

L'ECG e la visita nella certificazione per l'idoneità sportiva non agonistica: quando e perché

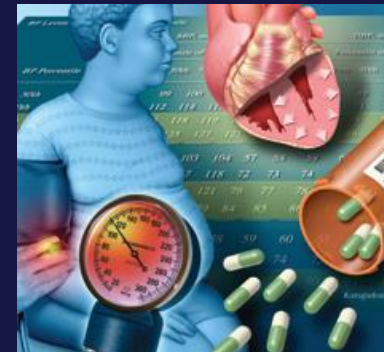
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Paidos 15 marzo 2014



Decreto del Fare: certificati medici per attività sportiva

Guida alle semplificazioni del decreto legge del Fare



Legge 9 agosto 2013 n.98



SEMPLIFICAITALIA

Per lo svolgimento di attività sportiva di tipo "ludico motoria amatoriale" è obbligatoria la certificazione dell'idoneità fisica?

No: il cosiddetto "Decreto del Fare" ha stabilito che, dal 21 agosto 2013, **non deve più essere presentato il certificato per le attività ludico-motorie e amatoriali**, mentre rimane l'obbligo di certificazione per le attività sportive non agonistiche presso il medico di base. Il Ministero della Salute in una nota alla Federazione Italiana Medici di Famiglia conferma l'abolizione dei certificati per attività ludico-amatoriale e dei previsti accertamenti diagnostici richiesti dalla normativa abrogata.

❑ Rimane l'obbligo della certificazione per l'attività sportiva non agonistica che si intende solo riferita ad attività promosse da Federazioni nazionali collegate al

Coni. L'esecuzione di ulteriori accertamenti, come l'ecg, **rimane alla discrezionalità professionale del medico certificatore.**

❑ NON deve presentare il certificato di idoneità fisica chi pratica attività sportiva ludico-ricreativa o amatoriale(es. fitness ed altre attività in palestra, nuoto in piscina, danza, attività motorie nelle scuole materne ed elementari, ginnastica formativa in età pediatrica, ecc).

❑ Deve presentare il certificato di idoneità fisica chi pratica attività sportiva non agonistica (attività svolta esclusivamente come tesserati di Federazioni sportive affiliate al Coni o agli Enti di promozione sportiva, finalizzata a partecipare a campionati e gare ufficiali, compresi i Giochi della Gioventù) e chi pratica attività sportiva agonistica. www.cardiologiapediatricact.com

Come si è arrivati a fare tanta confusione?



Assemini, muore un bambino di 11 anni colto da malore durante un giro in bici



La tragedia nel pomeriggio di domenica ad Assemini: il bambino è morto in ospedale.

Una passeggiata in bicicletta si è trasformata in tragedia domenica pomeriggio ad Assemini: un bambino di 11 anni, Simone Piano, è morto a causa di un infarto arrivato al termine di un attacco di aritmia cardiaca. Il bambino si è sentito male ed è stato accompagnato dall'ambulanza del 118 all'ospedale Santissima Trinità. Qui le condizioni ragazzino, che tra nemmeno un mese avrebbe compiuto 12 anni, sono peggiorate: i medici della struttura cagliaritana hanno cercato di rianimarlo, purtroppo senza riuscirci. L'aritmia che ha causato l'infarto sarebbe legata a una malformazione congenita.

Lunedì 26 agosto 2013 07:16

Articoli Correlati

TG VIDEOLINA LA TRAGEDIA DI ASSEMINI

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Genova, malore al corso di danza muore all'improvviso a 16 anni

Una ragazza si è sentita male sabato sera, inutili i soccorsi





Il teatro parrocchiale di via Ayroli dove Martina B. stava provando (Ansa/Zennaro)




Martina B., una ragazza di 16 anni, ha accusato un malore durante le prove di uno spettacolo di danza in un teatro parrocchiale di Genova, in via Ayroli (nel quartiere di San Fruttuoso) ed è morta senza più riprendersi nonostante la rapidità dei soccorsi. Al momento del malore la sua accademia di danza stava preparando uno




spettacolo destinato ad andare anche in tv.

LA MORTE - I testimoni riferiscono che sabato sera la giovane




 Commenti dei lettori 8


106

3

22


 Mi piace
 
+1

 Tweet

OGGI IN **cronache** >

A 90 anni sposa la badante di 45 e poi muore
 I figli dell'uomo: «È stato un omicidio»

Il Piemonte come il Klondike

Choc per la morte di un dodicenne

Alberto Parodi



Inutili i soccorsi della Croce Rossa di Varazze con il 118

la sua breve vita è finita. I soccorritori hanno provato di tutto, si sono sfiancati per più di un'ora ieri sera poco dopo le 20, poi stremati si sono rassegnati anche loro alla tragica evidenza. Il cuoricino del ragazzino di 12 anni non ha più ripreso a battere. L'arresto cardiaco, favorito da un quadro clinico già compromesso da altri gravi problemi di salute, è stato la causa del decesso, in casa. **Choc a Varazze** ieri sera in via Garibaldi per il tremendo lutto che ha colpito i familiari.

Mentre i soccorritori del 118 arrivati con l'automedicale con a bordo medico e infermiere,

Comunicato stampa Roma, 8 aprile 2013

«Morte “improvvisa” giovanile: lo screening elettrocardiografico può salvare la vita»

Iniziativa nelle scuole del territorio dell’Ospedale Pediatrico Bambino Gesù di Palidoro

Viene chiamata “morte improvvisa” in età pediatrica, perché colpisce bambini apparentemente sani: circa 5 pazienti all’anno su 100.000?

Si manifesta nel 10-15% dei casi durante l’attività fisica, e nel 90% dei casi è riconducibile a cause cardiache che potrebbero essere individuate preventivamente attraverso un semplice? elettrocardiogramma.

www.cardiologiapediatricact.com



- Lunedì 22 Aprile 2013 - **Parte a Marsala il progetto contro la morte "improvvisa" giovanile**

Morte cardiaca improvvisa.

