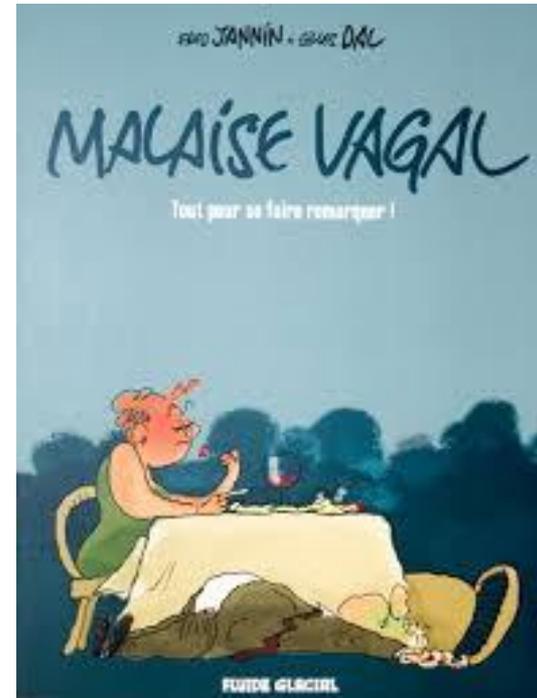


# Orientation diagnostique devant une syncope chez l'enfant et l'adolescent.



Dr Recher Morgan,  
Service de réanimation pédiatrique  
Service de cardiologie infantile  
CHRU Lille  
[morgan.recher@chru-lille.fr](mailto:morgan.recher@chru-lille.fr)





Vous avez dit malaise????

# Définition: multiple



European Heart Journal (2009) 30, 2631–2671  
doi:10.1093/eurheartj/ehp298

ESC GUIDELINES

## Guidelines for the diagnosis and management of syncope (version 2009)

The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology (ESC)

Developed in collaboration with, European Heart Rhythm Association (EHRA)<sup>1</sup>, Heart Failure Association (HFA)<sup>2</sup>, and Heart Rhythm Society (HRS)<sup>3</sup>

Syncope



Transient loss of consciousness (LOC) due to transient global cerebral hypoperfusion characterized by rapid onset, short duration and spontaneous complete recovery

Pré-syncope



A state that resembles the prodrome of syncope, but which is not followed by LOC

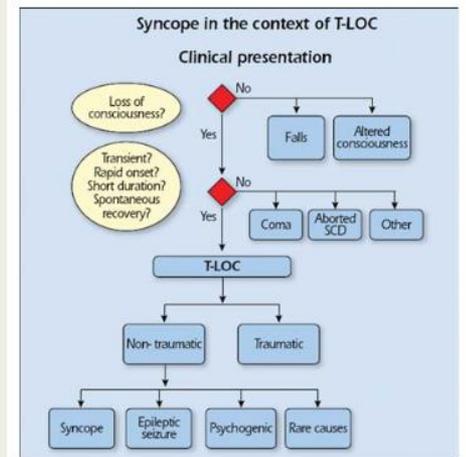
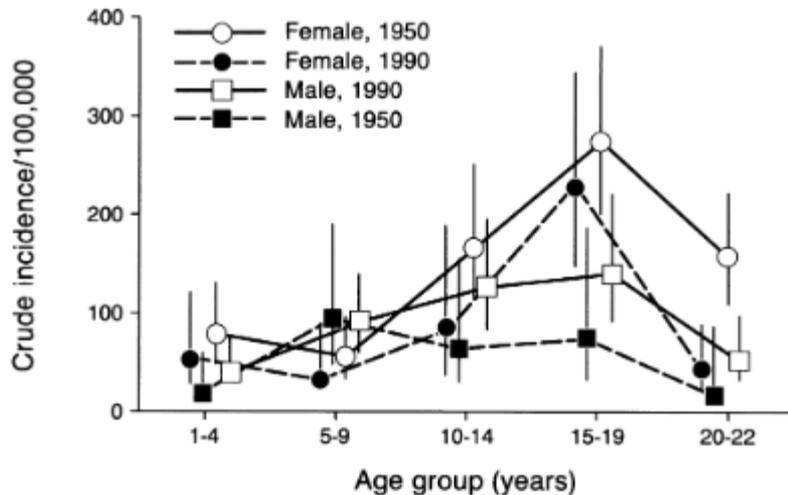


Figure 1 Context of transient loss of consciousness (T-LOC). SCD = sudden cardiac death.

## Syncope in Children and Adolescents

DAVID J. DRISCOLL, MD, FACC, STEVEN J. JACOBSEN, MD, PhD, CO-BURN J. PORTER, MD, FACC,  
PETER C. WOLLAN, PhD

Rochester, Minnesota



15 % des enfants et des adolescents

## The New England Journal of Medicine

A PROSPECTIVE EVALUATION AND FOLLOW-UP OF PATIENTS WITH SYNCOPE

WISHWA N. KAPOOR, M.D., MICHAEL KARPF, M.D., SAM WIEAND, PH.D., JACQUELINE R. PETERSON, P.A.,  
AND GERALD S. LEVEY, M.D.

Récurrence entre 33% et 51%  
(suivi de 5 ans)

Syncope unit in the paediatric population:  
A single-centre experience



Mathieu Courtheix<sup>1,\*</sup>, Zakaria Jalal<sup>1</sup>,  
Pierre Bordachar, Xavier Iriart, Xavier Pillois,  
Cécile Escobedo, Catherine Rabot, Laetitia Tribout,  
Jean-Benoit Thambo

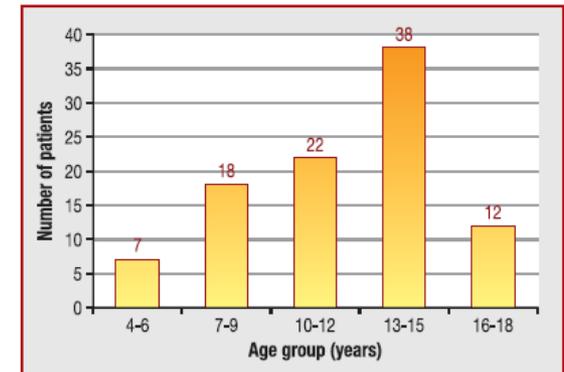


Figure 1. Distribution of patients assessed in the syncope unit by age group (4-6 means patients aged from 4 to 6 years; 7-9 means patients aged from 7 to 9 years, etc.).

