-COOH**

Anfetaminas y MDMA (éxtasis)

Otros estimulantes: areca **(arecolina),** mate **(cafeína, teobromina),**

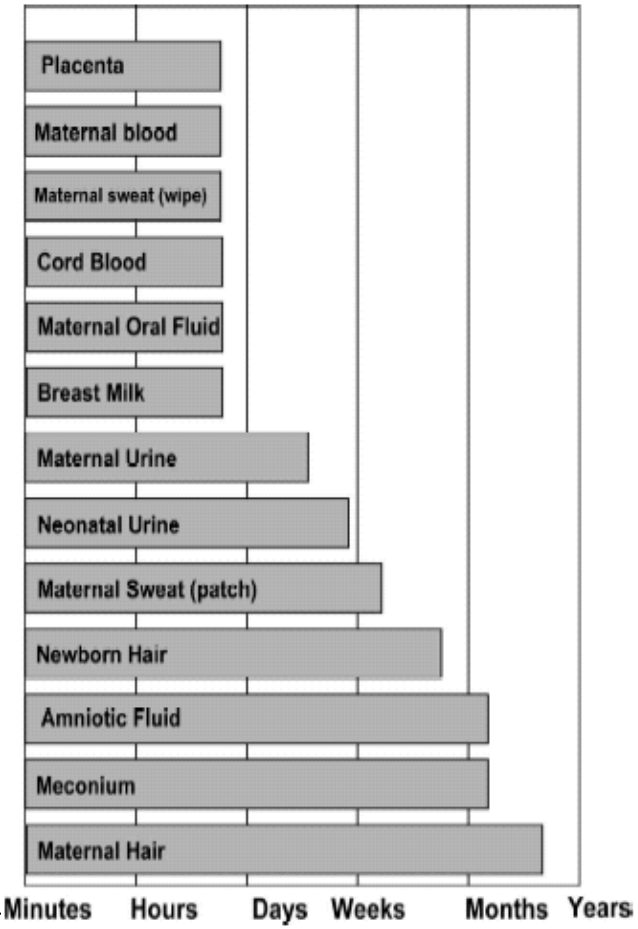
Ventajas: matrices biológicas alternativas

- Recogida no invasiva
- Recogida fácil de la muestra
- Ventana de tiempo más amplia de detección de la sustancia
- No degradación
- Nuevas metodologías publicadas

Drogas de abuso: implicaciones analíticas

Matrices biológicas para la evaluación in útero de la exposición a drogas de abuso (aguda y crónica)

- Meconio
- Pelo
- Dientes
- Placenta
- Sangre de cordón
- Leche materna



Biological Matrices for the Evaluation of In Utero Exposure to Drugs of Abuse

Jaime Lozano, MD, Oscar García-Algar, MD, PhD,* Oriol Vall, MD, PhD,* Rafael de la Torre, PhD,† Giulia Scaravelli, MD, PhD,‡ and Simona Pichini, PhD§*

Alarming Prevalence of Fetal Alcohol Exposure in a Mediterranean City

Oscar Garcia-Algar, MD, PhD, Vivan Kulaga, BSc,† Joey Gareri, BSc,† Gideon Koren, MD, PhD,† Oriol Vall, PhD,* Piergiorgio Zuccaro, PhD,‡ Roberta Pacifici, PhD,‡ and Simona Pichini, PhD‡*

Abstract: The prevalence of gestational ethanol exposure and subsequent fetal exposure has been assessed in a cohort of mother-infant dyads in a Mediterranean city (Barcelona, Spain) by meconium analysis of fatty acid ethyl esters (FAEEs) after showing in this

De las 353 muestras de meconio analizadas para la detección de los FAEE, 159 (45 %) contienen una cantidad total de 7 FAEE igual o superior a 2 nmol/g de meconio, la cifra de referencia límite considerada internacionalmente para diferenciar el consumo materno importante de alcohol durante el embarazo del consumo ocasional o la falta total de consumo

tration followed by palmitoleic acid ethyl ester.

This study, which highlights a 45% ethanol consumption during pregnancy in a low socioeconomic status cohort, may serve as an eye opener for Europeans that gestational alcohol exposure is not endemic only in areas outside of Europe.