Ogni anno muoiono mille giovani

- Sono giovani e apparentemente sani. Eppure muoiono per morte cardiaca improvvisa. Un evento drammatico che colpisce ogni anno oltre mille under 35. Una morte causata da difetti congeniti e malattie genetiche che potrebbero essere scoperti **con un semplice Ecg....** Per questo parte la campagna “Ascolta il battito.
- **Un ECG può salvare la vita” promossa dalla Società Italiana di Cardiologia (Sic) e dalla Fondazione Italiana Cuore e Circolazione-Onlus con il patrocinio del Miur. La campagna che ha ricevuto il via libera dal Segretariato sociale Rai nell’ambito di trasmissioni televisive e radiofoniche Rai, punta a raccogliere fondi con sms solidali.**
- **Obiettivo: realizzare il progetto “A scuola di cuore” che attraverso screening cardiovascolari ed Ecg agli studenti tra i 16 e i 18 anni delle scuole secondarie, punta a individuare i soggetti a rischio e a confermare la diagnosi anche con test genetici.**



MA..... UNA MORTE
IMPROVVISA CARDIACA (SCD)
E' ANCHE SEMPRE
INASPETTATA O, ALMENO IN
ALCUNI CASI, PUO' ESSERE
PREVISTA???

Mandatory Electrocardiographic Screening of Athletes to Reduce Their Risk for Sudden Death

Proven Fact or Wishful Thinking?

- **Objectives** The purpose of this study was to determine if pre-participation screening of athletes with a strategy including resting and exercise electrocardiography (ECG) reduces their risk for sudden death.
- **Results** There were 24 documented events of sudden death or cardiac arrest events among competitive athletes during the years 1985 through 2009. Eleven occurred before the 1997 legislation and 13 occurred after it. The average yearly incidence of sudden death or cardiac arrest events was 2.6 events per 100,000 athlete-years. The respective averaged yearly incidence during the decade before and the decade after the 1997 legislation was 2.54 and 2.66 events per 100,000 person years, respectively
- **Conclusions** The incidence of sudden death of athletes in our study is within the range reported by others. However, mandatory ECG screening of athletes had no apparent effect on their risk for cardiac arrest. (J Am Coll Cardiol 2011; 57:1291–6)

Le dimensioni del fenomeno

Incidence of Sudden Cardiac Death in Minnesota High School Athletes 1993–2012 Screened With a Standardized Pre-Participation Evaluation

William O. Roberts, MD, MS, Steven D. Stovitz, MD, MS

Minneapolis, Minnesota

JACC October 1, 2013:1298–301

Objectives

This study sought to determine the incidence of sudden cardiac death (SCD) during Minnesota State High School League (MSHSL) games and practices for high school (HS) athletes (12 to 19 years of age, with most age 15 to 18 years of age) using a uniform statewide pre-participation health screening examination (PPE) form every 3 years on a defined population across 19 academic years.

Results

There were 4 SCDs (2 cross country, 1 basketball, 1 wrestling), all male, during practice or games in 1,666,509 unduplicated athletes participating in ≥ 1 sports. The incidence of SCD in athletes screened every 3 years with a history and physical during MSHSL activities is 0.24 per 100,000 athlete-years over 19 years and 0.11 per 100,000 athlete-years over the past decade.

Conclusions

The incidence of SCD in athletes screened every 3 years with standard PPE during MSHSL activities is 0.24 per 100,000 athlete-years in 19 academic years. This incidence is much lower than that observed in studies of Division 1 National Collegiate Athletic Association and Italian athletes (ages 18 to 25 and mean age 24 years, respectively). Our data do not warrant screening HS athletes with electrocardiography to prevent SCD episodes. The decision to screen athletes with electrocardiography should consider age, training intensity, and genetic predisposition.

