Fertilité et grossesse de la femme neurologique

Prise en charge et Recommandations

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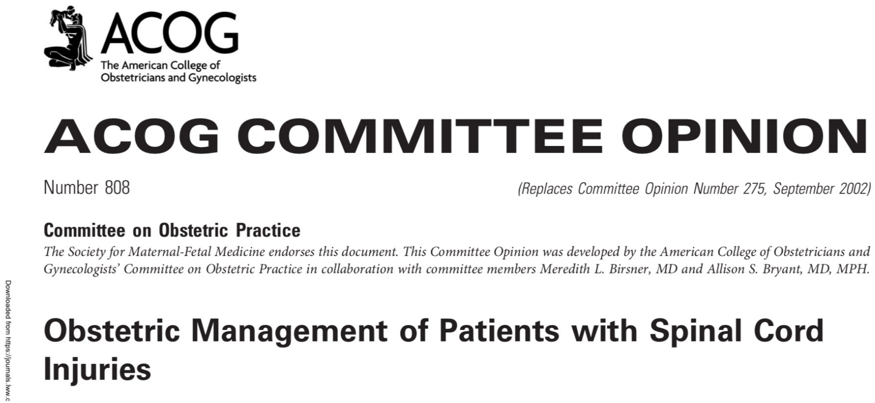
UNIVERSITAIRE DE NANTES

Fertilité et grossesse de la femme neurologique

- La lésion médullaire



ACOG
The American College of
Obstetricians and Gynecologists

ACOG COMMITTEE OPINION

Number 808

(Replaces Committee Opinion Number 275, September 2002)

Committee on Obstetric Practice

The Society for Maternal-Fetal Medicine endorses this document. This Committee Opinion was developed by the American College of Obstetricians and Gynecologists' Committee on Obstetric Practice in collaboration with committee members Meredith L. Birsner, MD and Allison S. Bryant, MD, MPH.

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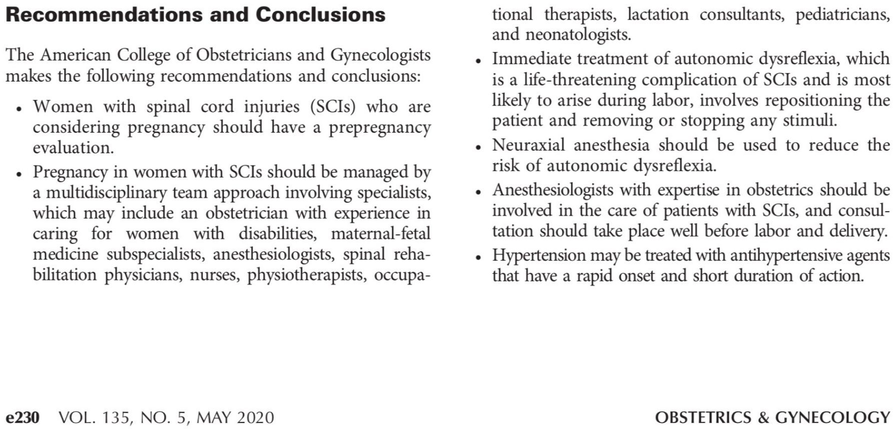
Obstetric Management of Patients with Spinal Cord Injuries



Recommendations and Conclusions

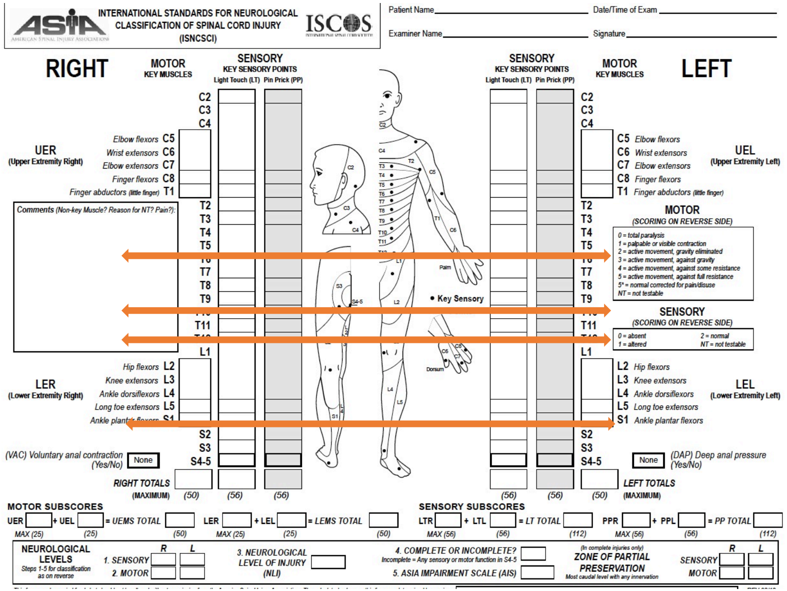
The American College of Obstetricians and Gynecologists makes the following recommendations and conclusions:

- Women with spinal cord injuries (SCIs) who are considering pregnancy should have a prepregnancy evaluation.
- Pregnancy in women with SCIs should be managed by a multidisciplinary team approach involving specialists, which may include an obstetrician with experience in caring for women with disabilities, maternal-fetal medicine subspecialists, anesthesiologists, spinal rehabilitation physicians, nurses, physiotherapists, occupational therapists, lactation consultants, pediatricians, and neonatologists.
- Immediate treatment of autonomic dysreflexia, which is a life-threatening complication of SCIs and is most likely to arise during labor, involves repositioning the patient and removing or stopping any stimuli.
- Neuraxial anesthesia should be used to reduce the risk of autonomic dysreflexia.
- Anesthesiologists with expertise in obstetrics should be involved in the care of patients with SCIs, and consultation should take place well before labor and delivery.
- Hypertension may be treated with antihypertensive agents that have a rapid onset and short duration of action.

e230 VOL. 135, NO. 5, MAY 2020 OBSTETRICS & GYNECOLOGY

Données physiopathologiques : des niveaux clés

- Lésion ≥ Th6
  - Risque d'Hyper-réflexie Autonome (HRA)
- Lésion ≥ T10 :
  - Anesthésie OGI.
  - Pas de perceptions des mouvements foetaux et risque de travail passé inaperçu
- Lésion ≤ T12:
  - Perception des contractions et dilatation du col
- Lésion ≤S2 : anesthésie périnéale



AMERICAN SPINAL INJURY ASSOCIATION

INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISNCSCI)

ISCOS

Patient Name______ Date/Time of Exam ______

Examiner Name______ Signature______

RIGHT — MOTOR KEY MUSCLES — SENSORY KEY SENSORY POINTS Light Touch (LT) Pin Prick (PP)

UER (Upper Extremity Right): Elbow flexors C5, Wrist extensors C6, Elbow extensors C7, Finger flexors C8, Finger abductors (little finger) T1

Comments (Non-key Muscle? Reason for NT? Pain?):

LER (Lower Extremity Right): Hip flexors L2, Knee extensors L3, Ankle dorsiflexors L4, Long toe extensors L5, Ankle plantar flexors S1

(VAC) Voluntary anal contraction (Yes/No) None

RIGHT TOTALS (MAXIMUM) (50) (56) (56)

LEFT — SENSORY KEY SENSORY POINTS Light Touch (LT) Pin Prick (PP) — MOTOR KEY MUSCLES

UEL (Upper Extremity Left): C5 Elbow flexors, C6 Wrist extensors, C7 Elbow extensors, C8 Finger flexors, T1 Finger abductors (little finger)

MOTOR (SCORING ON REVERSE SIDE)

0 = total paralysis
1 = palpable or visible contraction
2 = active movement, gravity eliminated
3 = active movement, against gravity
4 = active movement, against some resistance
5 = active movement, against full resistance
5* = normal corrected for pain/disuse
NT = not testable

SENSORY (SCORING ON REVERSE SIDE)

0 = absent
1 = altered
2 = normal
NT = not testable

LEL (Lower Extremity Left): L2 Hip flexors, L3 Knee extensors, L4 Ankle dorsiflexors, L5 Long toe extensors, S1 Ankle plantar flexors

None (DAP) Deep anal pressure (Yes/No)

LEFT TOTALS (MAXIMUM) (56) (56) (50)

MOTOR SUBSCORES

UER ☐ + UEL ☐ = UEMS TOTAL ☐ — MAX (25) (25) (50)

LER ☐ + LEL ☐ = LEMS TOTAL ☐ — MAX (25) (25) (50)

SENSORY SUBSCORES

LTR ☐ + LTL ☐ = LT TOTAL ☐ — MAX (56) (56) (112)

PPR ☐ + PPL ☐ = PP TOTAL ☐ — MAX (56) (56) (112)

NEUROLOGICAL LEVELS
Steps 1-5 for classification as on reverse

	R	L
1. SENSORY	☐	☐
2. MOTOR	☐	☐

3. NEUROLOGICAL LEVEL OF INJURY (NLI) ☐

4. COMPLETE OR INCOMPLETE? ☐
Incomplete = Any sensory or motor function in S4-5

5. ASIA IMPAIRMENT SCALE (AIS) ☐

(In complete injuries only)
ZONE OF PARTIAL PRESERVATION
Most caudal level with any innervation

	R	L
SENSORY	☐	☐
MOTOR	☐	☐

La procréation

- Procréation préservée après période d’aménorhée post-traumatique initiale mais
  - Taux moyen de naissance = 1/10° population générale
    - (Westgren 1994)
  - Suivi de cohortes et comparaison pré-post traumatique
    - Charlifue 1.3 versus 0.34
    - Jackson 2.7 versus 1.53.

