

Toxoplasma Gondii

Supplerende dokumentation ifm. foretræder og fremlæggelse for
Folketingsudvalg den 6/11-2014 samt 17/11-2015.

Input til udvalgsspørgsmål til Ministeren af 23/11-2015

November 2015

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Rejste spørgsmål til ministeren af 23/11 d.å

- Der er fremsat nedenstående [udvalgsspørgsmål](#) til Sundhedsministeren – vores bemærkninger hertil er med [blåt](#)
- Spm 112
 - Vil ministeren oplyse, hvilken vurdering Statens Serum Institut og Fødevarestyrelsen har af Toxoplasma Gondil? Jf. SUU alm. del – bilag 8, 58 og 83 (2014-15, 2. samling).
 - Af SSI's hjemmeside fremgår det at TG hovedsageligt er asymptomatisk og sovende. Dette er [ukorrekt](#).
 - SSI beskriver hovedsageligt det medfødte aspekt....WHO [advarer](#) om at det er alt for snævert
 - SSI's anbefalinger vedr. forebyggelse handler mestendels om [fødevare hygiejne](#)
 - Fødevarestyrelsen nævner [stort set ikke](#) TG i deres officielle kommunikation
- Spm 113
 - Vil ministeren oplyse, hvilke overvejelser WHO har om Toxoplasma Gondil?
 - WHO's forskere beskriver TG som en ["very large global burden"](#)
 - FN's Fødevareprogram FAO advarer og kalder parasitter ["a major public health issue"](#)
 - Amerikanske CDC har [prioriteret](#) indsatsen omkring TG

Rejste spørgsmål til ministeren af 23/11 d.å

- Der er til ministeren fremsat nedenstående udvalgsspørgsmål, jf Folketingets hjemmeside – vores bemærkninger hertil er med [blåt](#)
- Spm 114
 - Vil ministeren oplyse, hvilken forskning der finder sted i Toxoplasma Gondil, nationalt og i Skandinavien?
 - Århus Universitet har lavet forskning og publiceret rapporter & artikler, f.eks:
 - “Toxoplasma gondii seropositivity is **positively associated with anxiety and burnout-syndrome**” - [link](#)
 - “Toxoplasma Infection and **Later Development of Schizophrenia in Mothers**” – [link](#)
 - Statens Serum Institut foretager forskning i Toxoplasma Gondii
 - [The Laboratory of Parasitology, Statens Serum Institut, serves both as a primary clinical microbiology laboratory, specialising in the diagnosis of parasitic infections](#)
- Spm 115
 - Vil ministeren oplyse, om grundlaget for at stoppe screeningen for toxoplasmose hos spædbørn fortsat er gældende, eller der er kommet nye forskningsresultater m.m. de seneste år, som betyder, at beslutningen om at stoppe screeningen bør genovervejes?
 - [Det antages at kun 1 af 5.000 i DK har medfødt Toxoplasmose](#)
 - [Af 1.000 fødte forventes 300 inficeret inden de er 30 år gamle og 500 inden de er 50 år gamle](#)
 - [Man bliver immuniseret efter smitte](#)

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- Der er til ministeren fremsat nedenstående udvalgsspørgsmål, jf Folketingets hjemmeside – vores bemærkninger hertil er med [blåt](#)
- Spm 116
 - Vil ministeren oplyse, hvor stort problemet med Toxoplasma Gondil er i Danmark? Jf. SUU alm. del – bilag 8, 58 og 83 (2014-15, 2. samling).
 - [Ca 1,5 millioner er inficerede in Danmark](#)
 - [Forskere antager at mindst 20% af alle tilfælde af Skizofreni kan tilskrives TG – i Danmark udgør dette således ca. 4.000 personer](#)
 - [Medtages de øvrige sygdomme som TG relateres til er dette det største sundhedsmæssige problem vi står med nogensinde...men også den bedste sundhedsmæssige nyhed i mange år](#)

WHO's forskere advarer – “very large global burden”

- **The global burden of congenital toxoplasmosis: a systematic review (WHO)**
- Our estimates of the incidence and burden of CT point to a **very large global burden of toxoplasmosis**. The burden is even greater when various conditions and problems related to toxoplasmosis are considered. For example, **toxoplasmosis is known to cause chorioretinitis in healthy adults²⁹** and especially in people who have immunosuppression.³⁰ Encephalitis due to toxoplasmosis is a well-known complication of HIV infection. **There are also increasing reports of neurological, psychiatric or psychomotor disorders related to “latent” toxoplasmosis,³¹⁻³⁴** and of a **higher frequency of road traffic accidents** among seropositive individuals.³⁵ Even if toxoplasmosis accounts for only a small fraction of these problems in the population, **the global burden of disease attributable to toxoplasmosis is considerably greater than suggested by our CT data**. In addition, since much toxoplasmosis can be prevented, at least in theory, by observing appropriate food hygiene,³⁶ **the disease deserves a higher profile in GDB studies and should not be subsumed into other disease categories, such as “congenital disorders”**.
- <http://www.who.int/bulletin/volumes/91/7/12-111732/en/>



FAO og CDC advarer og beder politikere og presse om attention

- **United Nations (UN/FAO)** issued a **warning** recently:

“But considering the problems they cause, **these parasites do not get the attention they deserve**. We hope that by releasing a top 10 ranking **we can increase awareness among policy makers, the media and the general public about this major public health issue.**”

- [http://foodnewsinternational.com/tag/toxoplasma-gondii-
protozoa/](http://foodnewsinternational.com/tag/toxoplasma-gondii-protozoa/)
- The WHO is engaging in an ever-increasing number of cross sectoral activities to address health threats at the human-animal-ecosystem interface. **These threats include existing and emerging zoonoses** as well as antimicrobial resistance, food-borne zoonoses, and other threats to food safety.