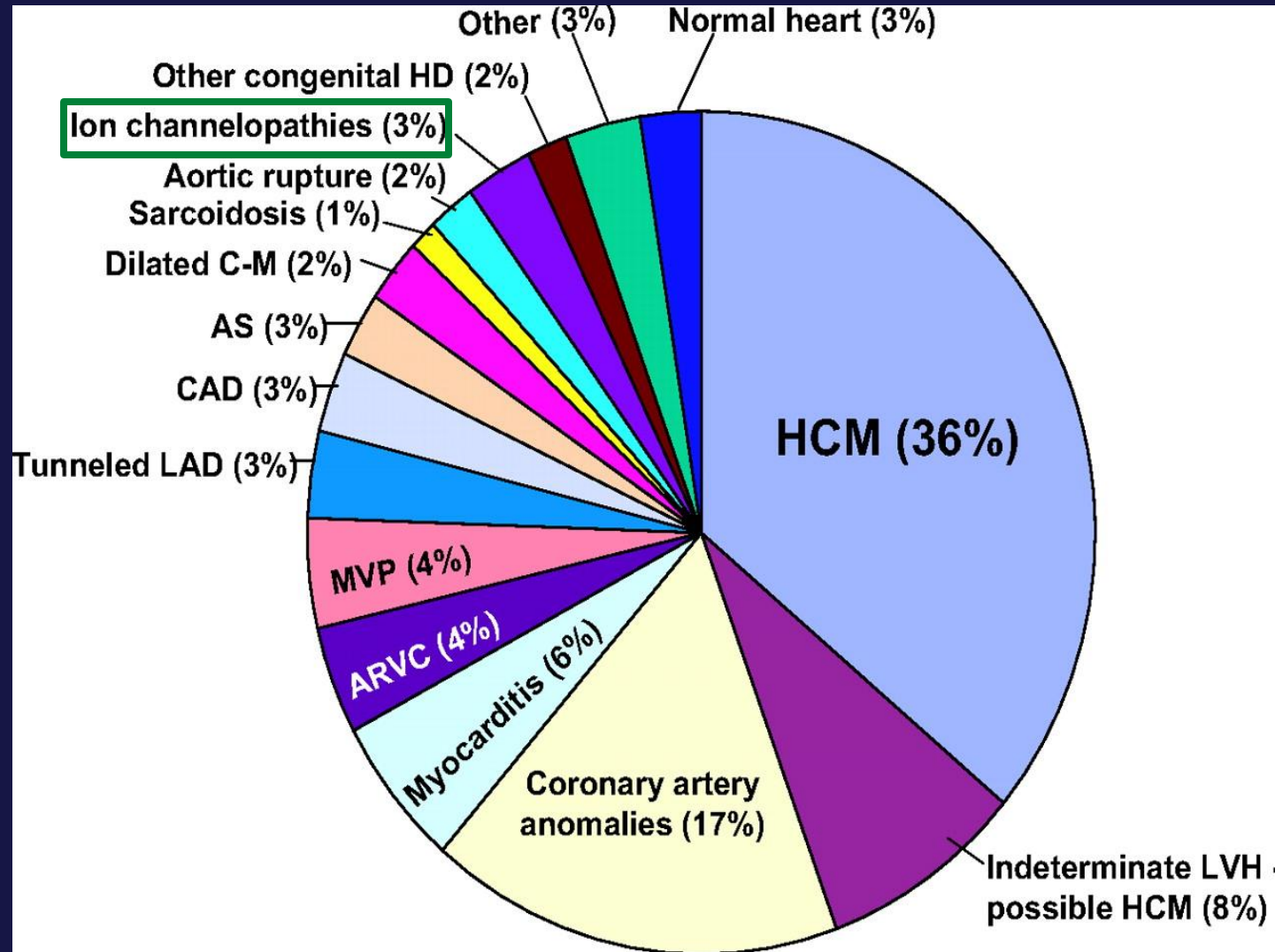
Le dimensioni del fenomeno

Table 1 Incidence of SCD in MSHSL Athletes Compared With Italian and NCAA Rates

	AY	No. of Cardiac Deaths	Incidence (/100,000 AY)	Relative Risk (Index MSHSL SCD Rate 1993–2012)
MSHSL 2003–2012	917,069	1	0.11	0.45
MSHSL 1993–2012	1,666,509	4	0.24	1.0
Italian 2001–2004 (2)	NA	2	0.43	1.8
Italian 1979–2004 (2)	2,938,730 (estimated)	55	1.90	7.9
Division 3 NCAA (3)	760,258	8	1.05	4.4
Division 2 NCAA (3)	424,572	10	2.38	9.9
Division 1 NCAA (3)	788,023	27	3.45	14.3
Italian pre-electrocardiography screening (1979–1981) (2)	NA	NA	3.60	15.0
NCAA black athletes (3)	NA	NA	8.33	34.7

AY = athlete-years; MSHSL = Minnesota State High School League; NA = not available; NCAA = National Collegiate Athletic Association; SCD = sudden cardiac death.

Quali sono le cause di SCD?



Distribuzione delle cause cardiovascolari di SCD in 1435 giovani atleti agonisti
From the Minneapolis Heart Institute Foundation Registry, 1980 to 2005.

Maron BJ et al. *Circ.* 2007

Due approcci diversi allo screening

1. Focalizzato solo su storia ed esame clinico, con ulteriori esami solo se identificati fattori di rischio
(U.S. approach)
1. Storia, esame clinico più ECG, con ulteriori esami se presenti anomalie
(Italian approach)

The Italian experience

- Pioneers of ECG screening for athletes
- They provide annual ECGs for all athletes ages 12-35
- They report dramatic reduction in SCD

SCD rate in athletes and non-athletes, Veneto, Italy, 1979-2004

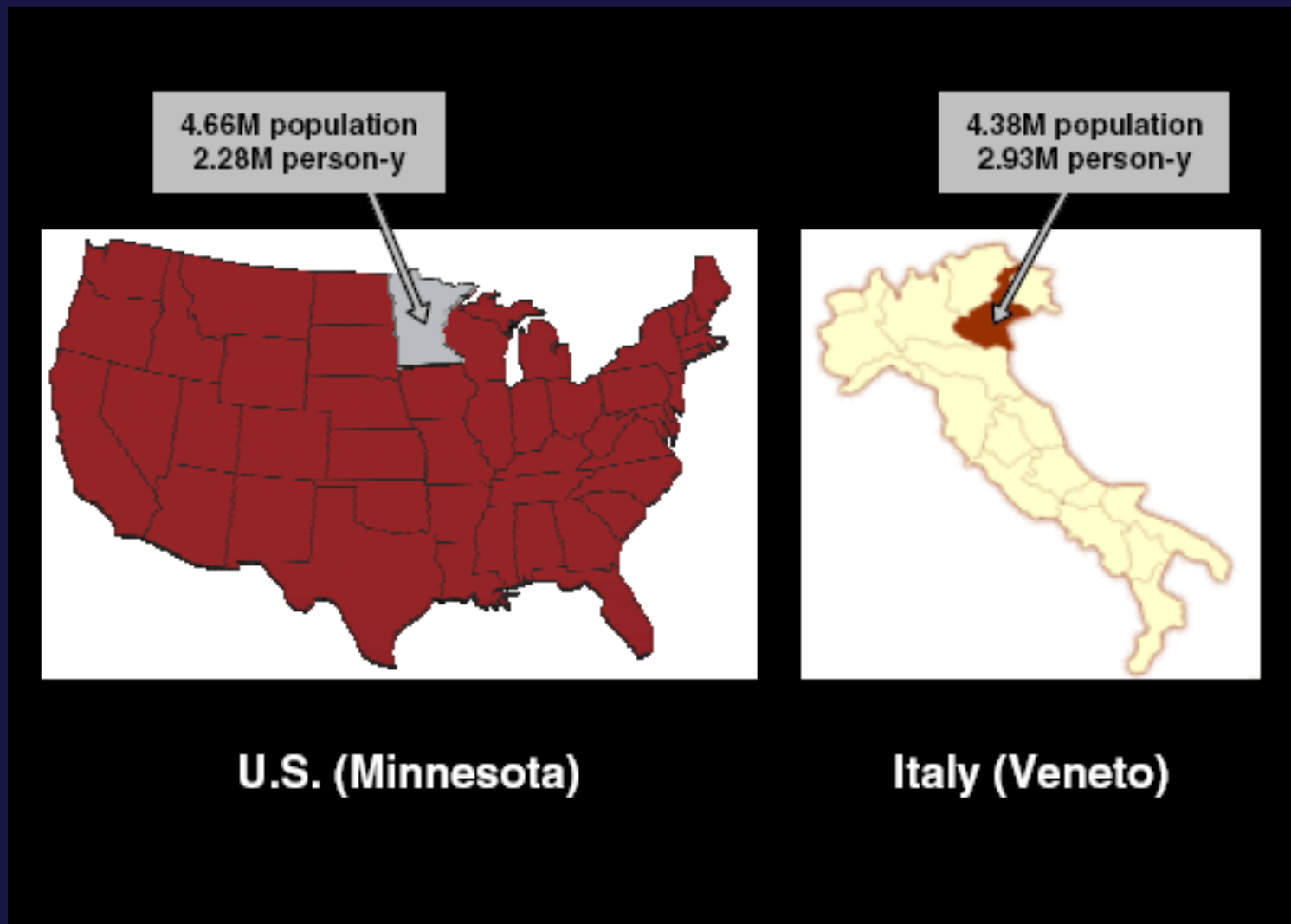


Corrado D. *JAMA*. 2006.