Key Words: fetal alcohol exposure, meconium, fatty acid ethyl esters

(*Ther Drug Monit* 2008;30:249–254)

Xavier Joya, Emilia Marchei, Judith Salat-Batlle, Oscar García-Algar, Valeria Calvaresi, Roberta Pacifici and Simona Pichini*

Fetal exposure to ethanol: relationship between ethyl glucuronide in maternal hair during pregnancy and ethyl glucuronide in neonatal meconium

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Abstract

Background: In recent years, fatty acid ethyl esters (FAEEs) and ethyl glucuronide (EtG) in meconium emerged as reliable, direct biological markers for establishing gestational ethanol exposure. We investigated whether EtG in maternal hair measured during the three trimesters of pregnancy correlated with EtG and FAEEs in neonatal meconium.
Methods: In a prospective sample of 80 mother-infant dyads from Barcelona (Spain), we measured EtG and FAEE in maternal hair segments and meconium samples using a validated UHPLC-MS/MS method.
Results: Fifty-eight (72.5%) women had EtG concentrations in the hair shafts >7 pg/mg in one or more pregnancy trimesters, and EtG and FAEEs in meconium samples were documented in 50 and 24 of their neonates, respectively. The best significant correlations ($p<0.0001$) were found between EtG concentration in the proximal 0–3 and 3–6 hair shaft segments corresponding to the last two pregnancy trimesters and EtG in neonatal meconium ($\rho=0.609$ and $\rho=0.577$, respectively). Using the combination of EtG in meconium ≥30 ng/g and a median of EtG >11 pg/mg in maternal hair during the second and third trimesters of pregnancy, prenatal ethanol exposure could be predicted with a sensitivity of 85.7% and specificity of 73.7%.
Conclusions: This study provides evidence of proven fetal exposure to ethanol during the second and third trimesters of pregnancy by linking detection of ethanol biomarkers (EtG) in maternal hair segments and EtG in neonatal meconium.

Keywords: alcohol biomarkers; fetal alcohol syndrome; hair testing; meconium; pregnancy.

Introduction

Cuestionario

15%

Biomarcadores

2010-2012

Meconio

> 2 unidades = 43%

2014-2015

Pelo materno

> 2 unidades = 40%

cualquier cantidad = 65%

El cuestionario NO es fiable para detectar el consumo de alcohol durante el embarazo

Es preciso validar cualquier cuestionario (desde el punto de vista metodológico y en comparación con resultados de bionmarcadores)

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JECH Online First, published on April 22, 2015 as 10.1136/jech-2014-203938