# Epidémiologie

European Heart Journal (2001) 22, 1618–1625  
doi:10.1053/euhj.2000.2577, available online at <http://www.idealibrary.com> on IDEAL®

## Long-term follow-up of children and adolescents with syncope

### Predictor of syncope recurrence

C. Kouakam<sup>1</sup>, G. Vaksman<sup>2</sup>, E. Pachy<sup>1</sup>, D. Lacroix<sup>1</sup>, C. Rey<sup>2</sup> and S. Kacet<sup>1</sup>

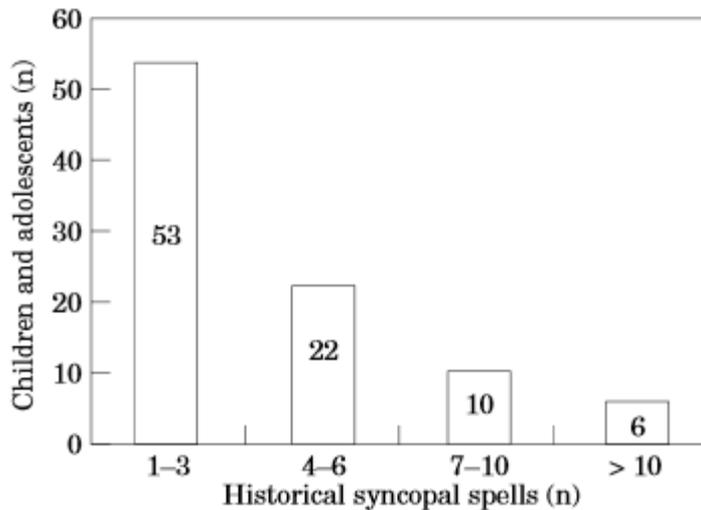


Figure 1 Distribution of children and adolescents according to their historical number of syncopal spells.

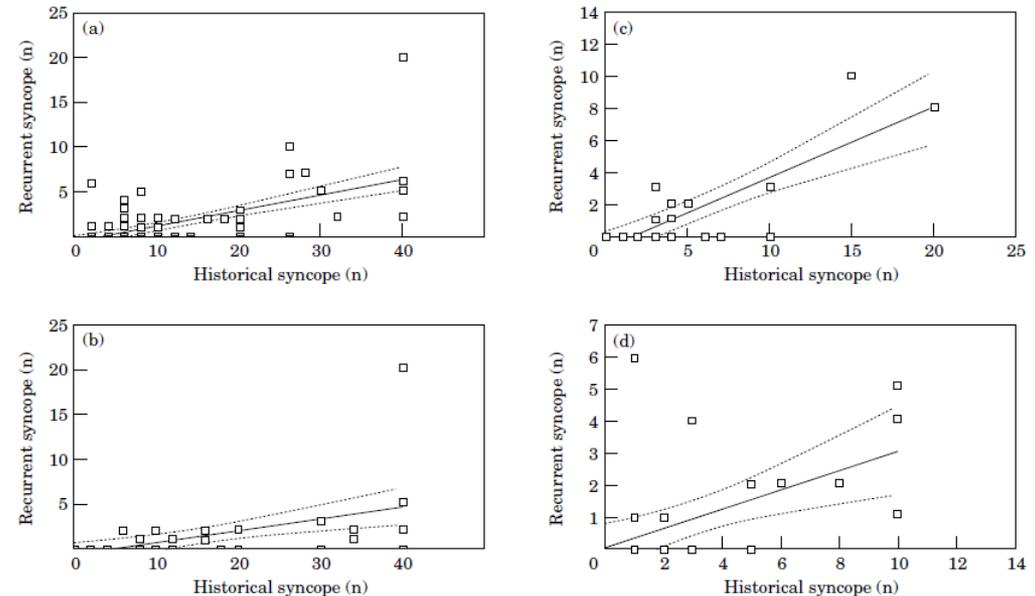
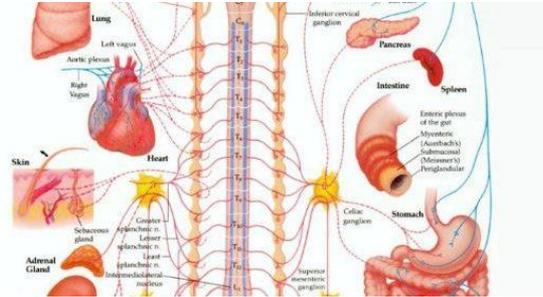
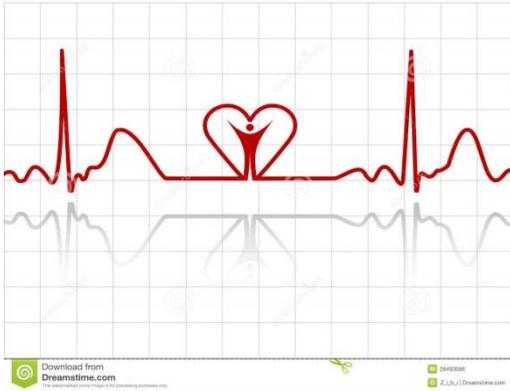


Figure 4 (a) Correlation between the number of recurrent and historical syncope episodes in the study group ( $n=97$ ) ( $r=0.6$ , 95% confidence interval: 0.47 to 0.72,  $P<0.0001$ ). (b) Correlation between the number of recurrent and historical syncope episodes among treated patients with a positive head-up tilt test ( $n=43$ ) ( $r=0.5$ , 95% confidence interval: 0.29 to 0.73,  $P=0.0001$ ). (c) Correlation between the number of recurrent and historical syncope episodes among untreated patients with a positive head-up tilt test ( $n=23$ ) ( $r=0.8$ , 95% confidence interval: 0.59 to 0.91,  $P<0.0001$ ). (d) Correlation between the number of recurrent and historical syncope episodes among untreated patients with a negative head-up tilt test ( $n=31$ ) ( $r=0.5$ , 95% confidence interval: 0.18 to 0.73,  $P=0.004$ ). —=linear regression; ···=95% confidence interval.