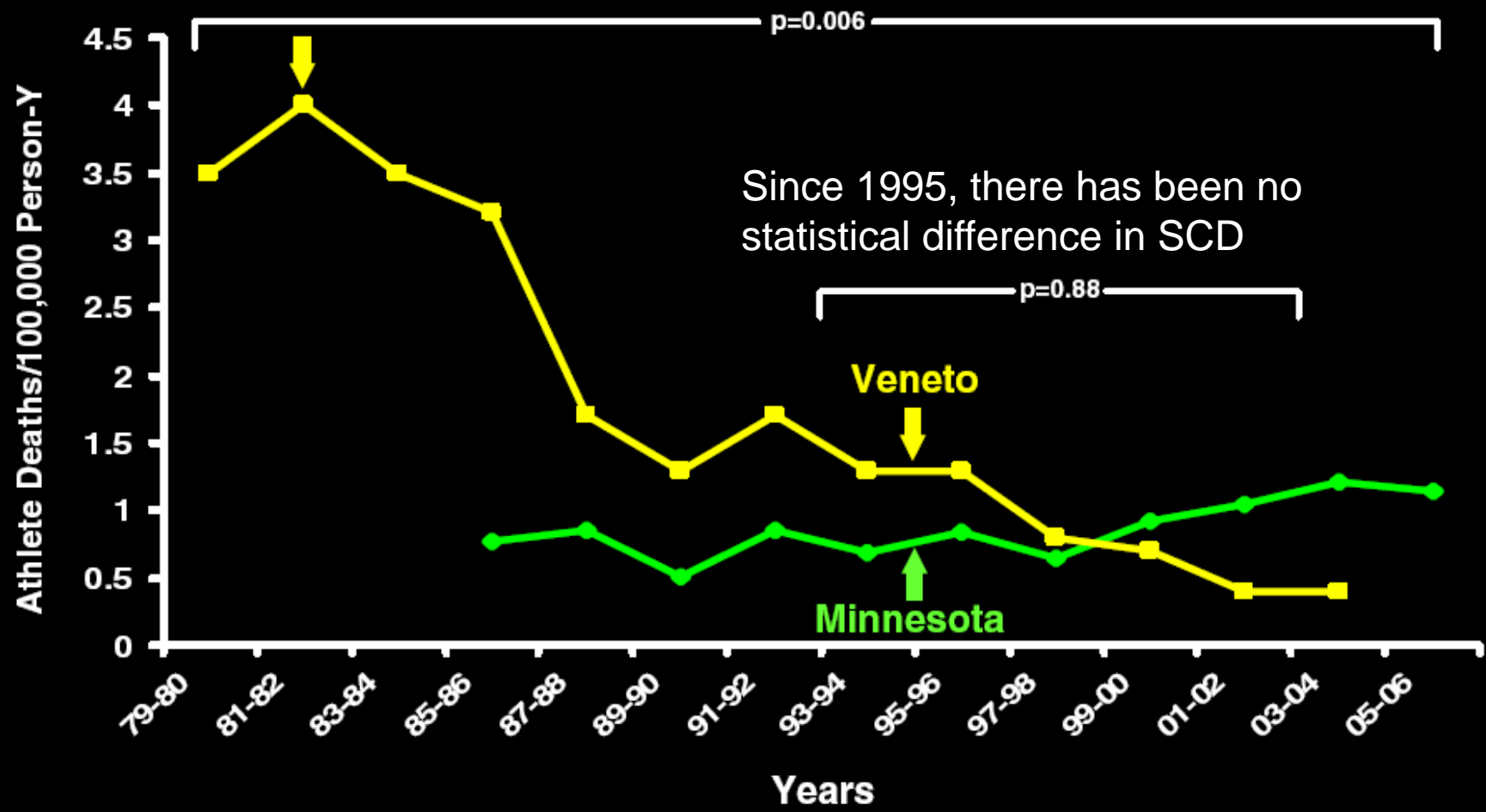
What about the USA?

- Maron et al compared SCD death rates in Minnesota with those reported in Veneto
- They found that, without ECG screening, SCD rates in MN were comparable to those in Italy with ECG screening

Veneto and Minnesota comparable in population and ethnicity



Trends in rates of SCD in MN and Veneto, 1979-2004



Maron et al. *Am J Card.* 2009.

Problematiche dello screening

Molti falsi positivi e falsi negativi

- Non tutte le morti possono essere previste
- Precludere la possibilità di fare sport a molte persone a basso o nullo rischio per SDC
- Ansietà per atleti con screening positivo
- Costi proibitivi
- Necessità di personale medico specifico
- *Freedom vs. paternalism*

- AHA recommends H&P, without routine ECG
- Present parents the facts
- Acknowledge uncertainty
- Ultimately, must be a shared, well-informed, and individualized decision

Is SCD preventable?

- The \$2 billion question!
- Some conditions that predispose to SCD can be picked up on sports screening, others cannot
- Screening programs are expensive
- Experts advocate different approaches

CONTROVERSIES IN CARDIOVASCULAR MEDICINE



Electrocardiograms Should Be Included in Preparticipation Screening of Athletes

Robert J. Myerburg, MD; Victoria L. Vetter, MD

Circulation 2007, 116

CONTROVERSIES IN CARDIOVASCULAR MEDICINE



Should an electrocardiogram be included in routine preparticipation screening of young athletes?

An Electrocardiogram Should Not Be Included in Routine Preparticipation Screening of Young Athletes

Bernard R. Chaitman, MD, FACC

Circulation 2007, 116

Segni e sintomi di allarme

- Benché un SCD può essere il primo sintomo di presentazione, spesso i pazienti a rischio per alterazioni funzionali o strutturali o per disordini elettrici primitivi manifestano sintomi premonitori.
- La presenza **di familiarità** per SCD e i **sintomi** sono utili per identificare i soggetti a rischio e impostare una prevenzione.

Segni e sintomi di allarme

Scand Cardiovasc J 2005;39(3):143-149

Studio su 162 casi (15-34 anni) con SCA autopsia neg:

IL 50% aveva storia di :

- Sincope
- Pre-sincope
- Dolore precordiale
- Palpitazioni
- Dispnea
- Il 16% aveva una storia familiare di SCD