Alcohol consumption during pregnancy and adverse neurodevelopmental outcomes

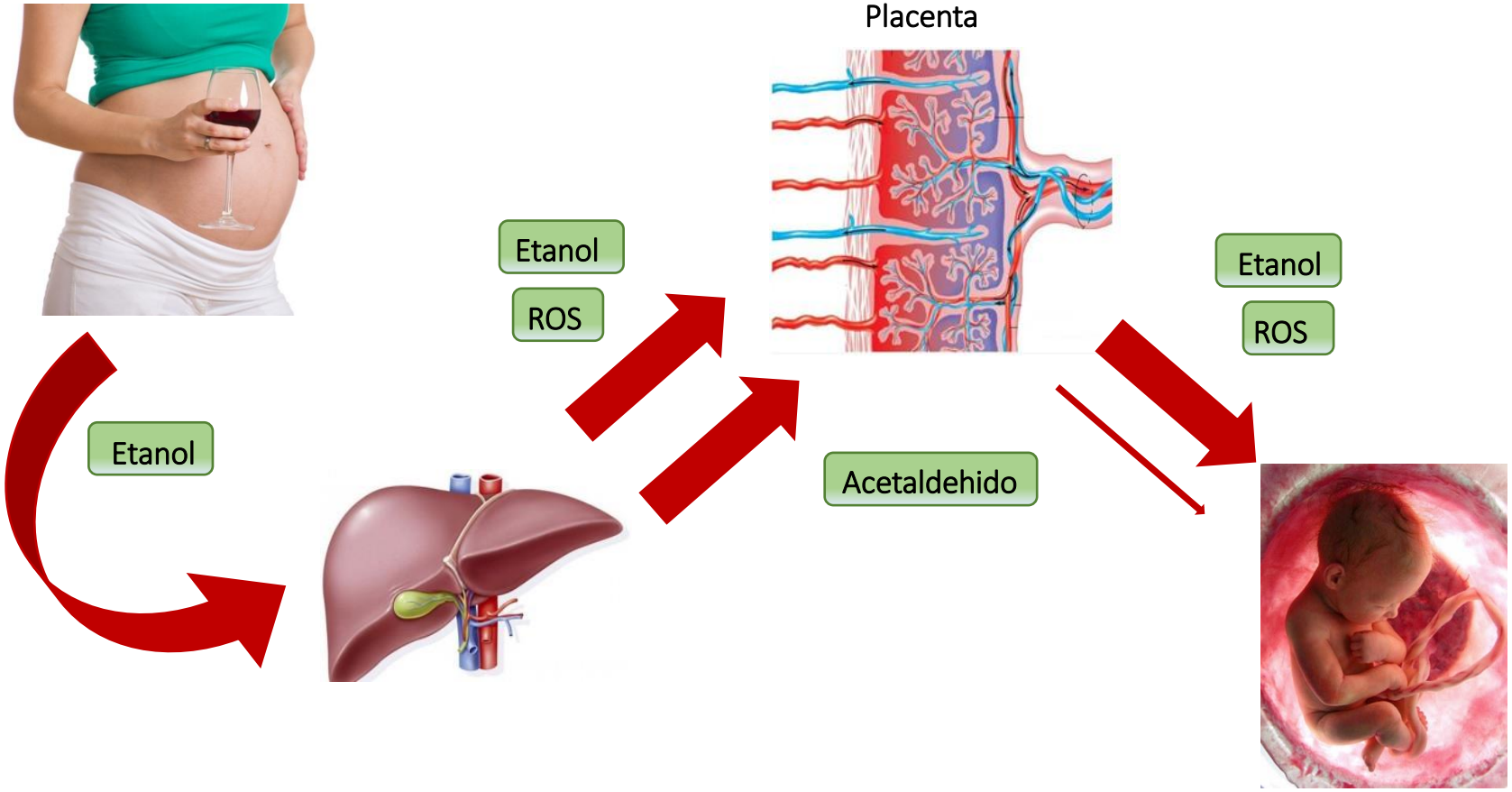
Oriol Vall, Judith Salat-Batlle, Oscar Garcia-Algar

Lack of evidence is not the same as evidence of absence of risk and, in this case, no evidence of harm does not mean evidence of no harm; subsequently, no amount of alcohol during pregnancy can be considered safe based on research evidence. Newborns exposed to maternal

lopmental outcome.[10] The preventive message must be very clear: no amount of alcohol is safe during pregnancy.[4 19 28 36]

Embarazo y alcohol

Efecto del alcohol sobre el desarrollo embrionario y fetal



Alteraciones epigenéticas
Cambios morfológicos faciales
Disfunciones cardiacas y óseas
Daño Neuronal
Daño Hepático