# Etiologies?



# Etiologies



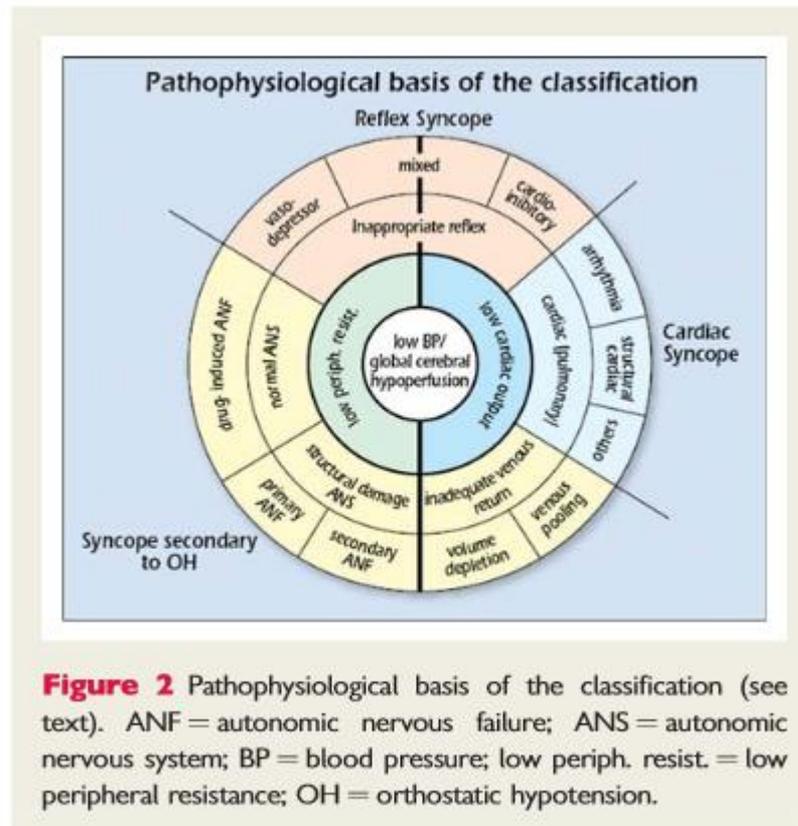
European Heart Journal (2009) 30, 2631–2671  
doi:10.1093/eurheartj/ehp298

ESC GUIDELINES

## Guidelines for the diagnosis and management of syncope (version 2009)

The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology (ESC)

Developed in collaboration with, European Heart Rhythm Association (EHRA)<sup>1</sup>, Heart Failure Association (HFA)<sup>2</sup>, and Heart Rhythm Society (HRS)<sup>3</sup>



# Etiologies



European Heart Journal (2009) 30, 2631–2671  
doi:10.1093/eurheartj/ehp298

ESC GUIDELINES

## Guidelines for the diagnosis and management of syncope (version 2009)

The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology (ESC)

Developed in collaboration with, European Heart Rhythm Association (EHRA)<sup>1</sup>, Heart Failure Association (HFA)<sup>2</sup>, and Heart Rhythm Society (HRS)<sup>3</sup>

**Table 3** Conditions incorrectly diagnosed as syncope

Disorders with partial or complete LOC but without global cerebral hypoperfusion

- Epilepsy
- Metabolic disorders including hypoglycaemia, hypoxia, hyperventilation with hypocapnia
- Intoxication
- Vertebrobasilar TIA

Disorders without impairment of consciousness

- Cataplexy
- Drop attacks
- Falls
- Functional (psychogenic pseudosyncope)
- TIA of carotid origin

LOC = loss of consciousness; TIA = transient ischaemic attack.

**Table 4** Classification of syncope

### Reflex (neurally-mediated) syncope

Vasovagal:

- mediated by emotional distress: fear, pain, instrumentation, blood phobia
- mediated by orthostatic stress

Situational:

- cough, sneeze
- gastrointestinal stimulation (swallow, defaecation, visceral pain)
- micturition (post-micturition)
- post-exercise
- post-prandial
- others (e.g., laugh, brass instrument playing, weightlifting)

Carotid sinus syncope

Atypical forms (without apparent triggers and/or atypical presentation)

### Syncope due to orthostatic hypotension

Primary autonomic failure:

- pure autonomic failure, multiple system atrophy, Parkinson's disease with autonomic failure, Lewy body dementia

Secondary autonomic failure:

- diabetes, amyloidosis, uraemia, spinal cord injuries

Drug-induced orthostatic hypotension:

- alcohol, vasodilators, diuretics, phenothiazines, antidepressants

Volume depletion:

- haemorrhage, diarrhoea, vomiting, etc

### Cardiac syncope (cardiovascular)

Arrhythmia as primary cause:

Bradycardia:

- sinus node dysfunction (including bradycardia/tachycardia syndrome)
- atrioventricular conduction system disease
- implanted device malfunction,

Tachycardia:

- supraventricular
- ventricular (idiopathic, secondary to structural heart disease or to channelopathies)

Drug induced bradycardia and tachyarrhythmias

Structural disease:

Cardiac: cardiac valvular disease, acute myocardial infarction/ischaemia, hypertrophic cardiomyopathy, cardiac masses (atrial myxoma, tumors, etc), pericardial disease/tamponade, congenital anomalies of coronary arteries, prosthetic valves dysfunction

Others: pulmonary embolus, acute aortic dissection, pulmonary hypertension

# Etiologies spécifiques à l'enfant



## The NEW ENGLAND JOURNAL of MEDICINE

Wishwa N. Kapoor, M.D., M.P.H.