Questionario anamnestico per attività sportiva suggerito dalla AAP 2010

1. Sei mai svenuto o sei mai stato sul punto di svenire DURANTE o DOPO l'esercizio fisico?
2. Hai mai avuto disturbi (es dolori, o senso di costrizione) al torace durante sforzo fisico?
3. Hai mai avvertito battiti irregolari (tachicardia improvvisa o battiti extra o mancanza di battito) durante esercizio fisico?
4. In qualche visita precedente qualche dottore ti ha mai detto che potresti avere qualche problema al cuore? (Pressione alta, colesterolo alto, soffi al cuore, infezione al cuore, malattia di Kawasaki?)
5. Qualcuno ti ha mai prescritto esami per il cuore? (es ECG di base o sotto sforzo, eco etc?)
6. Ti sei mai sentito stordito o hai mai avvertito respiro inaspettatamente corto durante esercizio (più dell'atteso per lo sforzo)?
7. Hai mai avuto convulsioni non spiegate dai medici?
8. Durante esercizio fisico, ti senti più stanco e avverti respiro corto prima dei tuoi amici?
9. C'è qualche parente deceduto prima dei 50 anni per problemi cardiaci accertati oppure per morte improvvisa inspiegata (incluso annegamenti, incidenti d'auto "da sonno", SIDS)?
10. Qualcuno in famiglia è affetto da: Cardiomiopatia Ipertrofica? Sindrome di Marfan? Cardiomiopatia Aritmogena del Ventricolo Destro? Sindrome del QT lungo? Sindrome del QT corto? Sindrome di Brugada? Tachicardia Ventricolare Polimorfa Catecolaminergica?
11. Qualcuno nella tua famiglia ha avuto problemi di cuore, ha avuto necessità di ricorrere ad impianto di Pace Maker o Defibrillatore cardiaco?
12. Qualcuno in famiglia ha avuto svenimenti inspiegati, convulsioni di natura non definita, o è stato sul punto di annegare? www.cardiologiapediatricact.com

EDITORIAL COMMENT

Minnesota High School Athletes 1993–2012

Evidence That American Screening
Strategies and Sideline Preparedness
Are Associated With Very Low Rates
of Sudden Cardiac Deaths*

Christine E. Lawless, MD, MBA

Chicago, Illinois

...returning to the ECG debate, it does not appear that an ECG screening would bring any added value here...to avoid unnecessary false-positive test results and unintended consequences.

The incidence of SCD is extremely low in MSHSL athletes, and there were, in fact, no deaths in the past 9 years of the study; it would be impossible to improve on that statistic by adding an ECG. The use of a standardized, regularly updated, and statewide approach to the PPE consistent with current guidelines may well be the key to the SCD rate. **The low MSHSL rate could also be, in part, due to the aggressive program to equip all HSs with automatic external defibrillators and to implement emergency action plans in all schools (MSHSL Anyone Can Save a Life Program).**

Vigor Bovolenta



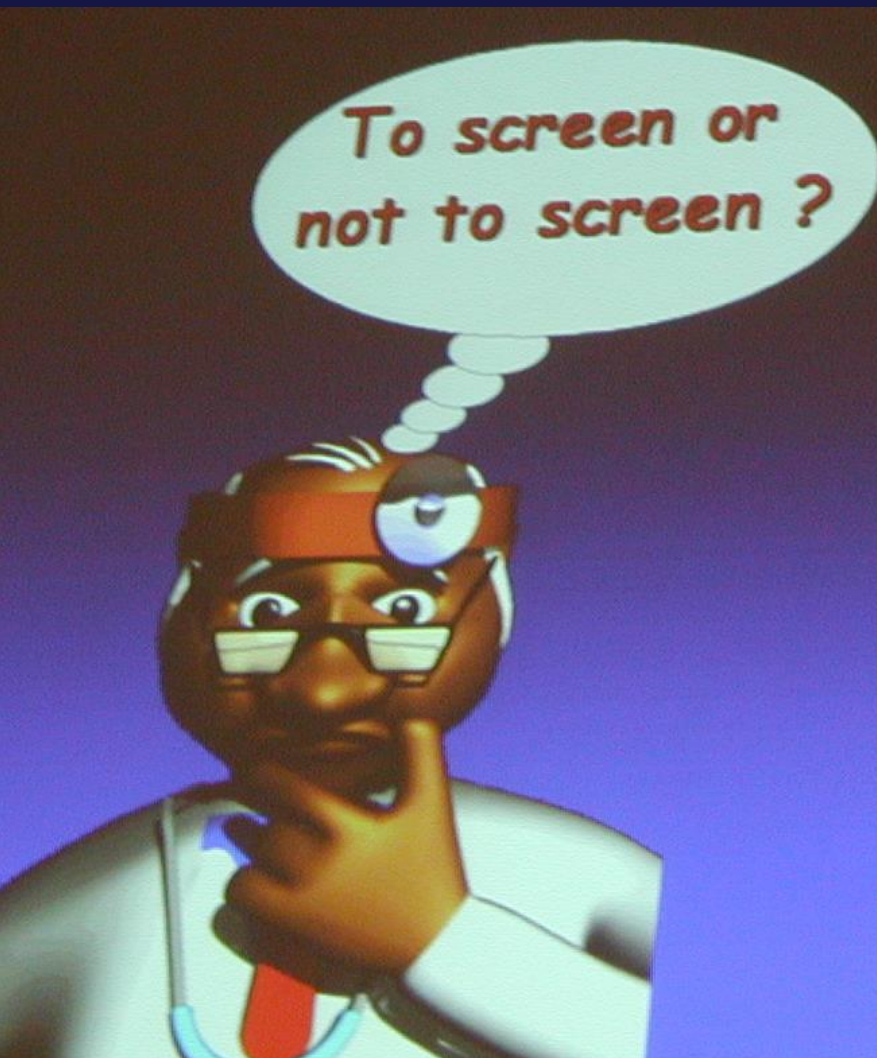


STABILIRE PRIORITA' OPERATIVE IN BASE A VARI FATTORI:

- CONTESTO LAVORATIVO
- EPIDEMIOLOGIA:
- GRAVITA'
- FREQUENZA
- PREVEDIBILITA'
- PREVENIBILITA'
- FATTIBILITA'
- SOSTENIBILITA'



Screening: esame sistematico condotto, con mezzi clinici o strumentali, in tutta la popolazione o in un suo sottogruppo, volto ad identificare o patologie in fase preclinica o indicatori di malattia o di situazioni di rischio.

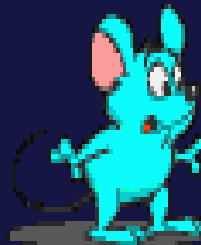


- Malattia importante
- Malattia frequente
- Disponibilità di terapia
- Disponibilità di conferme diagnostiche
- Diagnosticabile in fase presintomatica
- Test sicuro (assenza di rischi)
- Accettabile
- Appropriato
- Affidabile
- Valido
- Costo proporzionato ai benefici attesi

Attenzione agli screening:

Effettuare uno screening inutile è non solo uno spreco di risorse, ma, spesso, anche un intervento improprio i cui effetti collaterali possono superare di gran lunga i benefici.