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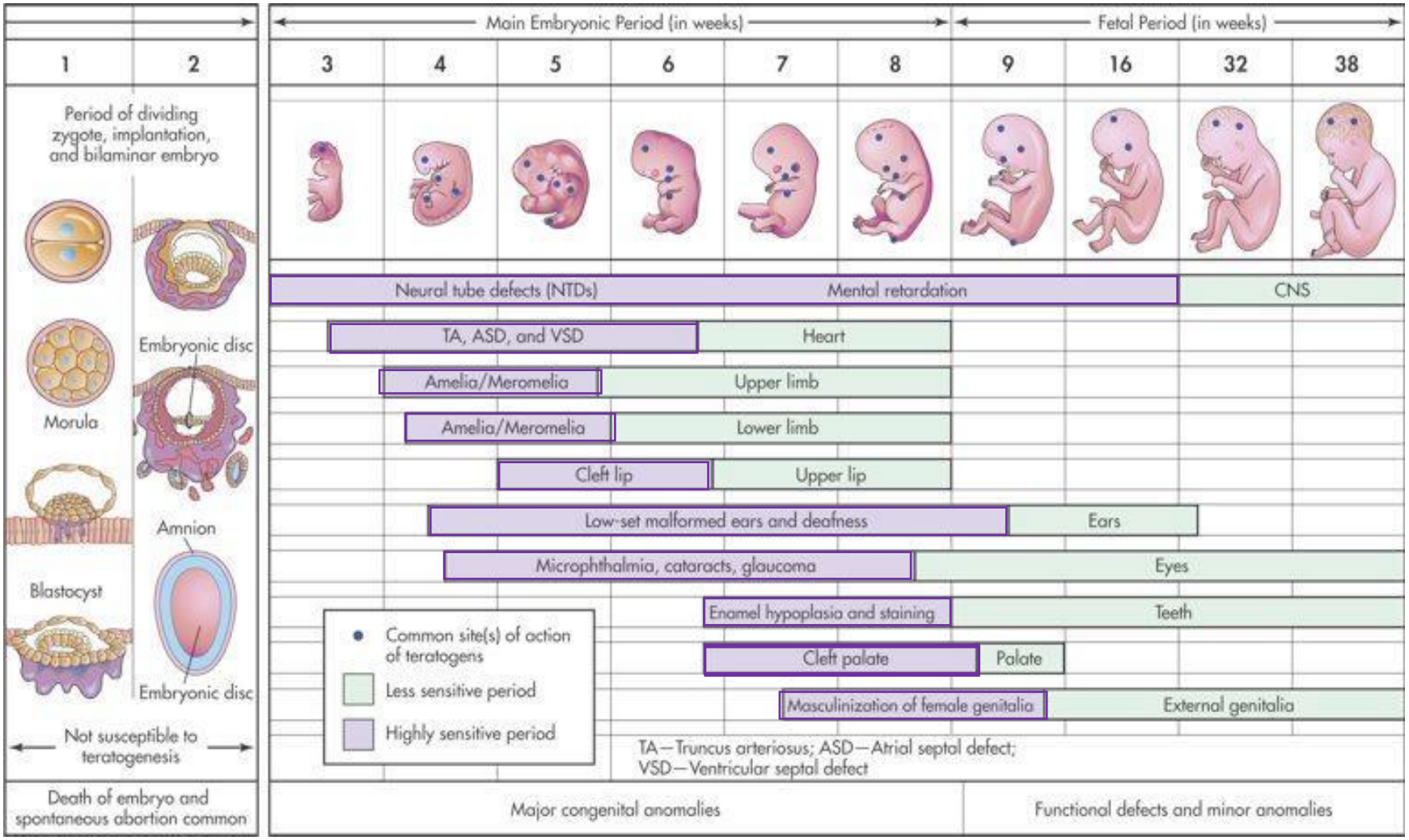
Embarazo y alcohol

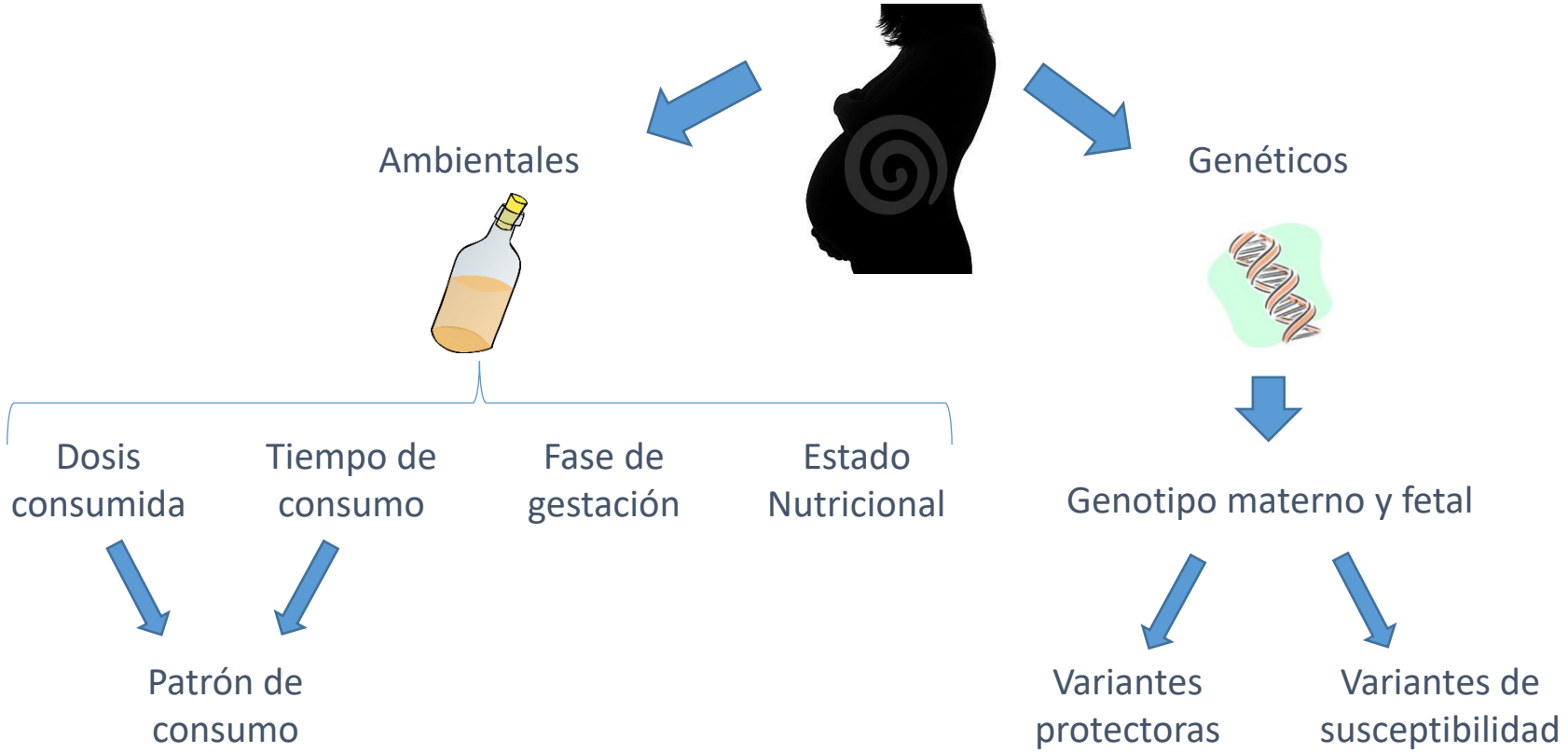
Periodos de sensibilidad a la acción de los tóxicos