N Engl J Med 2000; 343:1856-1862 | December 21, 2000 | DOI: 10.1056/NEJM200012213432507

**TABLE 1. CAUSES OF SYNCOPE.\***

CAUSE	MEAN PREVALENCE (RANGE)
	percent†
Neurally mediated syncope	
Vasovagal attack	18 (8–37)
Situational syncope	5 (1–8)
Carotid-sinus syncope	1 (0–4)
Psychiatric disorders	2 (1–7)
Orthostatic hypotension	8 (4–10)
Medications‡	3 (1–7)
Neurologic disease	10 (3–32)
<b>Cardiac syncope</b>	
Organic heart disease§	4 (1–8)
Arrhythmias	14 (4–38)

\*Reproduced from Linzer et al. with the permission of the publisher.<sup>8,9</sup>

†Percentages are of patients with syncope.

‡Some of the patients receiving medication may have had neurally mediated syncope but are classified in this category because the studies did not specify it.

§Organic heart disease refers to structural heart disease that causes syncope, such as aortic stenosis, pulmonary hypertension, pulmonary embolism, or myocardial infarction.

Syncope cardiovasculaires: 50 % chez les adultes, moins fréquentes chez les enfants

## Syncope chez l'enfant et l'adolescent

### Syncope in children and adolescents

G. Vaksman (Cardiopédiatre)<sup>a,\*</sup>, D. Lacroix (Praticien hospitalier)<sup>b</sup>

<sup>a</sup> Polyclinique de la Louvière, 69, rue de la Louvière, 59800 Lille, France

<sup>b</sup> Service d'électrophysiologie clinique, hôpital cardiologique, 59037 Lille cedex, France

**Tableau 1** Étiologies des syncope.

Dysrégulation du système nerveux autonome
Vasovagale
Hypertonie vagale
Réflexe : forme « pâle » du spasme du sanglot
Syncope mictionnelles, à la défécation, à la toux...
Hypotension orthostatique : déshydratation, hémorragie
Syncope d'origine cardiaque
Causes mécaniques : sténose aortique, myocardiopathie obstructive, hypertension artérielle pulmonaire, anomalie coronaire
Causes rythmiques : tachycardies supraventriculaires, tachycardies ventriculaires, bloc auriculoventriculaire
Syncope anoxique des cardiopathies cyanogènes
Syncope d'origine extracardiaque
Neurologique : convulsions, migraine
Métabolique : hypoglycémie
Hyperventilation
Psychiatrique : attaque de panique, hystérie
Vasculaire : insuffisance vertébrobasilaire, malformation cervicale

## What Is the Yield of Screening Echocardiography in Pediatric Syncope?

Saskia Ritter, MD; Lloyd Y. Tani, MD; Susan P. Etheridge, MD; Richard V. Williams, MD; Janet E. Craig, PNP; and L. LuAnn Minich, MD

**TABLE 1.** Summary of Final Diagnoses (n = 480)

Cause of Syncope	Number of Patients	Percentage of Total
Noncardiac syncope	458	95
Long QT syndrome	14	3
Arrhythmias	6	1
Cardiomyopathy	2	.4



# Etiologies spécifiques à l'enfant

Archives de pédiatrie 11 (2004) 169–174

## Syncope d'origine cardiaque chez l'enfant

### Cardiac syncope in children

E. Villain \*

*Service de cardiologie pédiatrique, hôpital Necker-Enfants-Malades, 149, rue de Sévres, 75015 Paris, France*

#### Tableau I

Caractéristiques des malaises bénins et graves de l'enfant

Mécanisme	vasovagal	QT long, TV polymorphes, BAVC, WPW
Circonstances	chaleur, foule, station debout prolongée faim	exercice, émotion
Prodromes	++	0
Blessure	rare	traumatisme de la face
Durée	< 1 minute	> 1 minute
Convulsions	rare	oui
Risque	non	mort subite

# Présentation clinique

## Syncope in Children and Adolescents

DAVID J. DRISCOLL, MD, FACC, STEVEN J. JACOBSEN, MD, PhD, CO-BURN J. PORTER, MD, FACC,  
PETER C. WOLLAN, PhD

Rochester, Minnesota

	1950-1954 (n = 43)		1987-1991 (n = 151)		Total (n = 194)		p Value†
	No.	%	No.	%	No.	%	
Tonic-clonic movements	3	7	12	8	15	8	1.00
Seizure	0	0	4	3	4	2	0.58
Injury from syncope	6	14	29	19	35	18	0.51
Trauma preceding syncope	1	2	12	8	13	7	0.30
Minor	1	2	10	7	11	6	0.46
Moderate	0	0	2	1	2	1	1.00
Head	0	0	8	5	8	4	0.20
Other	1	2	5	3	6	3	1.00
Nausea/vomiting	5	12	24	16	29	15	0.63
Vertigo	1	2	3	2	4	2	1.00
Anticipation of syncope	3	7	14	9	17	9	0.77
Feeling hot	5	12	10	7	15	8	0.33
Headache	0	0	6	4	6	3	0.34
Dizziness	5	12	23	15	28	14	0.63
Light-headedness	2	5	30	20	32	16	0.02
Pallor	1	2	1	1	2	1	0.40
Sweaty	3	7	6	4	9	5	0.42
Cold	1	2	5	3	6	3	1.00
Weak/shaky	2	5	4	3	6	3	0.62
Visual symptoms	3	7	21	14	24	12	0.30

\*Incident event = first syncopal episode brought to medical attention. †p value for test of difference between time periods.