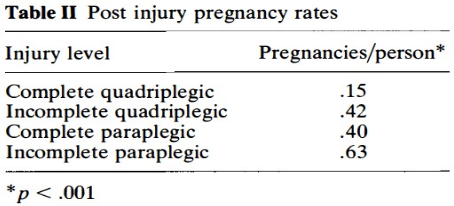


Table II Post injury pregnancy rates

Injury level	Pregnancies/person*
Complete quadriplegic	.15
Incomplete quadriplegic	.42
Complete paraplegic	.40
Incomplete paraplegic	.63

*$p < .001$

1907 Femmes
Âge au moment du traumatisme
Statut marital
Lésions basses ou incomplètes
Insertion sociale

Facteurs limitants:
Craintes des complications
Craintes des difficultés fonctionnelles
Sous Information

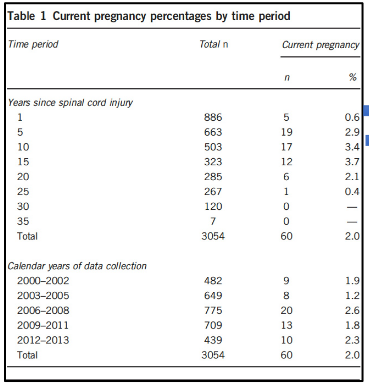
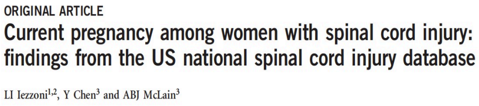


Table 1 Current pregnancy percentages by time period

Time period	*Total* n	*Current pregnancy*	
		n	*%*
Years since spinal cord injury			
1	886	5	0.6
5	663	19	2.9
10	503	17	3.4
15	323	12	3.7
20	285	6	2.1
25	267	1	0.4
30	120	0	—
35	7	0	—
Total	3054	60	2.0
Calendar years of data collection			
2000–2002	482	9	1.9
2003–2005	649	8	1.2
2006–2008	775	20	2.6
2009–2011	709	13	1.8
2012–2013	439	10	2.3
Total	3054	60	2.0



ORIGINAL ARTICLE

Current pregnancy among women with spinal cord injury: findings from the US national spinal cord injury database

LI Iezzoni[1,2], Y Chen[3] and ABJ McLain[3]

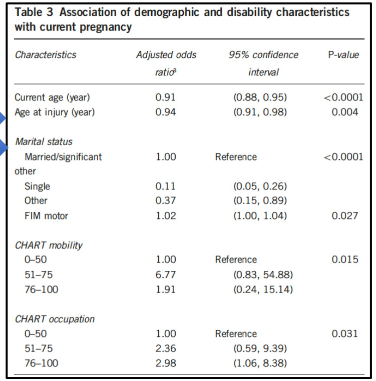
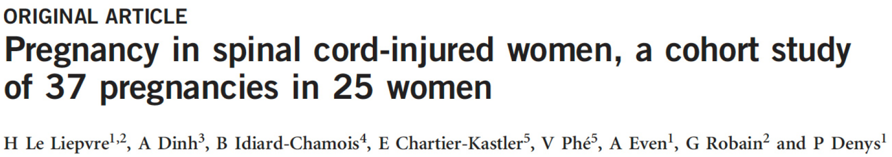


Table 3 Association of demographic and disability characteristics with current pregnancy

Characteristics	*Adjusted odds ratio*[a]	*95% confidence interval*	P-*value*
Current age (year)	0.91	(0.88, 0.95)	<0.0001
Age at injury (year)	0.94	(0.91, 0.98)	0.004
Marital status			
Married/significant other	1.00	Reference	<0.0001
Single	0.11	(0.05, 0.26)	
Other	0.37	(0.15, 0.89)	
FIM motor	1.02	(1.00, 1.04)	0.027
CHART mobility			
0–50	1.00	Reference	0.015
51–75	6.77	(0.83, 54.88)	
76–100	1.91	(0.24, 15.14)	
CHART occupation			
0–50	1.00	Reference	0.031
51–75	2.36	(0.59, 9.39)	
76–100	2.98	(1.06, 8.38)	

La littérature



ORIGINAL ARTICLE

Pregnancy in spinal cord-injured women, a cohort study of 37 pregnancies in 25 women

H Le Liepvre[1,2], A Dinh[3], B Idiard-Chamois[4], E Chartier-Kastler[5], V Phé[5], A Even[1], G Robain[2] and P Denys[1]

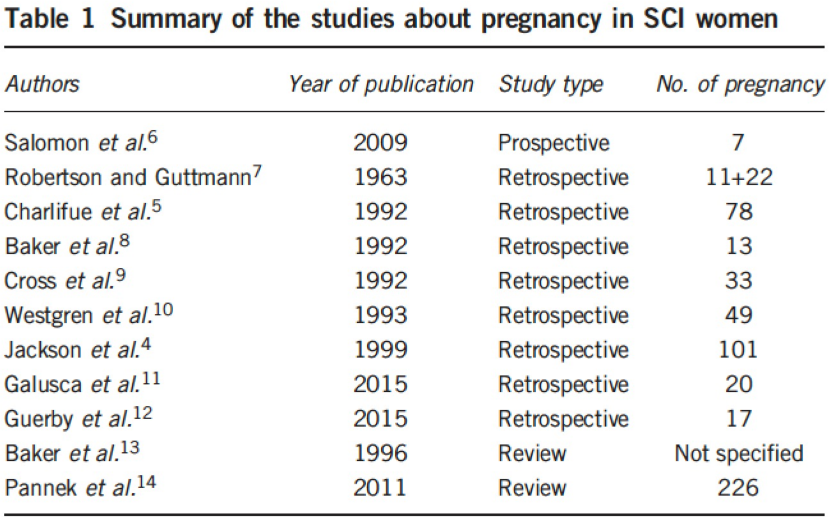


Table 1 Summary of the studies about pregnancy in SCI women

Authors	*Year of publication*	*Study type*	*No. of pregnancy*
Salomon *et al.*[6]	2009	Prospective	7
Robertson and Guttmann[7]	1963	Retrospective	11+22
Charlifue *et al.*[5]	1992	Retrospective	78
Baker *et al.*[8]	1992	Retrospective	13
Cross *et al.*[9]	1992	Retrospective	33
Westgren *et al.*[10]	1993	Retrospective	49
Jackson *et al.*[4]	1999	Retrospective	101
Galusca *et al.*[11]	2015	Retrospective	20
Guerby *et al.*[12]	2015	Retrospective	17
Baker *et al.*[13]	1996	Review	Not specified
Pannek *et al.*[14]	2011	Review	226

Sterling et al	2013	Rétrospective	37
Bertschy et al	2016	Rétrospective	23
Andretta	2019	Rétrospective	67

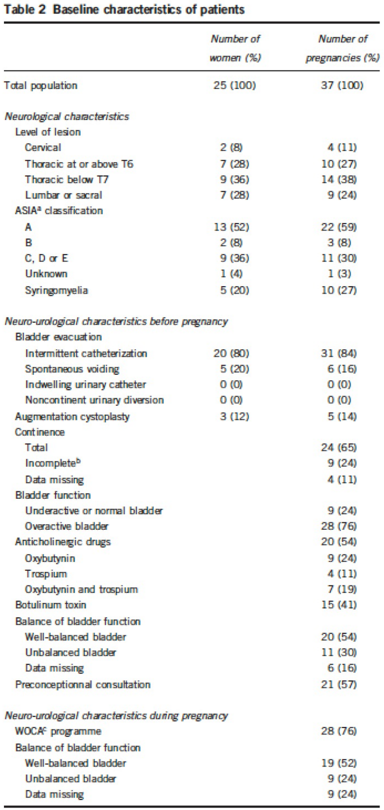


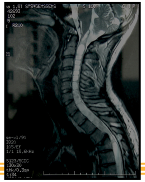
Table 2 Baseline characteristics of patients

	Number of women (%)	*Number of pregnancies (%)*
Total population	25 (100)	37 (100)
Neurological characteristics		
Level of lesion		
Cervical	2 (8)	4 (11)
Thoracic at or above T6	7 (28)	10 (27)
Thoracic below T7	9 (36)	14 (38)
Lumbar or sacral	7 (28)	9 (24)
ASIA[a] classification		
A	13 (52)	22 (59)
B	2 (8)	3 (8)
C, D or E	9 (36)	11 (30)
Unknown	1 (4)	1 (3)
Syringomyelia	5 (20)	10 (27)
Neuro-urological characteristics before pregnancy		
Bladder evacuation		
Intermittent catheterization	20 (80)	31 (84)
Spontaneous voiding	5 (20)	6 (16)
Indwelling urinary catheter	0 (0)	0 (0)
Noncontinent urinary diversion	0 (0)	0 (0)
Augmentation cystoplasty	3 (12)	5 (14)
Continence		
Total		24 (65)
Incomplete[b]		9 (24)
Data missing		4 (11)
Bladder function		
Underactive or normal bladder		9 (24)
Overactive bladder		28 (76)
Anticholinergic drugs		20 (54)
Oxybutynin		9 (24)
Trospium		4 (11)
Oxybutynin and trospium		7 (19)
Botulinum toxin		15 (41)
Balance of bladder function		
Well-balanced bladder		20 (54)
Unbalanced bladder		11 (30)
Data missing		6 (16)
Preconceptionnal consultation		21 (57)
Neuro-urological characteristics during pregnancy		
WOCA[c] programme		28 (76)
Balance of bladder function		
Well-balanced bladder		19 (52)
Unbalanced bladder		9 (24)
Data missing		9 (24)

La grossesse

- Le schéma idéal
  - Une grossesse anticipée
    - Bilan pré-conceptionnel et information
    - Suivi conjoint SCI center/ unit et Maternité niveau 3
    - MPR, Obstétriciens, Sages femmes encadrantes identifiées
    - Langage commun et réseau très formalisé
    - La préparation de la maman à la gestion du quotidien (ergothérapie)

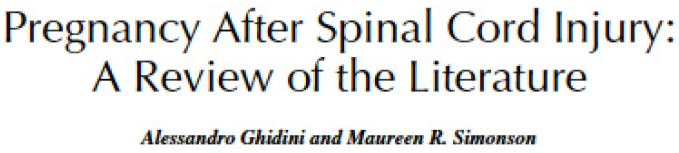
Bilan pré-conceptionnel



- Clinique :
  - ASIA, niveau neurologique, grade AIS, spasticité et réflectivité
  - Évaluation du risque d'HRA
  - Statut urinaire :
    - Mode mictionnel , urodynamique
    - Équilibre , infection urinaire, bilan arbre urinaire (échographie)
    - Antécédents chirurgicaux
  - IRM recherche de syringomyélie (CI Voie basse)
  - Recherche de difficultés éventuelles à l'anesthésie loco-régionale :
    - CI voie basse si niveau > T6
      - arachnoïdite thoraco-lombale
      - Instrumentation étendue avec arthrodèse osseuse sur scoliose neurologique
    - Présence de matériel d'ostéosynthèse n'est pas une CI !