Foley, M. (2007). Drug Use During Pregnancy. Retrieved Apr. 1, 2010, from Merck, Whitehouse Station, NJ. Web site: http://www.merck.com/mmhe/sec22/ch259/ ch259a.html#sec22-ch259-ch259a-1214.

Epidemiología consumo OH

Factores clave de la toxicidad derivada del consumo de alcohol durante el embarazo



El daño producido por el etanol está marcado por la combinación de estos factores.

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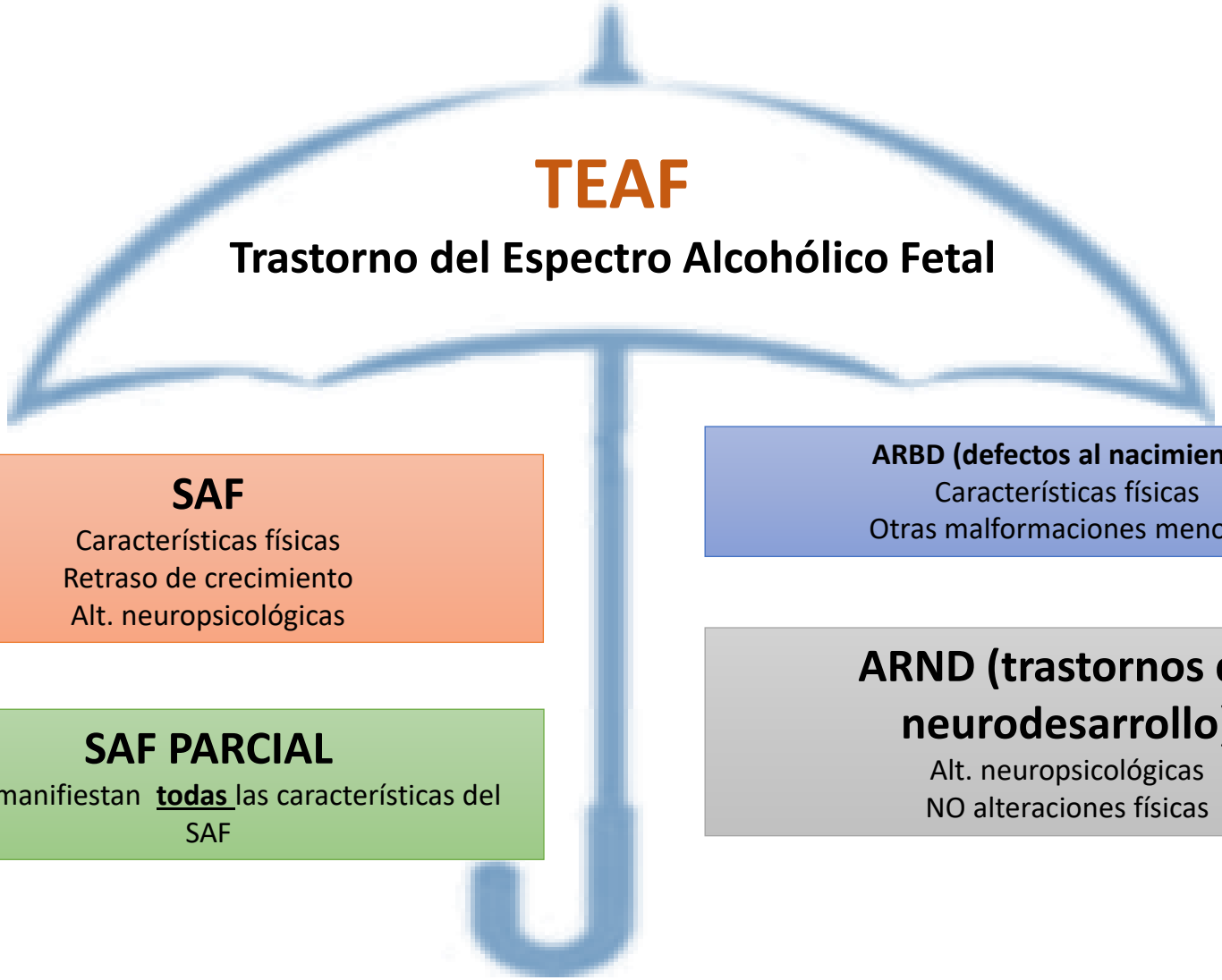
Criterios diagnósticos de Hoyme 2016