	1950-1954 (n = 43)		1987-1991 (n = 151)		Total (n = 194)		p Value†
	No.	%	No.	%	No.	%	
Cough	1	2	0	0	1	1	0.22
Crying	0	0	5	3	5	3	0.59
Urination	1	2	3	2	4	2	1.00
Defecation	0	0	2	1	2	1	1.00
Menses	5	12	7	5	12	6	0.16
In church	2	5	3	2	5	3	0.31
In shower/bath	0	0	11	7	11	6	0.13
After a noxious stimulus	13	30	32	21	45	23	0.22
After psychologic/emotional stimulus	5	12	18	12	23	12	1.00
During exercise	1	2	5	3	6	3	1.00
<5 min after exercise	1	2	1	1	2	1	0.40
Acute illness	9	21	38	25	47	24	0.69
Nonprescription drugs/alcohol	0	0	16	11	16	8	0.025
Prescription drug	2	5	37	25	39	20	0.003

\*Incident event = first syncopal episode brought to medical attention. †p value for test of difference between time periods.

# Causes cardiaques: la hantise!!



## INTERET DE L'ECG

Archives de pédiatrie 11 (2004) 169-174

### • Cardiomyopathie obstructive

Synopes d'origine cardiaque chez l'enfant

Cardiac syncope in children

E. Villain \*

Service de cardiologie pédiatrique, hôpital Necker-Enfants-Malades, 149, rue de Serres, 75014 Paris, France

### • Syndrome du QT long

–  $QT/\sqrt{RR} > 0,44$  ms

– ATCD familiaux QT long, surdité  
 – ATCD familiaux décès au cours convulsion  
 – syncope effort, émotions

### • Wolf Parkinson White

– PR court < 100 - 120 ms

Tableau 2

Anomalies de l'ECG à rechercher chez un enfant ayant fait une syncope

- Allongement de QT
- Pré-excitation ventriculaire (PR court et onde delta)
- Bloc auriculoventriculaire
- Troubles de la repolarisation, signes de surcharge ventriculaire
- Sus-décalage de ST en VI-V6 (Brugada)

#### Arrhythmias

- Complete heart block
- Sick sinus syndrome
- Tachyarrhythmias
  - Supraventricular
  - Ventricular
- Long QT syndrome
  - Wolff-Parkinson-White syndrome
- Channelopathies

#### Cardiac - Structural

- Aortic stenosis
- Hypertrophic obstructive cardiomyopathy
- Coronary artery anomalies
- Primary pulmonary hypertension
- Eisenmenger's syndrome
- Mitral valve prolapse
- Arrhythmogenic right ventricular dysplasia

What Is the Yield of Screening Echocardiography in Pediatric Syncope?

Saskia Ritter, MD; Lloyd Y. Tani, MD; Susan P. Etheridge, MD; Richard V. Williams, MD; Janet E. Craig, PNP; and L. LuAnn Minich, MD

TABLE 2. Comparison of an Abnormality in the Screening Protocol (History, Physical Examination, and Electrocardiogram) in Patients With Cardiac Versus Noncardiac Causes of Syncope

Positive Variable	Noncardiac (n = 458)	Cardiac (n = 22)	P Value
Exercise-induced	143	10	.19
Family history	153	9	.50
Physical exam	38	2	.09
Electrocardiogram	52	16	<.0001

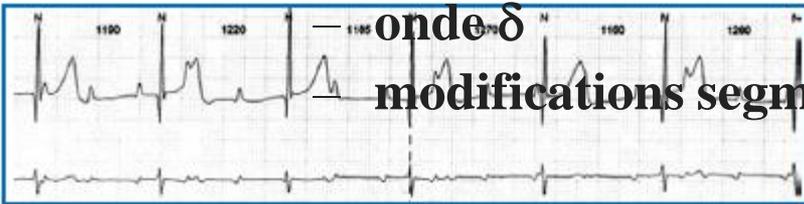


Fig. 2. Bloc auriculoventriculaire complet. Tracés d'enregistrement ECG sur 24 heures montrant la dissociation entre le rythme sinusal à 140/minute et le rythme d'échappement ventriculaire à 45/minute.

# Causes cardiaques: la hantise!!



## INTERET DE L'ECG?

Archives de pédiatrie 11 (2006) 149-174

Syncopes d'origine cardiaque chez l'enfant

Cardiac syncope in children

E. Villain \*

Service de cardiologie pédiatrique, Hôpital Necker-Enfants-Malades, 141, rue de Serres, 75017 Paris, France



Fig. 4. Tachycardie ventriculaire catécholergique (enregistrement Holter). On voit l'aspect bidirectionnel typique des extrasystoles ventriculaires, qui apparaissent pour une fréquence sinusale à 140/minute.

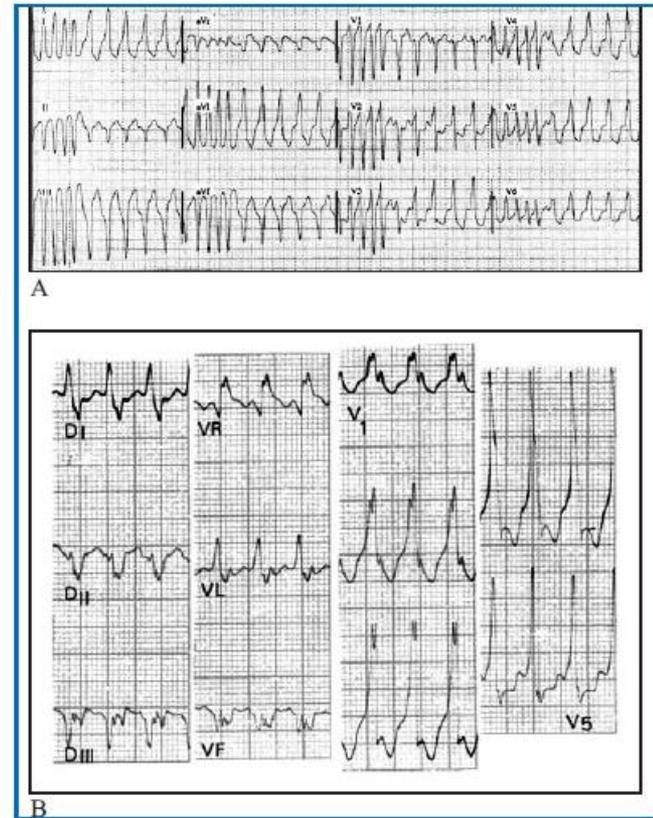


Fig. 5. Syndrome de WPW.