- Recherche de complications cliniques (cutanées, neuro-orthopédiques)
- ATCDS thrombo-emboliques
- Thérapeutiques médicamenteuses
- Au terme du bilan
  - Conseils pré-conceptionnels
  - Détermination du mode de suivi et éléments du suivi
  - Détermination de la prise en charge du 3° trimestre et du mode d'accouchement à priori
  - Conseils fonctionnels et éducation (ergothérapeute)

Les thérapeutiques médicamenteuses



Pregnancy After Spinal Cord Injury:
A Review of the Literature

Alessandro Ghidini and Maureen R. Simonson

- Diminuer au maximum les antispastiques et les Gabapentinoides
- Arrêter les Benzodiazépines
- Maintenir les Anticholinergiques (Oxybutinine)
- Pas de toxicité du baclofène intra-thécal
- Pas de toxine botulique ID

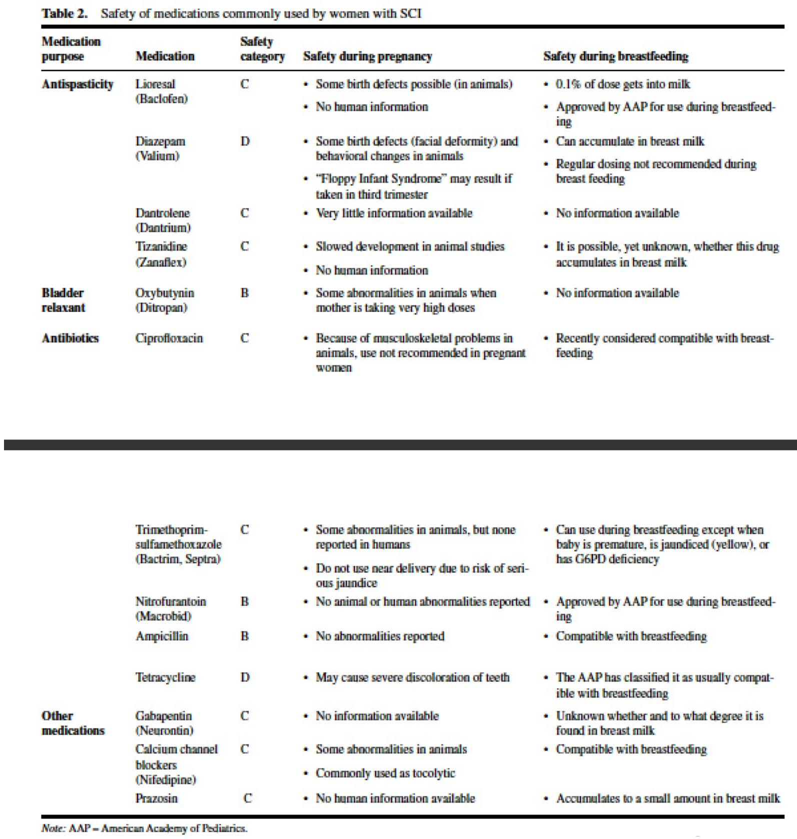


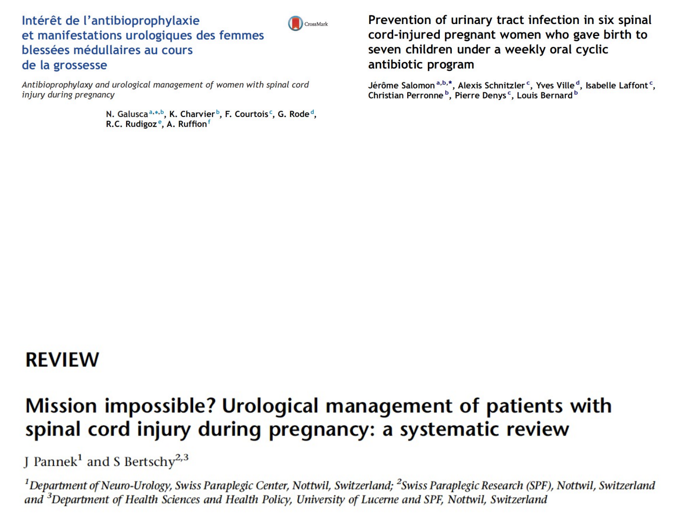
Table 2. Safety of medications commonly used by women with SCI

Medication purpose	Medication	Safety category	Safety during pregnancy	Safety during breastfeeding
Antispasticity	Lioresal (Baclofen)	C	• Some birth defects possible (in animals) • No human information	• 0.1% of dose gets into milk • Approved by AAP for use during breastfeeding
	Diazepam (Valium)	D	• Some birth defects (facial deformity) and behavioral changes in animals • "Floppy Infant Syndrome" may result if taken in third trimester	• Can accumulate in breast milk • Regular dosing not recommended during breast feeding
	Dantrolene (Dantrium)	C	• Very little information available	• No information available
	Tizanidine (Zanaflex)	C	• Slowed development in animal studies • No human information	• It is possible, yet unknown, whether this drug accumulates in breast milk
Bladder relaxant	Oxybutynin (Ditropan)	B	• Some abnormalities in animals when mother is taking very high doses	• No information available
Antibiotics	Ciprofloxacin	C	• Because of musculoskeletal problems in animals, use not recommended in pregnant women	• Recently considered compatible with breast-feeding
	Trimethoprim-sulfamethoxazole (Bactrim, Septra)	C	• Some abnormalities in animals, but none reported in humans • Do not use near delivery due to risk of serious jaundice	• Can use during breastfeeding except when baby is premature, is jaundiced (yellow), or has G6PD deficiency
	Nitrofurantoin (Macrobid)	B	• No animal or human abnormalities reported	• Approved by AAP for use during breastfeeding
	Ampicillin	B	• No abnormalities reported	• Compatible with breastfeeding
	Tetracycline	D	• May cause severe discoloration of teeth	• The AAP has classified it as usually compatible with breastfeeding
Other medications	Gabapentin (Neurontin)	C	• No information available	• Unknown whether and to what degree it is found in breast milk
	Calcium channel blockers (Nifedipine)	C	• Some abnormalities in animals • Commonly used as tocolytic	• Compatible with breastfeeding
	Prazosin	C	• No human information available	• Accumulates to a small amount in breast milk

Note: AAP = American Academy of Pediatrics.

Les problèmes rencontrés

- Majoration du risque de complications habituelles
  - Les complications urinaires infectieuses
    - Facteurs de risque : mode mictionnel (SAD) et hautes pressions intra-vésicales
    - Risque d'infection urinaire entre 45 et 60%
    - Pyélonéphrite 30% (15% si CI)
    - Risque de MAP et Hypotrophie fœtale
  - Prévention :
    - ECBU systématique et traitement des bactériuries mais 70-80% des patients aux autosondages ont une bactériurie??
    - Antibiocycle+++ (amoxicilline, céfixime et nitrofurantoine)
    - Autres problèmes : augmentation des fuites, augmentation des sondages



Intérêt de l'antibioprophylaxie et manifestations urologiques des femmes blessées médullaires au cours de la grossesse

Antibioprophylaxy and urological management of women with spinal cord injury during pregnancy

N. Galusca[a,*,b], K. Charvier[b], F. Courtois[c], G. Rode[d],
R.C. Rudigoz[e], A. Ruffion[f]

Prevention of urinary tract infection in six spinal cord-injured pregnant women who gave birth to seven children under a weekly oral cyclic antibiotic program

Jérôme Salomon[a,b,*], Alexis Schnitzler[c], Yves Ville[d], Isabelle Laffont[c],
Christian Perronne[b], Pierre Denys[c], Louis Bernard[b]

REVIEW

Mission impossible? Urological management of patients with spinal cord injury during pregnancy: a systematic review

J Pannek[1] and S Bertschy[2,3]

[1]Department of Neuro-Urology, Swiss Paraplegic Center, Nottwil, Switzerland; [2]Swiss Paraplegic Research (SPF), Nottwil, Switzerland and [3]Department of Health Sciences and Health Policy, University of Lucerne and SPF, Nottwil, Switzerland

Les problèmes rencontrés

- Cutanées : risque d'escarres majoré (modification morphologiques et perte de mobilité)
  - Jackson 6 %
- Vasculaires : risque de thrombophlébites 8 % versus 0.1%
  - Si ATCD : thrombo-prophylaxie par HBPM 2° Trimestre
- Respiratoires chez tétraplégique:
  - Syndrome restrictif majeur, absence de toux : kinésithérapie++
  - Classiquement suivi EFR si perte de CV<15ml/Kg= ventilation assistée
  - Skowronski (2008): suivi de 5 femmes C6, pas de complication respiratoire
- Neuro-digestives : majoration de la constipation de transit et terminale

3 ° trimestre et prépartum

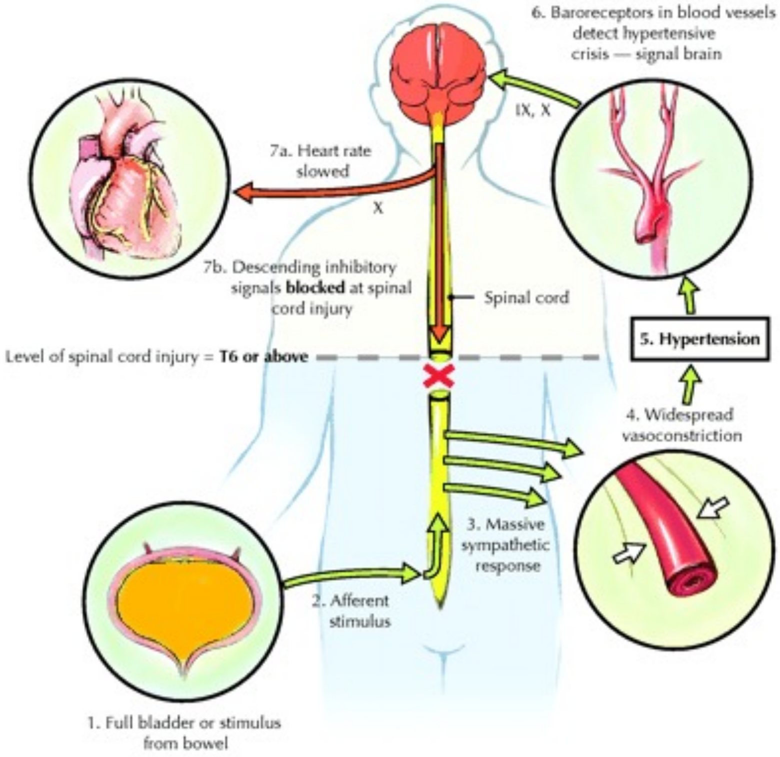
- Travail prématuré :
  - Contractions utérines régulières et modification du col < 37 SA
- Femmes blessées médullaires :
  - Durée moyenne de grossesse < 40 SA
  - Baker (1992) : 37.9 SA
- Taux d'accouchement prématuré :
  - 18% (Westgren), 19% (Charlifue), 22% (Wanner), 21.2% vs 12.6% (Jackson 1999), Sterling 24% (2010), Lelièpvre 20% (2016), Andretta 48% (2018)
  - le plus souvent entre 35 et 37 SA

3° trimestre (S 27- 40) et prépartum

- Les risques
  - Taux d'accouchement prématuré légèrement augmenté
  - Début de travail passé inaperçu (HRA)
  - Déclenchement 38 s sous couvert ALR ??
- Les recommandations
  - Examen cervical une fois /semaine dès la 28° semaine
  - Monitorage des contractions et suivi à domicile.
  - Hospitalisation proposée dans les niveaux hauts à la 36° semaine et a fortiori avant si MAP
  - Apprentissage des femmes à l'autopalpation, à la recherche de signes indirects (Wanner, Ghidini 2011)
  - Charlifue : 77% des femmes reconnaissent le début du travail.