La “Diagnosi precoce” di D. Baronciani, R. Buzzetti, R. Bellù.
Ed. UTET



Aiuto!!! Mi vogliono fare uno screening



Amministrazione

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Sabato 17 Agosto 2013

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14/05/2013
Screening cardiologico per i bambini delle prime elementari del Q.2. Su 338 controlli 31 cardiopatie congenite
Il presidente Paolucci: "L'obiettivo è prevenire ed educare alla salute"

Screening cardiologico per i bambini della prima elementare del Quartiere 2. Un modo per prevenire ed educare alla salute fin da piccoli. Il progetto si chiama "Nel cuore nella scuola" e nasce dalla collaborazione del Quartiere 2 con l'Università degli studi di Firenze e l'Azienda Ospedaliera Universitaria Careggi. I bambini controllati (l'iniziativa è partita a febbraio e terminerà alla fine di maggio) fino ad oggi sono circa 340 su 650 iscritti alla prima elementare. Sono state riscontrate 31 cardiopatie congenite lievi e asintomatiche, 20 i bambini in sovrappeso. Il punto sul progetto è

Mentre nel resto del mondo???



Choosing Wisely is focused on encouraging physicians, patients and other health care stakeholders to think and talk **about medical tests and procedures that may be unnecessary, and in some instances can cause harm.**

American Academy of Neurology ▶

American Academy of Ophthalmology ▶

American Academy of Orthopaedic Surgeons ▶

American Academy of Otolaryngology – Head and Neck Surgery ▶

American Academy of Pediatrics ▼

American Academy
of Pediatrics



DEDICATED TO THE HEALTH OF ALL CHILDREN™

The American Academy of Pediatrics (AAP) is a strong supporter of partnerships that improve the quality of care for patients. The *Choosing Wisely*® campaign helps to raise

awareness of the need to evaluate tests and treatments thoughtfully. This is particularly important when treating children because they are still growing and developing. The AAP believes that health care for children, in addition to being delivered in a patient-centered medical home, should be evidence-based or informed, efficient and based on quality improvement measures relevant to the pediatric population. The AAP also encourages patient and family engagement in promoting their child's well-being. These hallmarks of the patient-centered medical home are integral to the *Choosing Wisely* campaign.

FEATURE

MEDICALISATION

Preventing overdiagnosis: how to stop harming the healthy

Concern about overdiagnosis does not preclude awareness that many people miss out on much needed healthcare. On the contrary, resources wasted on unnecessary care can be much better spent treating and preventing genuine illness. The challenge is to work out which is which, and to produce and disseminate evidence to help us all make more informed decisions about when a diagnosis might do us more good than harm.

EDITOR'S CHOICE

Preventing overdiagnosis

Fiona Godlee *editor, BMJ*

Yudkin points the finger firmly at the drug industry as probably “the sole beneficiary” of this state of affairs. Moynihan and colleagues spread the blame more widely. They see a mixture of commercial and professional vested interests, legal incentives, and a fixed cultural belief in the merits of early detection.

Overdiagnosis: la faccia oscura del progresso tecnologico?

Antonino Cartabellotta^{1*}

Oggi si parla di *overdiagnosis* quando in soggetti asintomatici viene diagnosticata una malattia che non sarà mai sintomatica, né causa di mortalità precoce. Nel senso più ampio del termine, l'*overdiagnosis* include tutte quelle situazioni che contribuiscono a etichettare come malate le persone sane, con problemi lievi e/o a basso rischio: eccesso di medicalizzazione, interventi terapeutici non necessari (*overtreatment*), modifica delle soglie diagnostiche delle malattie, invenzione di nuove entità patologiche (*disease mongering*). La faccia oscura della luna è popolata da tutte le conseguenze negative di essere "etichettati" come malati (*labeling effect*), dai rischi legati a test diagnostici e trattamenti non necessari, dallo spreco di risorse economiche che potrebbero essere utilizzate in maniera più appropriata.

Driver dell'overdiagnosis



- *Evoluzione delle tecnologie diagnostiche che consentono di identificare “**anomalie**” anche minime*
 - *Interessi commerciali e professionali (**lobbies**)*
 - *Gruppi di esperti in palese **conflitto di interessi** che espandono continuamente le definizioni di malattia e definiscono nuove entità patologiche*
 - *Orientamento dell'autorità giudiziaria a condannare l'underdiagnosis, ma **mai** l'overdiagnosis*
 - *Sistemi sanitari che incentivano la medicalizzazione per.....*
- *Percezione socio-culturale che “**more is better**”*



Pulse oximetry screening for critical congenital heart defects in asymptomatic newborn babies: a systematic review and meta-analysis

Lancet 2012; 379: 2459-64

Shakila Thangaratinam, Kiritrea Brown, Javier Zamora, Khalid S Khan, Andrew K Ewer

Summary

Background Screening for critical congenital heart defects in newborn babies can aid in early recognition, with the prospect of improved outcome. We assessed the performance of pulse oximetry as a screening method for the detection of critical congenital heart defects in asymptomatic newborn babies.