A. Fibrillation atriale conduite vers les ventricules par la voie accessoire. On voit une tachycardie irrégulière avec des QRS plus ou moins larges (plus ou moins « pré-excités ») car l'influx en provenance des oreillettes est conduit à la fois par la voie normale et par la voie accessoire.

B. Pré-excitation ventriculaire avec PR court et onde delta.

# Causes cardiaques: la hantise!!

## Syndrome du QT long

Archives de pédiatrie 11 (2004) 169-174

Syncope d'origine cardiaque chez l'enfant

Cardiac syncope in children

**Critères diagnostiques :**

*Dr. Villain \**  
Service de cardiologie pédiatrique, hôpital Necker-Enfants-Malades, 149, rue de Sévres, 75015 Paris, France

**ATCD familiaux de QT long**

**Tableau 3**  
Syndromes de QT long. Gènes mutés et canaux ioniques

Syndrome	Chromosome	Gène	Canal ionique	Conséquence
LQT1	3	KCNQ1	sous-unité lks	↓ K <sup>+</sup>
LQT2	7	HERG	sous-unité lkr	↓ K <sup>+</sup>
LQT3	3	SCN5A	Na	↑ Na
LQT5	21	KCNE1	MinK lks	↓ K <sup>+</sup>
LQT6	21	KCNE2	Mirp1 lkr	↓ K <sup>+</sup>

lks, canal potassique lent ; lkr, canal potassique rapide ; Na, canal sodique

Attention l'ECG peut être normal!! : intérêt du Holter-ECG et de l'épreuve d'effort!



Fig. 3. Syndrome de QT long congénital.

A. Calcul du QTc par la formule de Bazett.  $QTc = 0,66 \text{ seconde } (0,56 / \sqrt{0,72}) = 660 \text{ millisecondes.}$

B. Troubles de la repolarisation ventriculaire.

C. Torsade de pointes.

# Cause cardiaque: la hantise!!

## INTERET DE L'ECHOCARDIOGRAPHIE?

### What Is the Yield of Screening Echocardiography in Pediatric Syncope?

Saskia Ritter, MD; Lloyd Y. Tani, MD; Susan P. Etheridge, MD; Richard V. Williams, MD; Janet E. Craig, PNP; and L. LuAnn Minich, MD

**TABLE 4.** Abnormal Echocardiogram of Syncope

Abnormal echocardiogram  
Normal echocardiogram

Sensitivity = 18%; specificity = 93%;  
11%; and negative predictive value :



**Fig. 1.** ECG de myocardiopathie hypertrophique. On voit une hypertrophie ventriculaire gauche et des troubles diffus de la repolarisation (dépressement de ST).

of data regarding its value shows little benefit of screening and should discourage its routine use in the evaluation of pediatric syncope.

### Syncope unit in the paediatric population: A single-centre experience



Mathieu Courtheix<sup>1,\*</sup>, Zakaria Jalal<sup>1</sup>, Pierre Bordachar, Xavier Iriart, Xavier Pillois, Cécile Escobedo, Catherine Rabot, Laetitia Tribout, Jean-Benoit Thambo

**Table 4** Comparison of elements of the initial evaluation (baseline characteristics, history, diagnostic tests) in patients with cardiac syncope versus non-cardiac syncope.

	Cardiac (n=5)	Non-cardiac (n=92)	P
Females	2 (40)	49 (53)	0.67
Mean age	11.4 ± 6.3	12.1 ± 3.1	0.81
Syncope	5 (100)	73 (79.3)	0.58
Recurrent episode	2 (40)	78 (84.8)	0.04
Trauma	1 (20)	8 (8.7)	0.39
Prodromal symptoms	1 (20)	66 (71.7)	0.03
Palpitations	1 (20)	13 (14.1)	0.55
Chest pain	0 (0)	8 (8.7)	1.00
Exercise-induced	3 (60)	5 (5.4)	0.003
Abnormal electrocardiogram	3 (60)	0 (0)	< 0.001
Abnormal Holter monitoring	3 (60)	0 (0)	< 0.001
Abnormal echocardiogram	0 (0)	0 (0)	1.00

Data are expressed as number (%) or mean ± standard deviation.

# Comment procéder devant une syncope de l'enfant?

- **Circonstances de survenue du malaise**
  - position, émotion, coiffage, ...
  - distance dernier repas
  - écran, sommeil
  - effort, atmosphère aquatique, bruit, surprise
  - malaises « collectifs »
  - date des dernières règles
  - toxiques
- **Description du malaise**
  - prodromes
  - existence d'une perte de connaissance
  - teint
  - mouvements anormaux
  - chronologie +++
  - symptômes suivants le malaise

# Comment procéder devant une syncope de l'enfant?

## Syncopes chez l'enfant et l'adolescent

G. Vaxsmann

### “ *Point fort* ”

#### **Circonstances évocatrices d'une cause grave de syncope devant lesquelles des explorations complémentaires sont nécessaires**

- Antécédents familiaux de mort subite inexpliquée (canalopathie, CMH).
- Antécédents de chirurgie cardiaque (troubles du rythme).
- Syncope survenue au cours d'un effort physique (causes mécaniques, tachycardie ventriculaire catécholergique).
- Syncope survenue en milieu aquatique (syndrome du QT long de type 1).
- Syncope précédée d'un accès de palpitations ou d'une douleur thoracique.
- Syncope associée à une anomalie de l'EKG.