3° trimestre , pré-partum, accouchement

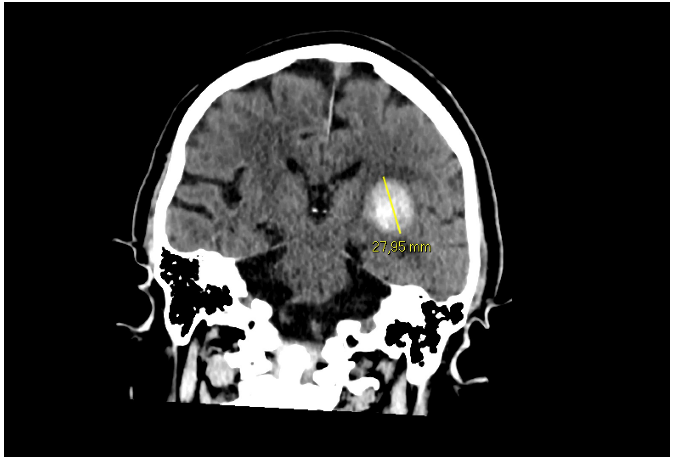
- Syndrome d'Hyper Réflexie Autonome (HRA)
  - Réponse sympathique massive à une stimulation nociceptive sous lésionnelle pelvienne ou sacrée
  - Contractions utérines +++
- Physiopathologie
  - Libération de réflexes sympathiques spinaux
  - Noradrénaline, Dopamine βHydroxylase
  - Hypersensibilité des récepteurs α
  - Vasoconstriction sous lésionnelle
    - Territoire splanchnique et périphérique
  - Vasodilatation sus lésionnelle



6. Baroreceptors in blood vessels detect hypertensive crisis — signal brain
IX, X
7a. Heart rate slowed
X
7b. Descending inhibitory signals **blocked** at spinal cord injury
Spinal cord
5. Hypertension
Level of spinal cord injury = **T6 or above**
4. Widespread vasoconstriction
3. Massive sympathetic response
2. Afferent stimulus
1. Full bladder or stimulus from bowel

3° trimestre , pré-partum, accouchement

- Hyperréflexie autonome
  - Définition clinique
    - Augmentation brutale de la TA systolique ≥ 20 mm Hg
    - +/-Signes cliniques inconstants mais évocateurs: céphalée brutale pulsatile, sueurs profuses sus lésionnelles, flush sus lésionnel, piloérection , tachycardie/ bradycardie, arythmies
  - Complications potentielles
    - Convulsions, Accidents vasculaires hémorragiques
    - Coma et décès : *McGregor, Am J Obstet Gynecol, 1985* (Autonomic hyperreflexia : A mortal danger for spinal cord - damaged women in labor)
    - Risque d'ischémie myocardique
    - Risque fœtal (vasoconstriction utéro -placentaire)
  - Fréquence des signes d'HRA (Westgren) 75%
  - Diagnostic différentiel : éclampsie

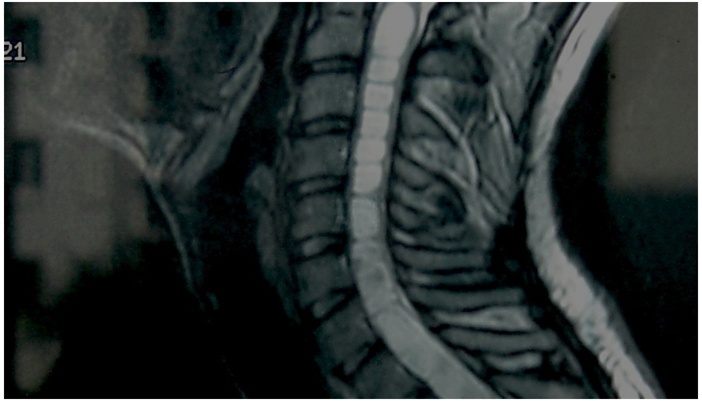


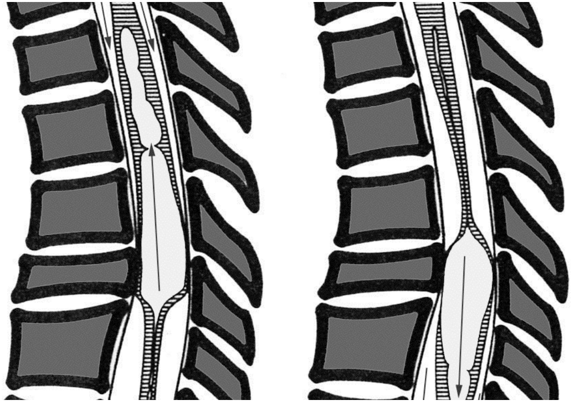
Hyperréflexie autonome et prévention

- Eviter toute épines irritatives nociceptives
  - Distension rectale et vésicale
  - Diminuer les afférences nociceptives locales avec utilisation de topiques anesthésiques locaux
    - Manoeuvres de sondages, d'évacuation rectale
    - Examens gynécologiques
  - Analgésie loco régionale continue systématique lors de lésions hautes dès le début du travail (péridurale) +++
    - Combinaison rachi-anesthésie, péridurale.
      - Krzysztof, Arch Gynecol Obstet 2006, Sharpe IJOA 2015
    - Analgésie péridurale doit être efficace au moins jusqu'au niveau T10

Du 3$^{\text{ème}}$ trimestre au post-partum

- Travail et accouchement
  - Durée moyenne du travail = 4,6 heures (+/- 3,6) + 41 mn (+/- 62)
  - Taux de césarienne variable, de 25 à 68% (indications peu claires)
  - Manœuvres instrumentales ≈ 14-22%
  - Recommandations sur installation correcte, prévention des complications cutanées, vidange vésicale régulière, monitorage TA
- Césarienne = indication obstétricale ++, sauf :
  - Syringomyélie post-traumatique
  - CI à l'anesthésie loco-régionale
  - HRA non jugulable
  - Complications neuro-orthopédiques majeures
  - Quid de la voie basse sur syndrome de la queue de cheval?

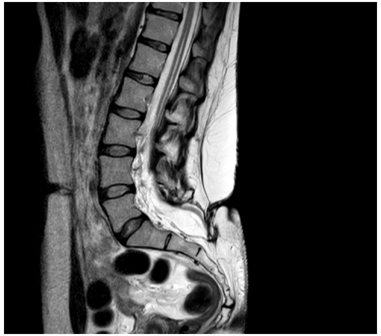




Grossesse et lésion médullaire

- Et le bébé?
  - Jackson (1999), Sterling (2013)
    - Bébés de petit poids ≠ 3Kgs
    - Sterling : 12% < 2.5kgs
    - Pas de risque supplémentaire de malformations congénitales dans les lésions acquises
- Post-partum
  - Problème de cicatrisation des épisiotomies
  - Pas de contre-indication à l'allaitement mais difficultés fonctionnelles chez tétraplégiques et possible inhibition du réflexe de lactation possible
    - Liu et Krassioukov 2013
  - Enquête de Charlifue , problèmes physiques dans 10% des cas :
    - Intestinaux, vésico-sphinctériens, spasticité,
    - Thrombophlébite, fatigue, maux de tête.
- 50% des femmes nécessitent une assistance supplémentaire à domicile.

Grossesse et femme spina-bifida/ dysraphismes



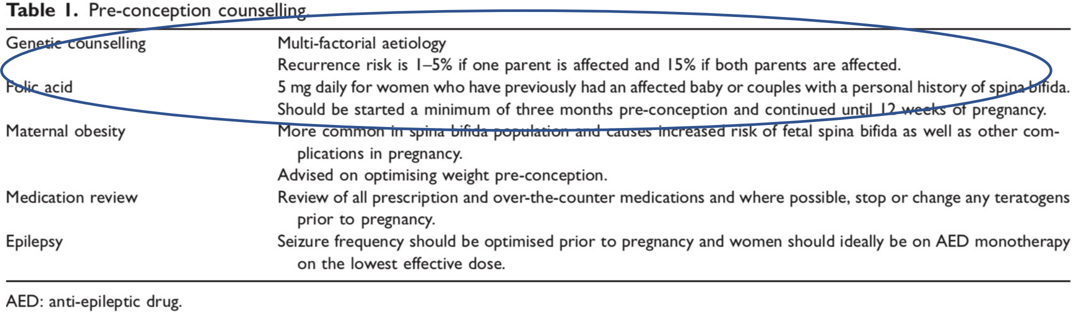
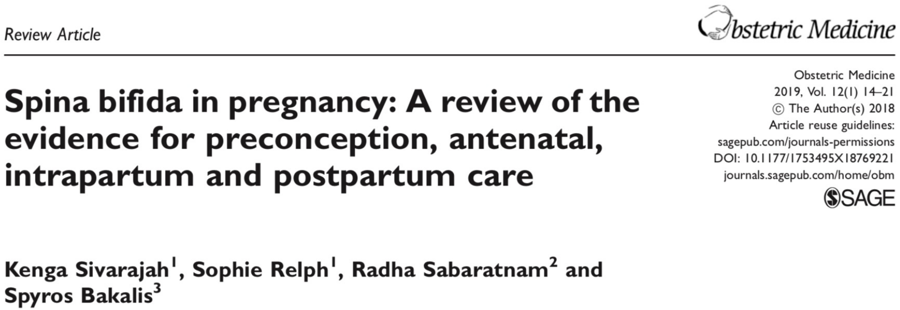


Table 1. Pre-conception counselling.