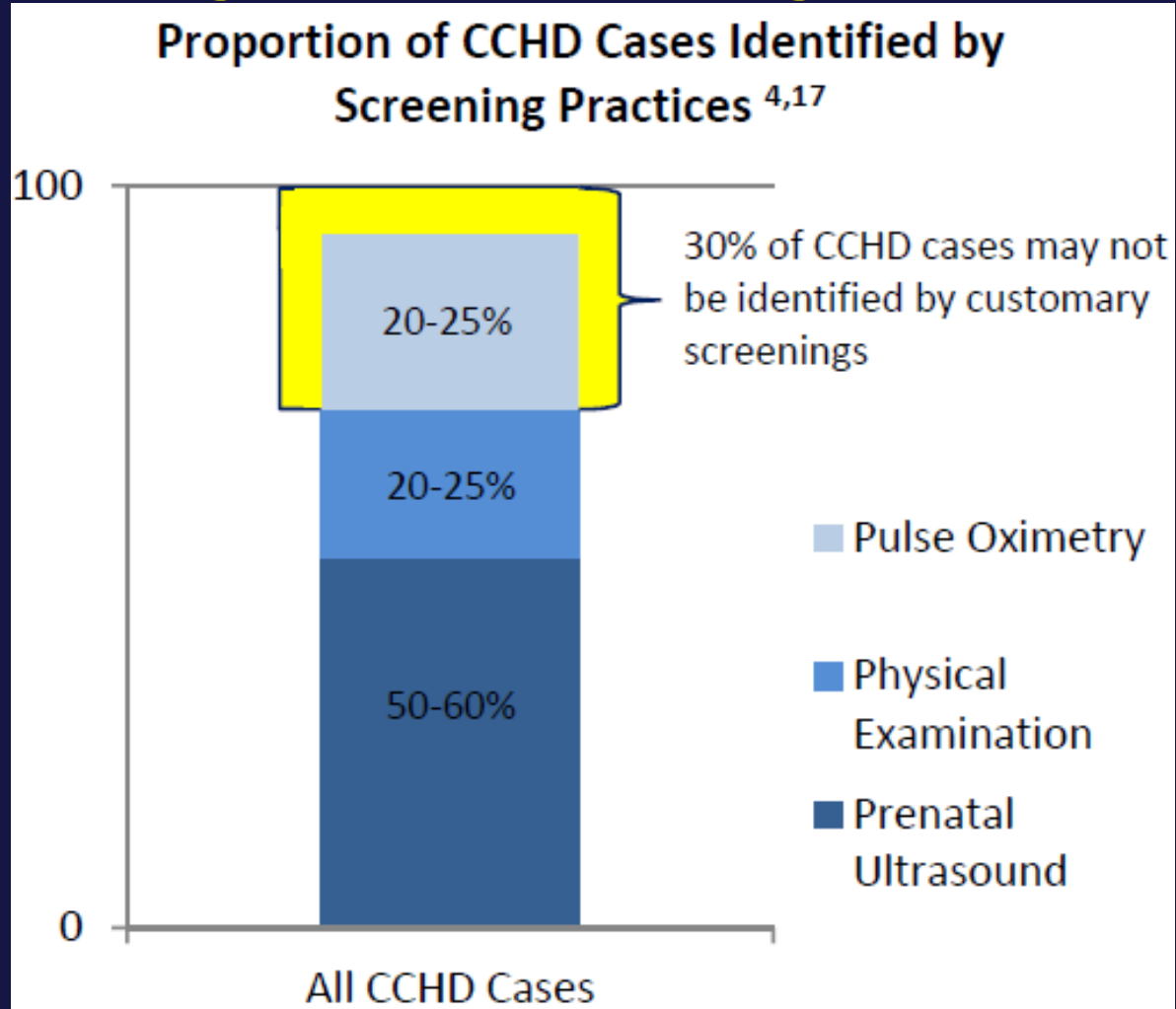
Methods In this systematic review, we searched Medline (1951–2011), Embase (1974–2011), Cochrane Library (2011), and Scisearch (1974–2011) for relevant citations with no language restriction. We selected studies that assessed the accuracy of pulse oximetry for the detection of critical congenital heart defects in asymptomatic newborn babies. Two reviewers selected studies that met the predefined criteria for population, tests, and outcomes. We calculated sensitivity, specificity, and corresponding 95% CIs for individual studies. A hierarchical receiver operating characteristic curve was fitted to generate summary estimates of sensitivity and specificity with a random effects model.

Findings We screened 552 studies and identified 13 eligible studies with data for 229 421 newborn babies. The overall sensitivity of pulse oximetry for detection of critical congenital heart defects was 76·5% (95% CI 67·7–83·5). The specificity was 99·9% (99·7–99·9), with a false-positive rate of 0·14% (0·06–0·33). The false-positive rate for detection of critical congenital heart defects was particularly low when newborn pulse oximetry was done after 24 h from birth than when it was done before 24 h (0·05% [0·02–0·12] vs 0·50 [0·29–0·86]; $p=0·0017$).

Interpretation Pulse oximetry is highly specific for detection of critical congenital heart defects with moderate sensitivity, that meets criteria for universal screening.



The American Heart Association (AHA), the American Academy of Pediatrics (AAP), and the American College of Cardiology Foundation (ACCF) outlined recommendations for a standardized pulse oximetry screening approach and diagnostic follow-up



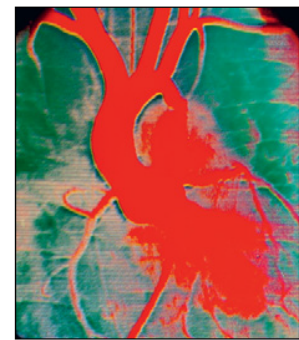
The Lancet 30 June 2012

A new milestone in the history of congenital heart disease

Andrew Ewer and colleagues' meta-analysis of pulse oximetry screening for critical congenital heart defects in this week's issue presents some good news. Here is a cheap and readily available—at least in developed countries—screening tool with good specificity, very high sensitivity, and a low false-positive rate, especially when used 24 h after birth. Good news is welcome in the area of congenital heart disease, where progress has been patchy at best. Since the first open heart corrections of congenital heart defects almost 60 years ago, slow and steady improvements in outcomes from surgical and catheter-based interventions have been interspersed with scandals about systemic failures and surgical inadequacy in some units. Many countries, including the UK, are reviewing their provision of paediatric

hypoplastic left heart syndrome, but also to advance the possibility of intrauterine interventions that might halt or even reverse progression of lesions that become more severe throughout pregnancy. But not all countries have good coverage of fetal ultrasound screening and some of the critical congenital lesions, such as transposition of the great arteries, are difficult to visualise and diagnose by this technique. Pulse oximetry, especially when done in both preductal and postductal position (right hand and right or left foot), has the potential to pick up these duct-dependent lesions that are causing hypoxaemia.

In August, 2011, New Jersey in the USA became the first state to introduce pulse oximetry screening for critical congenital heart disease. A screening algorithm



See [Comment](#) page 2407

See [Articles](#) page 2459

- According to these recommendations, screening should be performed on asymptomatic newborns after 24 hours of life in order to avoid false-positive results.
- When pulse oximetry screening identifies newborns with low blood oxygen levels, echocardiography can be used to definitively diagnose heart defects.
- **The AHA/AAP/ACCF recommendations emphasize that echocardiograms should be interpreted by pediatric cardiologists.**

Vantaggi dello screening della saturazione:

- Costo molto basso
- Nessun rischio
- Ottima specificità (0,03% di falsi positivi)
- Buona sensibilità

Ma in Italia, sebbene sia raccomandato dalla AAP, sono ancora centinaia i punti nascita in cui non viene eseguita come i PDF ben sanno...

De sexu angelorum?



Eur J Pediatr

DOI 10.1007/s00431-013-2064-x

REVIEW

Sports preparticipation cardiac screening: what about children?

Daniel De Wolf · Dirk Matthys

Received: 5 May 2013 / Accepted: 5 June 2013

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“Sufficient data are lacking to support general preparticipation screening with history, physical exam, and ECG in competitive children”.