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Trastorno del Espectro Alcohólico Fetal

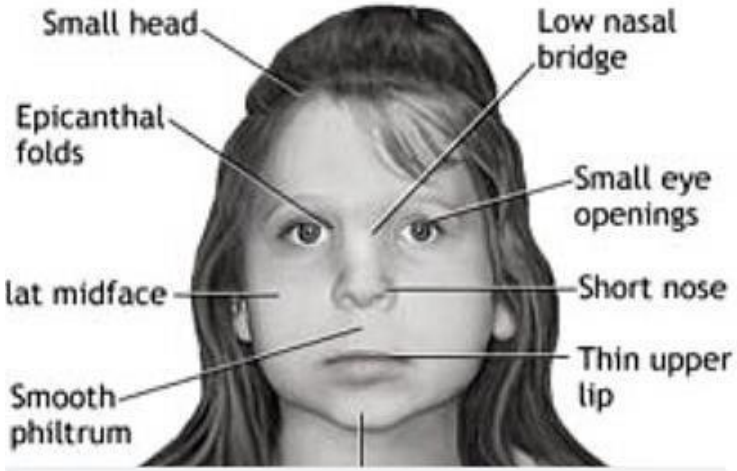
SAF
Características físicas
Retraso de crecimiento
Alt. neuropsicológicas

SAF PARCIAL
No se manifiestan **todas** las características del SAF

ARBD (defectos al nacimiento)
Características físicas
Otras malformaciones menores

ARND (trastornos del neurodesarrollo)
Alt. neuropsicológicas
NO alteraciones físicas

Institute of Medicine (IOM) Revised Criteria (Stratton et al. 1996; Hoyme et al. 2016)



FASD IS MORE THAN FACIAL DEFORMITIES

IT IS A VARYING RANGE OF PHYSICAL, MENTAL, BEHAVIORAL, AND LEARNING DISABILITIES.

The FASD Spectrum

FAS	pFAS	ARND	ARBD
Fetal Alcohol Syndrome	**Partial Fetal Alcohol Syndrome**	**Alcohol related neuro-development disorder**	**Alcohol related birth defects**
Where a child has problems with growth learning, has distinctive facial features and structural abnormalities	*Where a child has some but not all, features reported in FAS*	*Refers to children with learning and behaviour problems related to alcohol exposure*	*Refer to babies born with organ damage like heart or kidneys related to alcohol exposure*

FASD IS A SPECTRUM DISORDER

FETAL. ALCOHOL. **SPECTRUM.** DISORDER

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Mental XR
Treatment for Neurocognitive Disorders