Genetic counselling	Multi-factorial aetiology Recurrence risk is 1–5% if one parent is affected and 15% if both parents are affected.
Folic acid	5 mg daily for women who have previously had an affected baby or couples with a personal history of spina bifida. Should be started a minimum of three months pre-conception and continued until 12 weeks of pregnancy.
Maternal obesity	More common in spina bifida population and causes increased risk of fetal spina bifida as well as other complications in pregnancy. Advised on optimising weight pre-conception.
Medication review	Review of all prescription and over-the-counter medications and where possible, stop or change any teratogens prior to pregnancy.
Epilepsy	Seizure frequency should be optimised prior to pregnancy and women should ideally be on AED monotherapy on the lowest effective dose.

AED: anti-epileptic drug.



Review Article

Obstetric Medicine

Obstetric Medicine
2019, Vol. 12(1) 14–21
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DOI: 10.1177/1753495X18769221
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SAGE

Spina bifida in pregnancy: A review of the evidence for preconception, antenatal, intrapartum and postpartum care

Kenga Sivarajah[1], Sophie Relph[1], Radha Sabaratnam[2] and Spyros Bakalis[3]

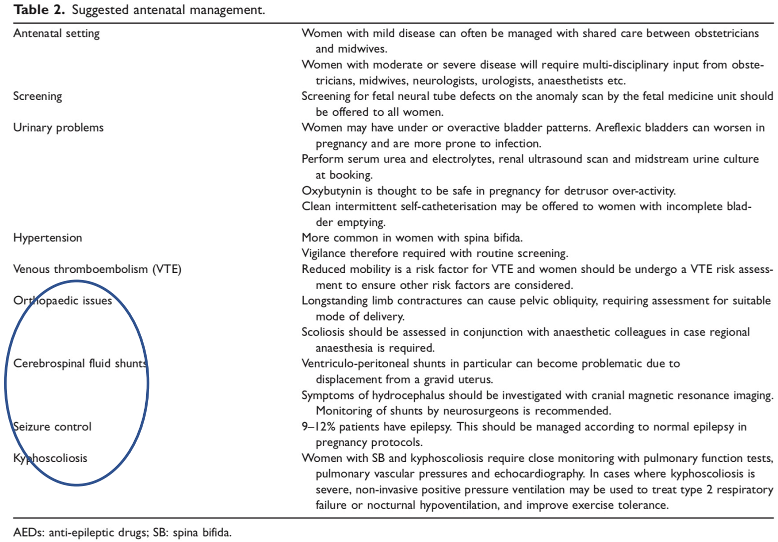


Table 2. Suggested antenatal management.

Antenatal setting	Women with mild disease can often be managed with shared care between obstetricians and midwives. Women with moderate or severe disease will require multi-disciplinary input from obstetricians, midwives, neurologists, urologists, anaesthetists etc.
Screening	Screening for fetal neural tube defects on the anomaly scan by the fetal medicine unit should be offered to all women.
Urinary problems	Women may have under or overactive bladder patterns. Areflexic bladders can worsen in pregnancy and are more prone to infection. Perform serum urea and electrolytes, renal ultrasound scan and midstream urine culture at booking. Oxybutynin is thought to be safe in pregnancy for detrusor over-activity. Clean intermittent self-catheterisation may be offered to women with incomplete bladder emptying.
Hypertension	More common in women with spina bifida. Vigilance therefore required with routine screening.
Venous thromboembolism (VTE)	Reduced mobility is a risk factor for VTE and women should be undergo a VTE risk assessment to ensure other risk factors are considered.
Orthopaedic issues	Longstanding limb contractures can cause pelvic obliquity, requiring assessment for suitable mode of delivery. Scoliosis should be assessed in conjunction with anaesthetic colleagues in case regional anaesthesia is required.
Cerebrospinal fluid shunts	Ventriculo-peritoneal shunts in particular can become problematic due to displacement from a gravid uterus. Symptoms of hydrocephalus should be investigated with cranial magnetic resonance imaging. Monitoring of shunts by neurosurgeons is recommended.
Seizure control	9–12% patients have epilepsy. This should be managed according to normal epilepsy in pregnancy protocols.
Kyphoscoliosis	Women with SB and kyphoscoliosis require close monitoring with pulmonary function tests, pulmonary vascular pressures and echocardiography. In cases where kyphoscoliosis is severe, non-invasive positive pressure ventilation may be used to treat type 2 respiratory failure or nocturnal hypoventilation, and improve exercise tolerance.

AEDs: anti-epileptic drugs; SB: spina bifida.

Grossesse et femme spina-bifida/ dysraphismes

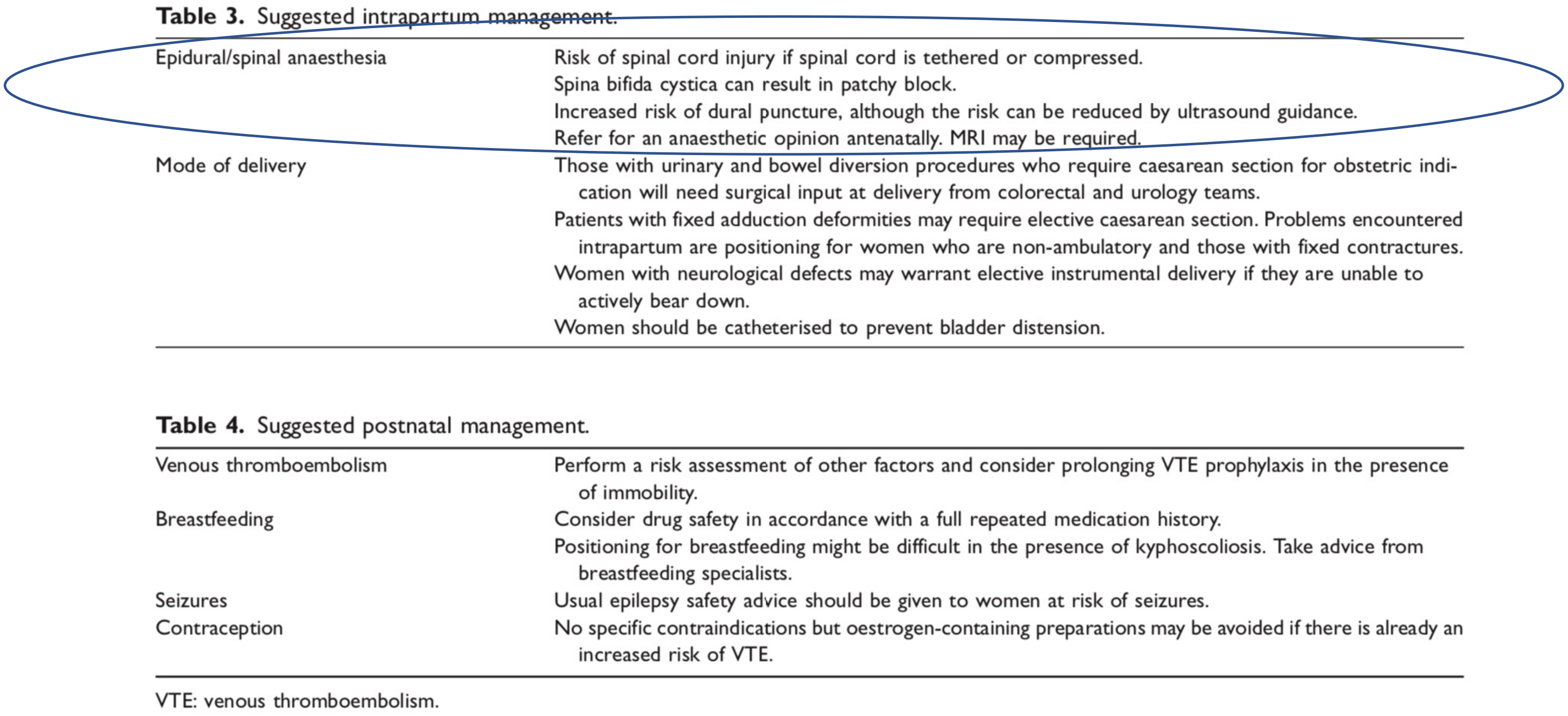


Table 3. Suggested intrapartum management.

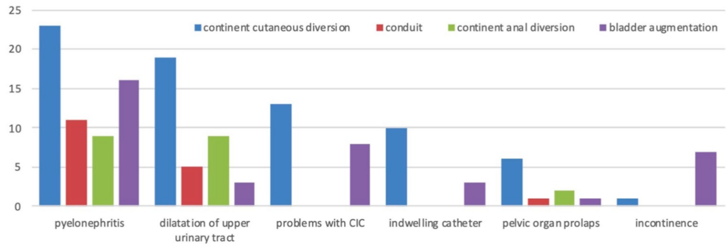
Epidural/spinal anaesthesia	Risk of spinal cord injury if spinal cord is tethered or compressed. Spina bifida cystica can result in patchy block. Increased risk of dural puncture, although the risk can be reduced by ultrasound guidance. Refer for an anaesthetic opinion antenatally. MRI may be required.
Mode of delivery	Those with urinary and bowel diversion procedures who require caesarean section for obstetric indication will need surgical input at delivery from colorectal and urology teams. Patients with fixed adduction deformities may require elective caesarean section. Problems encountered intrapartum are positioning for women who are non-ambulatory and those with fixed contractures. Women with neurological defects may warrant elective instrumental delivery if they are unable to actively bear down. Women should be catheterised to prevent bladder distension.

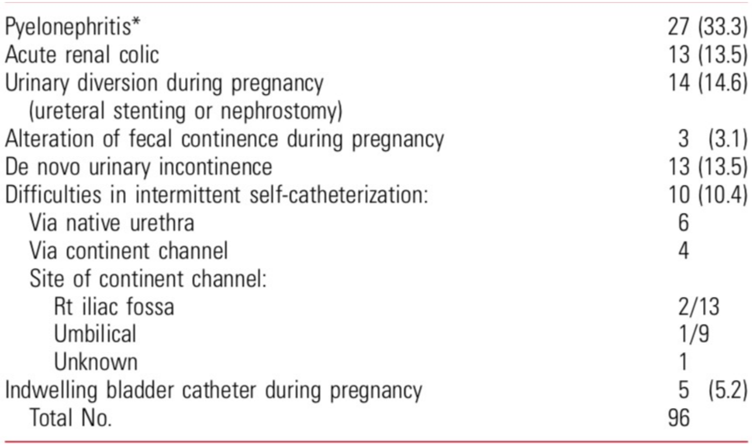
Table 4. Suggested postnatal management.