Sudden Cardiac Death in Young Athletes



The Basic Facts on Sudden Cardiac Death in Young Athletes

American Academy of Pediatrics
 DEDICATED TO THE HEALTH OF ALL CHILDREN™



New Jersey Chapter

American Heart Association



Learn and Live

SUDDEN CARDIAC DEATH IN YOUNG ATHLETES

Sudden death in young athletes between the ages of 10 and 19 is very rare. What, if anything, can be done to prevent this kind of tragedy?

What is sudden cardiac death in the young athlete?

Sudden cardiac death is the result of an unexpected failure of proper heart function, usually (about 60% of the time) during or immediately after exercise *without trauma*. Since the heart stops pumping adequately, the athlete quickly collapses, loses consciousness, and ultimately dies unless normal heart rhythm is restored using an automated external defibrillator (AED).

How common is sudden death in young athletes?

Sudden cardiac death in young athletes is very rare. About 100 such deaths are reported in the United States per year. The chance of sudden death occurring to any individual high school athlete is about one in 200,000 per year.

Sudden cardiac death is more common: in males than in females; in football and basketball than in other sports; and in African-Americans than in other races and ethnic groups.

What are the most common causes?

Research suggests that the main cause is a loss of proper heart rhythm, causing the heart to quiver instead of pumping

blood to the brain and body. This is called *ventricular fibrillation* (*ven-TRICK-you-lar fib-roo-LAY-shun*). The problem is usually caused by one of several cardiovascular abnormalities and electrical diseases of the heart that go unnoticed in healthy-appearing athletes.

The most common cause of sudden death in an athlete is *hypertrophic cardiomyopathy* (*hi-per-TRO-fic CAR-dee-oh-my-OP-a-thee*) also called HCM. HCM is a disease of the heart, with abnormal thickening of the heart muscle, which can cause serious heart rhythm problems and blockages to blood flow. This genetic disease runs in families and usually develops gradually over many years.

The second most likely cause is *congenital* (*con-JEN-it-al*) (i.e., present from birth) *abnormalities of the coronary arteries*. This means that these blood vessels are connected to the main blood vessel of the heart in an abnormal way. This differs from blockages that may occur when people get older (commonly called "coronary artery disease," which may lead to a heart attack).

Other diseases of the heart that can lead to sudden death in young people include:

- *Myocarditis* (*my-oh-car-DIE-tis*), an acute inflammation of the heart muscle (usually due to a virus).

- *Dilated cardiomyopathy*, an enlargement of the heart for unknown reasons.

- *Long QT syndrome* and other electrical abnormalities of the heart which cause abnormal fast heart rhythms that can also run in families.



- *Marfan syndrome*, an inherited disorder that affects heart valves, walls of major arteries, eyes and the skeleton. It is generally seen in unusually tall athletes, especially if being tall is not common in other family members.

Are there warning signs to watch for?

In more than a third of these sudden cardiac deaths, there were warning signs that were not reported or taken seriously. Warning signs are:

- Fainting, a seizure or convulsions during physical activity
- Fainting or a seizure from emotional excitement, emotional distress or being startled
- Dizziness or lightheadedness, especially during exertion
- Chest pains, at rest or during exertion

- Palpitations - awareness of the heart beating unusually (skipping, irregular or extra beats) during athletics or during cool down periods after athletic participation

- Fatigue or tiring more quickly than peers
- Being unable to keep up with friends due to shortness of breath

What are the current recommendations for screening young athletes?

New Jersey requires all school athletes to be examined by their primary care physician ("medical home") or school physician at least once per year. The New Jersey Department of Education requires use of the specific Annual Athletic Pre-Participation Physical Examination Form.

This process begins with the parents and student-athletes answering questions about *symptoms* during exercise (such as chest pain, dizziness, fainting, palpitations or shortness of breath); and questions about *family health history*.

The primary healthcare provider needs to know if any family member died suddenly during physical activity or during a seizure. They also need to know if anyone in the family under the age of 50 had an unexplained sudden death such as drowning or car accidents. This information must be provided annually for



each exam because it is so *essential to identify those at risk for sudden cardiac death*.

The required physical exam includes measurement of blood pressure and a careful listening examination of the heart, especially for murmurs and rhythm abnormalities. If there are no warning signs reported on the health history and no abnormalities discovered on exam, no further evaluation or testing is recommended.



When should a student athlete see a heart specialist?

If the primary healthcare provider or school physician has concerns, a referral to a child heart specialist, a pediatric cardiologist, is recommended. This specialist will perform a more thorough evaluation, including an electrocardiogram (ECG), which is a graph of the electrical activity of the heart. An echocardiogram, which is an ultrasound test to allow for direct visualization of the heart structure, will likely also be done. The specialist may also order a treadmill exercise test and a monitor to enable a longer recording of the heart rhythm. None of the testing is invasive or uncomfortable.

Can sudden cardiac death be prevented just through proper screening?

A proper evaluation should find most, but not all, conditions that would cause sudden death in the athlete. This is because some diseases are difficult to uncover and may only develop later in life. Others can develop following a normal screening evaluation, such as an infection of the heart muscle from a virus.

This is why screening evaluations and a review of the family health history need to be performed on a yearly basis by the athlete's primary healthcare provider. With proper screening and evaluation, most cases can be identified and prevented.

Why have an AED on site during sporting events?

The only effective treatment for ventricular fibrillation is immediate use of an automated external defibrillator (AED). An AED can restore the heart back into a normal rhythm. An AED is also life-saving for ventricular fibrillation caused by a blow to the chest over the heart (commotio cordis).

The American Academy of Pediatrics/New Jersey Chapter recommends that schools:

- Have an AED available at every sports event (three minutes total time to reach and return with the AED)
- Have personnel available who are trained in AED use present at practices and games.
- Have coaches and athletic trainers trained in basic life support techniques (CPR)
- Call 911 immediately while someone is retrieving the AED.

- **E' possibile giungere ad una sintesi???**

AHA Science Advisory

Key Concepts in the Evaluation of Screening Approaches for Heart Disease in Children and Adolescents A Science Advisory From the American Heart Association

...Conclusion



in “Recommendations and Considerations Related to Preparticipation Screening for Cardiovascular Abnormalities in Competitive Athletes: 2007 Update: A Scientific Statement From the American Heart Association Council on Nutrition, Physical Activity, and Metabolism.”³ That panel emphasized the importance of risk assessment with questionnaires and physical examination but did “not believe it to be either prudent or practical to recommend the routine use of tests such as 12-lead ECG or echocardiography in the context of mass, universal screening.”

Circulation. 2012



Grazie per l'attenzione!!!