# Evolution des diagnostics?

## Syncope in Children and Adolescents

DAVID J. DRISCOLL, MD, FACC, STEVEN J. JACOBSEN, MD, PhD, CO-BURN J. PORTER, MD, FACC,  
PETER C. WOLLAN, PhD

Rochester, Minnesota

**Table 3.** Attending Physicians' Diagnosis After Initial Evaluation of Incident\* Syncopal Event: Residents of Rochester, Minnesota: Aged 1 to 22 Years, by Time Period

	1950 to 1954 (n = 43)		1987 to 1991 (n = 151)		Total (n = 194)		p Value†
	No.	%	No.	%	No.	%	
Simple faint	21	49	44	29	65	34	0.016
Vasodepressor/vasovagal	6	14	61	40	67	35	0.001
Hysteria/psychogenic	1	2	3	2	4	2	1.00
Breathholding	0	0	6	4	6	3	0.34
Concurrent infectious disease	1	2	3	2	4	2	0.89
Possible epilepsy	6	14	3	2	9	5	0.001
Syncope	3	7	6	4	9	5	0.41
Orthostatic	1	2	2	1	3	2	0.64
Hyperventilation	1	2	1	1	2	1	0.34
Hypoglycemia	0	0	3	2	3	2	0.35
Unknown	6	14	6	4	12	6	0.017
Other‡	4	9	22	15	28	13	0.37

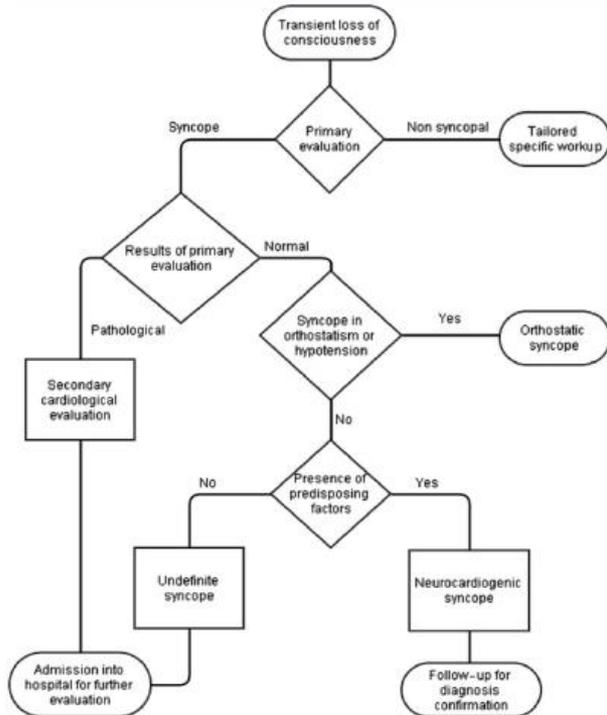
\*Incident event = first syncopal episode brought to medical attention. †p value for test of difference between time periods. ‡Includes, among other diagnoses, chest pain, sunburn, exhaustion, dysmenorrhea, medication-related condition, vertigo, trauma, dehydration, stress, alcohol-related condition.

# Comment procéder devant une syncope de l'enfant?



## The Availability and the Adherence to Pediatric Guidelines for the Management of Syncope in the Emergency Department

Umberto Raucci, MD, PhD<sup>1</sup>, Simona Scateni, MD<sup>1</sup>, Alberto Eugenio Tozzi, MD<sup>2</sup>, Fabrizio Drago, MD<sup>3</sup>, Ugo Giordano, MD<sup>4</sup>, Michela Marcias, MD<sup>1</sup>, Francesca Faa, MD<sup>1</sup>, and Antonino Reale, MD<sup>1</sup>



**Figure.** Diagnostic workup of children with transient loss of consciousness.



NIH Public Access

Author Manuscript

*J Pediatr*. Author manuscript; available in PMC 2014 April 10.

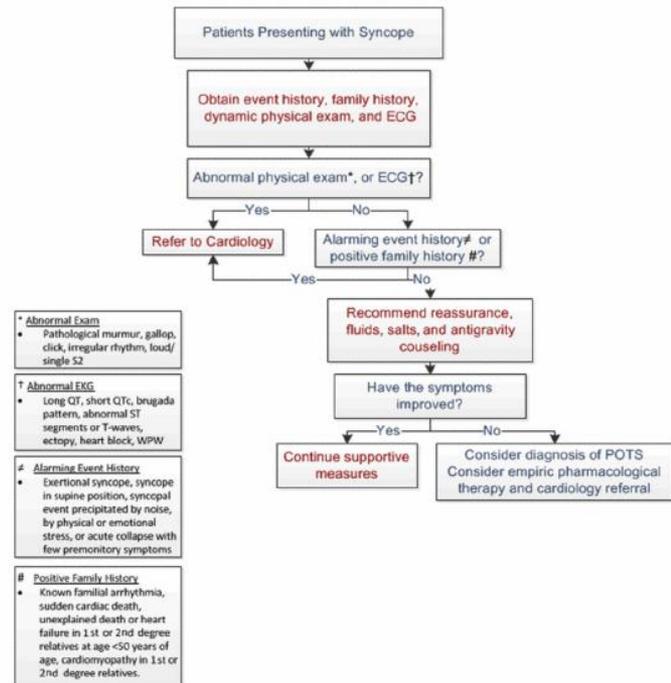
Published in final edited form as:

*J Pediatr*. 2013 September ; 163(3): 896–901.e1-3. doi:10.1016/j.jpeds.2013.05.001.

## Chest Pain and Syncope in Children: A Practical Approach to the Diagnosis of Cardiac Disease

Kevin G. Friedman, MD and Mark E. Alexander, MD

Department of Cardiology, Children's Hospital Boston and the Department of Pediatrics, Harvard Medical School, Boston, MA



**Figure 3.**

Syncope management algorithm. *POTS*, postural orthostatic tachycardia syndrome; *WPW*, Wolff-Parkinson-White.