Venous thromboembolism	Perform a risk assessment of other factors and consider prolonging VTE prophylaxis in the presence of immobility.
Breastfeeding	Consider drug safety in accordance with a full repeated medication history. Positioning for breastfeeding might be difficult in the presence of kyphoscoliosis. Take advice from breastfeeding specialists.
Seizures	Usual epilepsy safety advice should be given to women at risk of seizures.
Contraception	No specific contraindications but oestrogen-containing preparations may be avoided if there is already an increased risk of VTE.

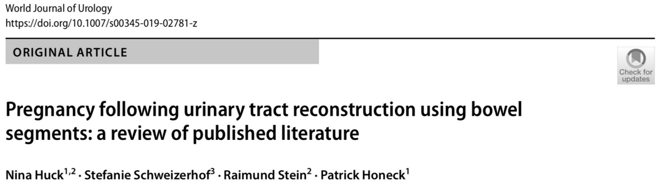
VTE: venous thromboembolism.

Grossesse /femme neurologique et reconstructions urinaires





Pyelonephritis*	27 (33.3)
Acute renal colic	13 (13.5)
Urinary diversion during pregnancy (ureteral stenting or nephrostomy)	14 (14.6)
Alteration of fecal continence during pregnancy	3 (3.1)
De novo urinary incontinence	13 (13.5)
Difficulties in intermittent self-catheterization:	10 (10.4)
Via native urethra	6
Via continent channel	4
Site of continent channel:	
Rt iliac fossa	2/13
Umbilical	1/9
Unknown	1
Indwelling bladder catheter during pregnancy	5 (5.2)
Total No.	96



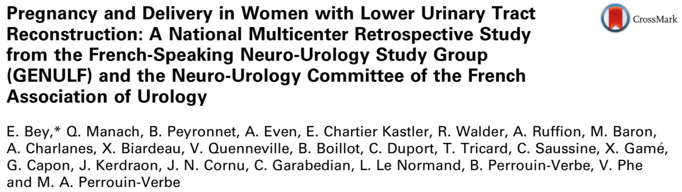
World Journal of Urology
https://doi.org/10.1007/s00345-019-02781-z

ORIGINAL ARTICLE

Pregnancy following urinary tract reconstruction using bowel segments: a review of published literature

Nina Huck[1,2] · Stefanie Schweizerhof[3] · Raimund Stein[2] · Patrick Honeck[1]

282 F, 395 grossesses



Pregnancy and Delivery in Women with Lower Urinary Tract Reconstruction: A National Multicenter Retrospective Study from the French-Speaking Neuro-Urology Study Group (GENULF) and the Neuro-Urology Committee of the French Association of Urology

E. Bey,* Q. Manach, B. Peyronnet, A. Even, E. Chartier Kastler, R. Walder, A. Ruffion, M. Baron, A. Charlanes, X. Biardeau, V. Quenneville, B. Boillot, C. Duport, T. Tricard, C. Saussine, X. Gamé, G. Capon, J. Kerdraon, J. N. Cornu, C. Garabedian, L. Le Normand, B. Perrouin-Verbe, V. Phe and M. A. Perrouin-Verbe

68 F, 96 grossesses

Grossesse /femme neurologique et reconstructions urinaires

- Même risque de pyélonéphrite= WOCA
- Risque de dilatation de l'arbre urinaire
  - Surveillance échographique
- Difficultés d'autosondages
  - 10 à 30%
  - Cystostomies continentes : fosse iliaque droite
- Si sphincter artificiel
  - Le désactiver avant accouchement par voie basse

World Journal of Urology
https://doi.org/10.1007/s00345-019-02781-z

ORIGINAL ARTICLE

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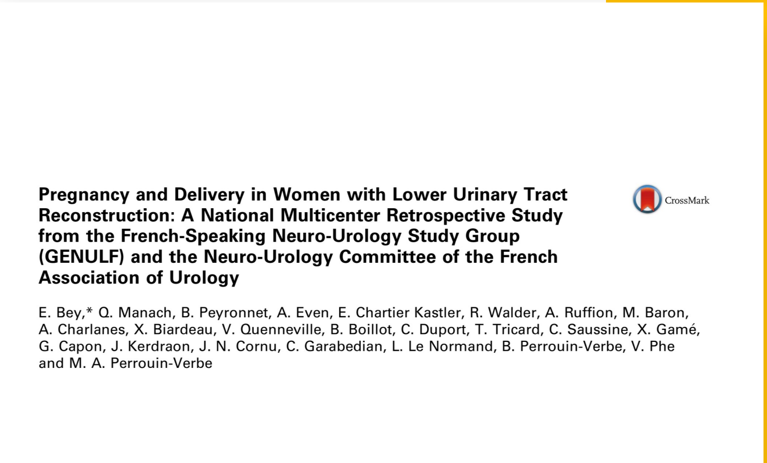
Nina Huck[1,2] · Stefanie Schweizerhof[3] · Raimund Stein[2] · Patrick Honeck[1]



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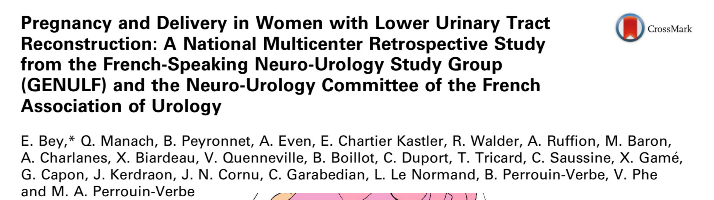
Modalités d'accouchement et reconstructions urinaires

- Césarienne 64%, n= 61. Voie basse 36%, n= 35
  - 20 complications
    - 15 urologiques
      - Laparotomie à travers entérocystoplastie : 11
      - Section des tubulures du sphincter artificiel : 2
      - Section du conduit de cystotomie continente: 1
      - Faux passage lors du sondage avec lésion cystostomie continente : 1
  - Privilégier voie basse
  - Si césarienne : en présence d'un urologue expert



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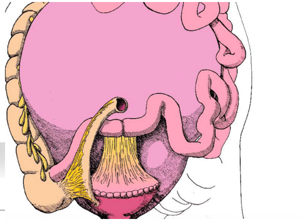
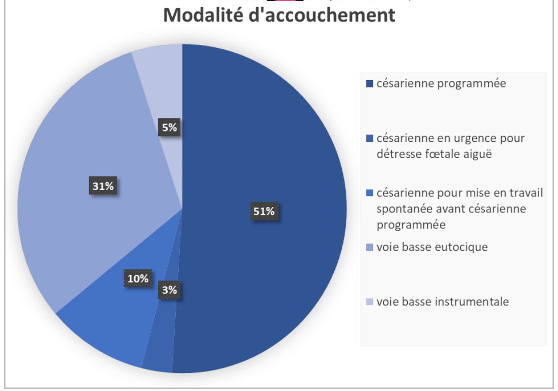
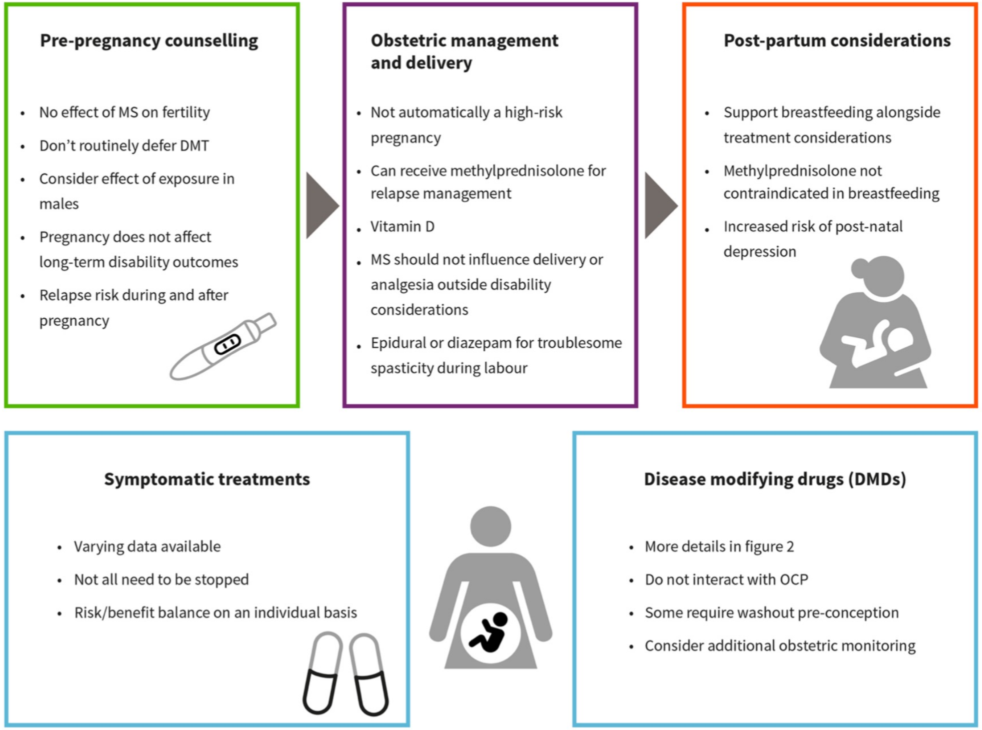



Modalité d'accouchement
51%
3%
10%
31%
5%
césarienne programmée
césarienne en urgence pour détresse fœtale aiguë
césarienne pour mise en travail spontanée avant césarienne programmée
voie basse eutocique
voie basse instrumentale

Grossesse et SEP

UK consensus on pregnancy in multiple sclerosis: 'Association of British Neurologists' guidelines

Ruth Dobson,[1,2] Pooja Dassan,[3,4] Megan Roberts,[5] Gavin Giovannoni,[2,6]
Catherine Nelson-Piercy,[7,8] Peter A Brex[9]



Pre-pregnancy counselling

- No effect of MS on fertility
- Don't routinely defer DMT
- Consider effect of exposure in males
- Pregnancy does not affect long-term disability outcomes
- Relapse risk during and after pregnancy

Obstetric management and delivery

- Not automatically a high-risk pregnancy
- Can receive methylprednisolone for relapse management
- Vitamin D
- MS should not influence delivery or analgesia outside disability considerations
- Epidural or diazepam for troublesome spasticity during labour

Post-partum considerations

- Support breastfeeding alongside treatment considerations
- Methylprednisolone not contraindicated in breastfeeding
- Increased risk of post-natal depression