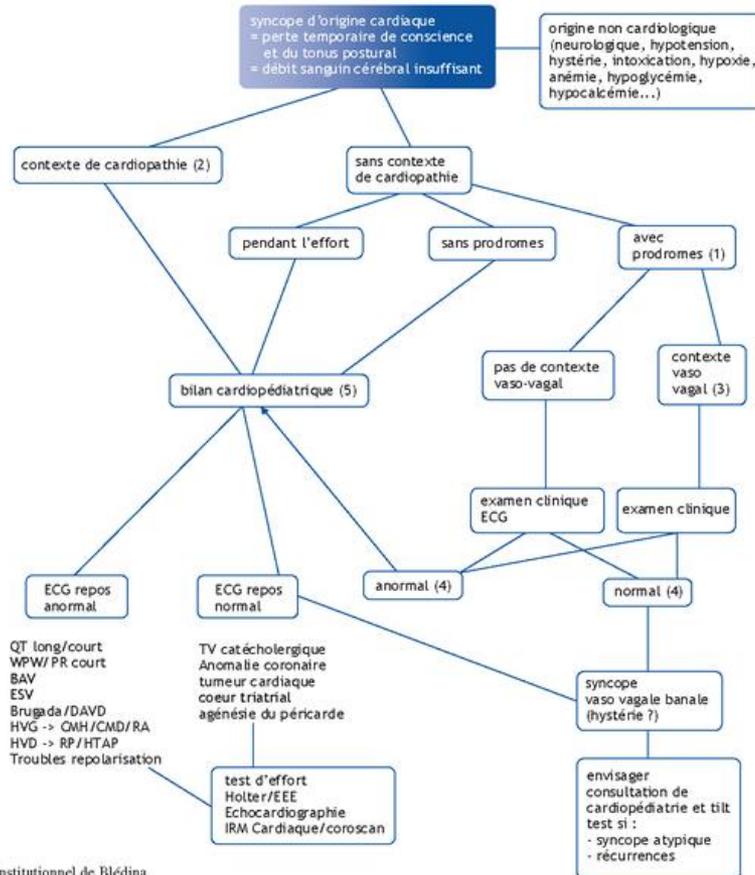
# Comment procéder devant une syncope de l'enfant?

## A. Chantepie

Service de Pédiatrie A, Pôle de Médecine Pédiatrique, Université F. Rabelais,  
Hôpital Clocheville, 49 boulevard Béranger, 37044 TOURS cedex

### ■ Abréviations

BAV : bloc auriculoventriculaire  
 CMD : cardiomyopathie dilatée  
 CMH : cardiomyopathie hypertrophique  
 DAVD : dysplasie arythmogène du ventricule droit  
 EEE : exploration électrophysiologique endocavitaire  
 ESV : extrasystoles ventriculaires  
 HTAP : hypertension artérielle pulmonaire  
 HVD : hypertrophie ventriculaire droite  
 HVG : hypertrophie ventriculaire gauche  
 RA : rétrécissement aortique  
 RP : rétrécissement pulmonaire  
 TV : tachycardie ventriculaire  
 WPW : syndrome de Wolf parkinson White.



# Peut-on s'aider de scores?



## Guidelines for the diagnosis and management of syncope (version 2009)

The Task Force for the Diagnosis and Management of Syncope of the European Society of Cardiology (ESC)

Developed in collaboration with, European Heart Rhythm Association (EHRA)<sup>1</sup>, Heart Failure Association (HFA)<sup>2</sup>, and Heart Rhythm Society (HRS)<sup>3</sup>

**Table 8** Risk stratification at initial evaluation in prospective population studies including a validation cohort

Study	Risk factors	Score	Endpoints	Results (validation cohort)
<b>S. Francisco Syncope Rule<sup>44</sup></b>	-Abnormal ECG -Congestive heart failure -Shortness of breath -Haematocrit <30% -Systolic blood pressure <90 mmHg	No risk = 0 item Risk = ≥1 item	Serious events at 7 days	98% sensitive and 56% specific
<b>Martin et al.<sup>40</sup></b>	-Abnormal ECG -History of ventricular arrhythmia -History of congestive heart failure -Age >45 years	0 to 4 (1 point each item)	1-year severe arrhythmias or arrhythmic death	0% score 0 5% score 1 16% score 2 27% score 3 or 4
<b>OESIL score<sup>41</sup></b>	-Abnormal ECG -History of cardiovascular disease -Lack of prodrome -Age >65 years	0 to 4 (1 point each item)	1-year total mortality	0% score 0 0.6% score 1 14% score 2 29% score 3 53% score 4
<b>EGSYS score<sup>42</sup></b>	-Palpitations before syncope (+4) -Abnormal ECG and/or heart disease (+3) -Syncope during effort (+3) -Syncope while supine (+2) -Autonomic prodrome <sup>a</sup> (-1) -Predisposing and/or precipitating factors <sup>b</sup> (-1)	Sum of + and - points	2-year total mortality  ..... Cardiac syncope probability	2% score <3 21% score ≥3  ..... 2% score <3 13% score 3 33% score 4 77% score >4

This table shows several different studies that have analysed the impact of different clinical data on the follow-up of patients presenting with syncope. Overall, the presence of abnormal ECG, increased age, or data suggestive of heart disease imply a worse prognosis at 1–2 year follow-up

<sup>a</sup>Nausea/vomiting

<sup>b</sup>Warm-crowded place/ prolonged orthostasis/fear-pain-emotion.

ECG = electrocardiogram

# Conclusion

## Evaluation du patient

- Interrogatoire exhaustif
- Examen clinique précis
- Electrocardiogramme

## Avis spécialisé dans certaines circonstances

### “ *Point fort* ”

#### **Circonstances évocatrices d'une cause grave de syncope devant lesquelles des explorations complémentaires sont nécessaires**

- Antécédents familiaux de mort subite inexplicée (canalopathie, CMH).
- Antécédents de chirurgie cardiaque (troubles du rythme).
- Syncope survenue au cours d'un effort physique (causes mécaniques, tachycardie ventriculaire catécholergique).
- Syncope survenue en milieu aquatique (syndrome du QT long de type 1).
- Syncope précédée d'un accès de palpitations ou d'une douleur thoracique.
- Syncope associée à une anomalie de l'ECG.