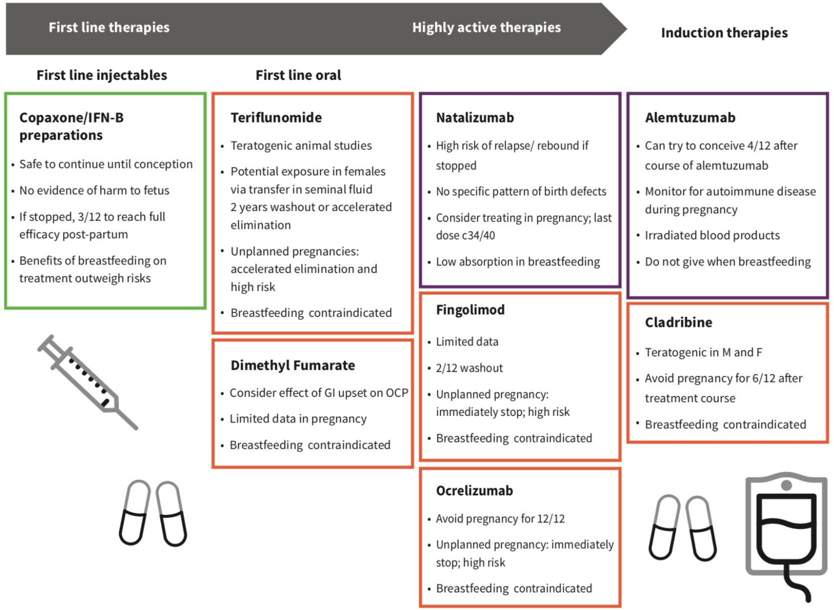
Symptomatic treatments

- Varying data available
- Not all need to be stopped
- Risk/benefit balance on an individual basis

Disease modifying drugs (DMDs)

- More details in figure 2
- Do not interact with OCP
- Some require washout pre-conception
- Consider additional obstetric monitoring

Figure 1 Infographic summarising topics to consider during prepregnancy counselling. DMT, disease modifying therapy; OCP, oral contraceptive pill.



First line therapies → **Highly active therapies** → **Induction therapies**

First line injectables

Copaxone/IFN-B preparations

- Safe to continue until conception
- No evidence of harm to fetus
- If stopped, 3/12 to reach full efficacy post-partum
- Benefits of breastfeeding on treatment outweigh risks

First line oral

Teriflunomide

- Teratogenic animal studies
- Potential exposure in females via transfer in seminal fluid 2 years washout or accelerated elimination
- Unplanned pregnancies: accelerated elimination and high risk
- Breastfeeding contraindicated

Dimethyl Fumarate

- Consider effect of GI upset on OCP
- Limited data in pregnancy
- Breastfeeding contraindicated

Natalizumab

- High risk of relapse/ rebound if stopped
- No specific pattern of birth defects
- Consider treating in pregnancy; last dose c34/40
- Low absorption in breastfeeding

Fingolimod

- Limited data
- 2/12 washout
- Unplanned pregnancy: immediately stop; high risk
- Breastfeeding contraindicated

Ocrelizumab

- Avoid pregnancy for 12/12
- Unplanned pregnancy: immediately stop; high risk
- Breastfeeding contraindicated

Alemtuzumab

- Can try to conceive 4/12 after course of alemtuzumab
- Monitor for autoimmune disease during pregnancy
- Irradiated blood products
- Do not give when breastfeeding

Cladribine

- Teratogenic in M and F
- Avoid pregnancy for 6/12 after treatment course
- Breastfeeding contraindicated

Figure 2 Infographic summarising advice about the use of disease-modifying drugs during pregnancy and in breastfeeding. IFN-B, interferon beta.

Grossesse et paralysie cérébrale

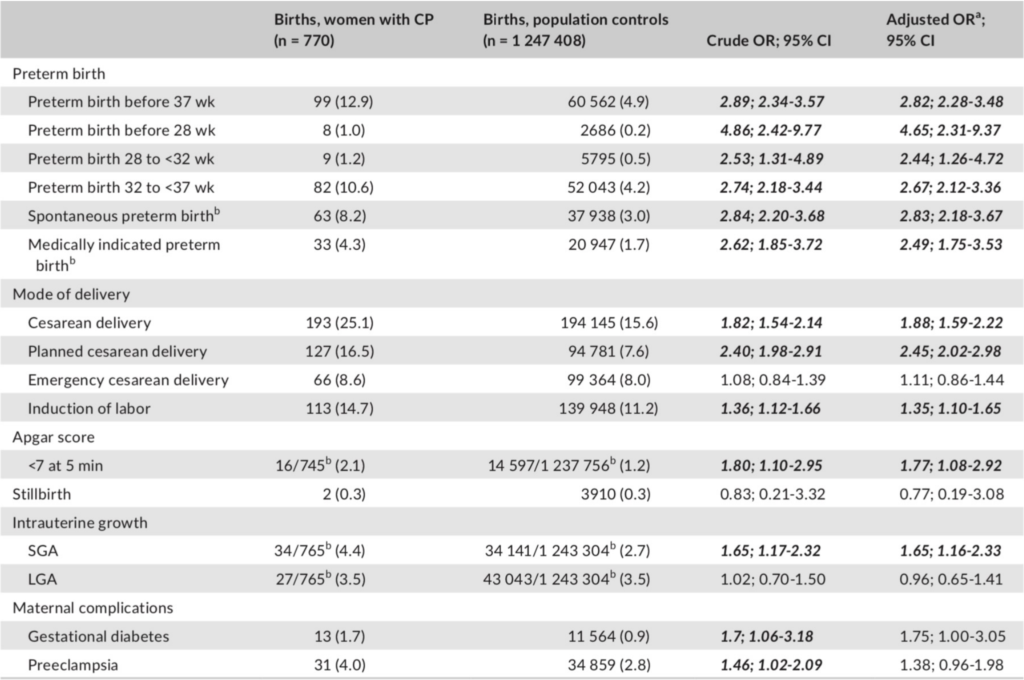
Received: 3 September 2019 | Revised: 7 November 2019 | Accepted: 11 November 2019
DOI: 10.1111/aogs.13773

ORIGINAL RESEARCH ARTICLE

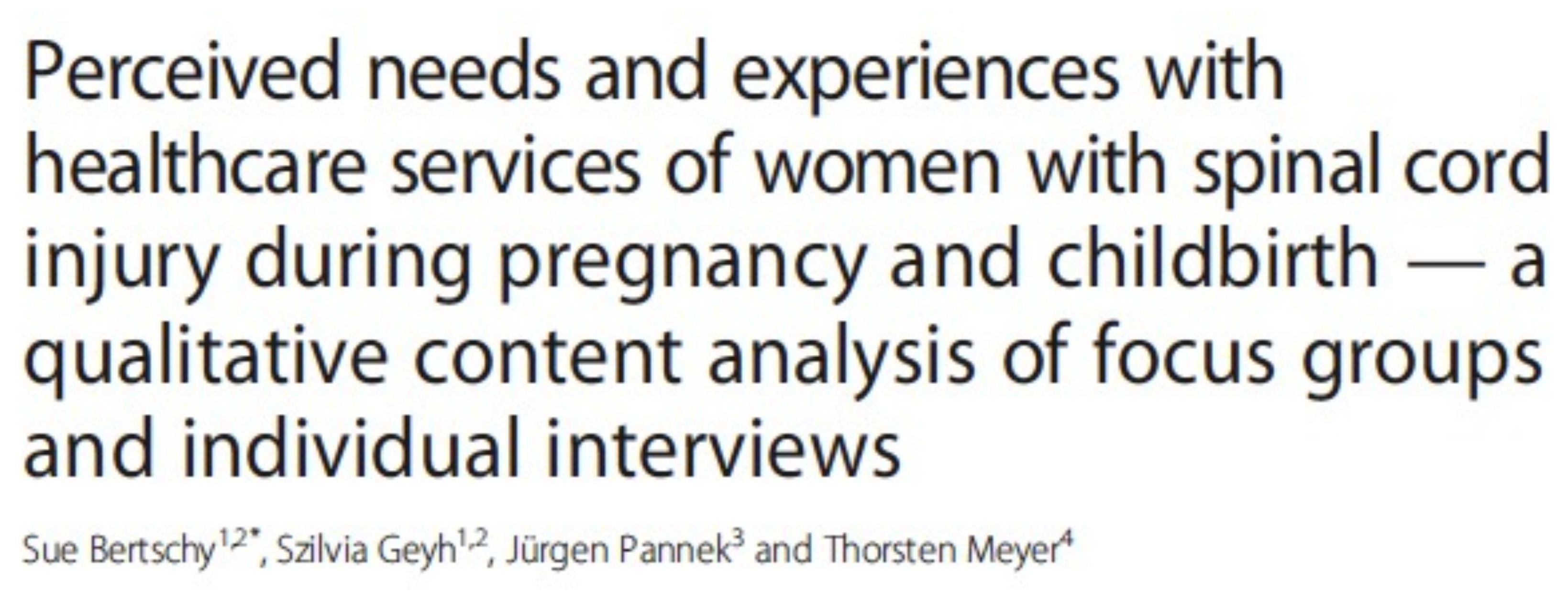
AOGS Acta Obstetricia et Gynecologica Scandinavica

Pregnancy outcome in women with cerebral palsy: A nationwide population-based cohort study

Heléne E. K. Sundelin[1] | **Olof Stephansson**[2,3,4] | **Stefan Johansson**[2,5] | **Jonas F. Ludvigsson**[6,7,8,9]



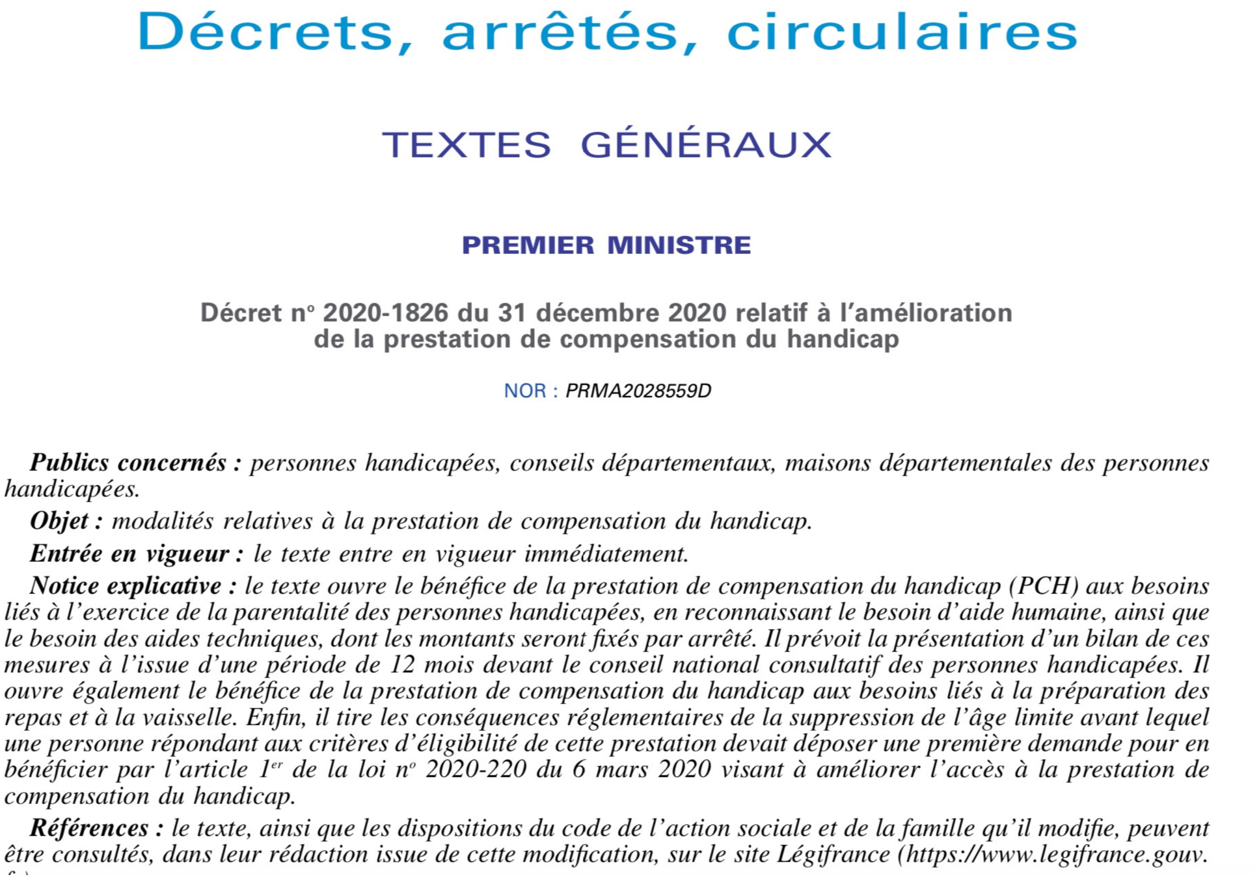
	Births, women with CP (n = 770)	Births, population controls (n = 1 247 408)	Crude OR; 95% CI	Adjusted OR[a]; 95% CI
Preterm birth				
Preterm birth before 37 wk	99 (12.9)	60 562 (4.9)	***2.89; 2.34-3.57***	***2.82; 2.28-3.48***
Preterm birth before 28 wk	8 (1.0)	2686 (0.2)	***4.86; 2.42-9.77***	***4.65; 2.31-9.37***
Preterm birth 28 to <32 wk	9 (1.2)	5795 (0.5)	***2.53; 1.31-4.89***	***2.44; 1.26-4.72***
Preterm birth 32 to <37 wk	82 (10.6)	52 043 (4.2)	***2.74; 2.18-3.44***	***2.67; 2.12-3.36***
Spontaneous preterm birth[b]	63 (8.2)	37 938 (3.0)	***2.84; 2.20-3.68***	***2.83; 2.18-3.67***
Medically indicated preterm birth[b]	33 (4.3)	20 947 (1.7)	***2.62; 1.85-3.72***	***2.49; 1.75-3.53***
Mode of delivery				
Cesarean delivery	193 (25.1)	194 145 (15.6)	***1.82; 1.54-2.14***	***1.88; 1.59-2.22***
Planned cesarean delivery	127 (16.5)	94 781 (7.6)	***2.40; 1.98-2.91***	***2.45; 2.02-2.98***
Emergency cesarean delivery	66 (8.6)	99 364 (8.0)	1.08; 0.84-1.39	1.11; 0.86-1.44
Induction of labor	113 (14.7)	139 948 (11.2)	***1.36; 1.12-1.66***	***1.35; 1.10-1.65***
Apgar score				
<7 at 5 min	16/745[b] (2.1)	14 597/1 237 756[b] (1.2)	***1.80; 1.10-2.95***	***1.77; 1.08-2.92***
Stillbirth	2 (0.3)	3910 (0.3)	0.83; 0.21-3.32	0.77; 0.19-3.08
Intrauterine growth				
SGA	34/765[b] (4.4)	34 141/1 243 304[b] (2.7)	***1.65; 1.17-2.32***	***1.65; 1.16-2.33***
LGA	27/765[b] (3.5)	43 043/1 243 304[b] (3.5)	1.02; 0.70-1.50	0.96; 0.65-1.41
Maternal complications				
Gestational diabetes	13 (1.7)	11 564 (0.9)	***1.7; 1.06-3.18***	1.75; 1.00-3.05
Preeclampsia	31 (4.0)	34 859 (2.8)	***1.46; 1.02-2.09***	1.38; 0.96-1.98



Perceived needs and experiences with healthcare services of women with spinal cord injury during pregnancy and childbirth — a qualitative content analysis of focus groups and individual interviews

Sue Bertschy[1,2*], Szilvia Geyh[1,2], Jürgen Pannek[3] and Thorsten Meyer[4]

- Le Vécu des femmes : difficultés d'accès aux soins
  - Les barrière formelles : environnement et absence de coordination des soins
  - Les barrières informelles : attitudinales et méconnaissance des soignants
- Convention des Nations Unies souligne le droit des personnes handicapées à l'accès aux soins notamment dans le domaine de la santé sexuelle et de la reproduction



Décrets, arrêtés, circulaires

TEXTES GÉNÉRAUX

PREMIER MINISTRE

Décret n° 2020-1826 du 31 décembre 2020 relatif à l'amélioration de la prestation de compensation du handicap

NOR : *PRMA2028559D*

Publics concernés : *personnes handicapées, conseils départementaux, maisons départementales des personnes handicapées.*

Objet : *modalités relatives à la prestation de compensation du handicap.*

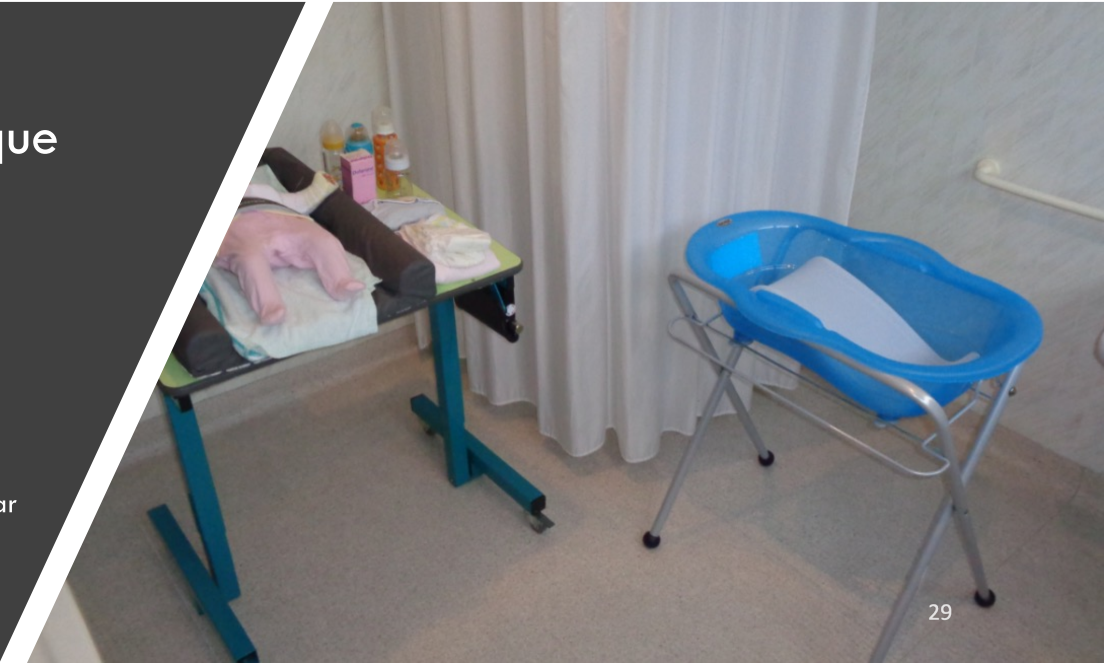
Entrée en vigueur : *le texte entre en vigueur immédiatement.*

Notice explicative : *le texte ouvre le bénéfice de la prestation de compensation du handicap (PCH) aux besoins liés à l'exercice de la parentalité des personnes handicapées, en reconnaissant le besoin d'aide humaine, ainsi que le besoin des aides techniques, dont les montants seront fixés par arrêté. Il prévoit la présentation d'un bilan de ces mesures à l'issue d'une période de 12 mois devant le conseil national consultatif des personnes handicapées. Il ouvre également le bénéfice de la prestation de compensation du handicap aux besoins liés à la préparation des repas et à la vaisselle. Enfin, il tire les conséquences réglementaires de la suppression de l'âge limite avant lequel une personne répondant aux critères d'éligibilité de cette prestation devait déposer une première demande pour en bénéficier par l'article 1er de la loi n° 2020-220 du 6 mars 2020 visant à améliorer l'accès à la prestation de compensation du handicap.*

Références : *le texte, ainsi que les dispositions du code de l'action sociale et de la famille qu'il modifie, peuvent être consultés, dans leur rédaction issue de cette modification, sur le site Légifrance (https://www.legifrance.gouv.*

Grossesse et femme neurologique

- Prise en charge pluri-professionnelle
  - Dès projet de parentalité
    - HDJ MPR
    - Évaluation fonctionnelle par ergothérapeute et kinésithérapeute
      - Mise en situation « Nursery »
      - Visite à domicile
    - Dossier de financement des aides techniques par AS



Le vécu des enfants

- Mothers with spinal cord injuries : Impact on marital, Family, and children's adjustment
  - Craig J Alexander (2002)
  - pas d'impact du handicap de la mère sur :
    - construction individuelle des enfants
    - attitude vis à vis des parents
    - estime de soi
    - identité sexuelle
    - fonctionnement global de la famille