Food and Agriculture Organization
of the United Nations

- **Center for Disease Control, USA**-- Five types of parasitic infections **have just been labeled priorities for public health action** by U.S. health officials.

More than 60 million people (in USA) are chronically infected with Toxoplasma gondii, the parasite that causes toxoplasmosis. New infections in pregnant women can cause birth defects, and **infections in people with weakened immune systems can be deadly**.

The CDC actions to protect people from these parasitic infections include: **increasing public and physician awareness**; improving diagnosis methods; providing treatment advice, including distribution of otherwise unavailable drugs; **and analyzing data to learn more about the infections.**”

- [http://health.usnews.com/health-
news/articles/2014/05/08/cdc-targets-5-parasitic-infections](http://health.usnews.com/health-news/articles/2014/05/08/cdc-targets-5-parasitic-infections)



Centers for Disease Control and Prevention
CDC 24/7: Saving Lives. Protecting People™

“Conventional wisdom” er **forkert**...Toxoplasma er IKKE sovende, men aktiv i hele sin livscyklus og derfor ikke asymptomatisk

- “Toxoplasma gondii persist in tissue cysts for the lifetime of an infected host **and can reactivate to cause clinical disease. It was thought that in vivo bradyzoites within tissue cysts are biologically inactive dormant forms that rarely replicate. Apparently, consensus was wrong.**”
- <http://www.ncbi.nlm.nih.gov/pubmed/26515047>
- “*This latent infection has been assumed, until recently, to be clinically asymptomatic; as indicated in the accompanying articles, **this assumption is being reconsidered.***”
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2526127/>
- “Led by Anthony Sinai, professor at the UK College of Medicine, the study has **significant implications** on the understanding of **chronic toxoplasmosis in the brain**, a condition suggested to contribute to a range of neurological diseases including **schizophrenia** in humans. These findings **directly challenge the prevailing notion** of bradyzoites as dormant nonreplicative entities in chronic toxoplasmosis **and have implications on our understanding of this enigmatic and clinically important life cycle stage.** “**This fundamentally alters our understanding of chronic toxoplasmosis,**” Sinai said
- <http://uknow.uky.edu/content/uk-researchers-find-%E2%80%9Cdormant%E2%80%9D-parasite-cysts-are-actually-quite-active>
- http://uknowledge.uky.edu/cgi/viewcontent.cgi?article=1066&context=microbio_facpub

“That Toxo is *asymptomatic* has been the key argument downplaying the dangers of Toxo....but also *the only* argument. It has no scientific merit and there is no trace of its origins...it has just been assumed as common wisdom since Toxo was discovered many years ago.....one wonders why ?”

Hovedkilde for smitte er fødevarer

- Katteejere kan ånde lettet op, mens grill-gourmeter skal passe på. Den katteparasit, som øger risikoen for både skizofreni og for at begå selvmord, **smitter nemlig hovedsageligt via kødet i vores husholdning** og ikke i så stort omfang via afføring fra vores kæledyr.
- Det vurderer Rune Stensvold, forsker på Statens Serum Institut og ekspert i parasitter.
- **Når det gælder mennesker, så var knap 27 procent af de ca. 46.000 kvinder i en dansk undersøgelse inficerede.** Undersøgelsen viser, at de inficerede kvinder har større risiko for at forvolde skade på sig selv og i yderste konsekvens forsøge at tage deres eget liv.
- En tommelfingerregel lyder ifølge Rune Stensvold, at **30 procent af befolkningen på 30 år har antistoffer mod T. gondii**, mens det gælder **40 procent af de 40-årige og 50 procent af de 50-årige.**
- <http://ing.dk/artikel/pas-pa-ved-grillen-katteparasit-smitter-gennem-din-bof-130602>
- **PM Fears Behavior-Changing Microbe in Imported Meat**
- Prime Minister Sigmundur Davíð Gunnlaugsson ... has expressed an added fear of the protozoan *Toxoplasma gondii*, which causes the disease Toxoplasmosis.
- “..there is for example a protozoan that **causes people’s behavior to change**. If people for instance eat meat abroad that is not properly cooked, they **risk ingesting this protozoan and it can lead to changes in behavioral patterns**, and people have even wondered if this could be changing the behavior of whole nations
- <http://icelandreview.com/news/2014/08/15/pm-fears-behavior-changing-microbe-imported-meat>

Kaldes "Global Trussel". Forbindes ofte med Alzheimers og Parkinson

- "Toxoplasma gondii is not only implicated in **schizophrenia and related disorders**, but also in **Alzheimer's or Parkinson's disease, cancer, cardiac myopathies, and autoimmune disorders**. During its life cycle, the pathogen interacts with ~3000 host genes or proteins. Susceptibility genes for multiple sclerosis, Alzheimer's disease, schizophrenia, **bipolar disorder, depression, childhood obesity, Parkinson's disease, attention deficit hyperactivity disorder** (multiple sclerosis), and **autis**
- <http://www.hindawi.com/journals/jpat/2013/965046/>
- **Toxoplasmosis – A Global Threat.** Correlation of Latent Toxoplasmosis with Specific Disease Burden in a Set of 88 Countries
- **Toxoplasmosis is becoming a global health hazard** as it infects 30–50% of the world human population. Clinically, the life-long presence of the parasite in tissues of a majority of infected individuals is usually considered asymptomatic. **However, a number of studies show that this 'asymptomatic infection' may also lead to development of other human pathologies.**
- <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0090203>

Skandinavisk forskning viser bla. øget selvmordsrisiko blandt kvinder

- "En mikroskopisk parasit, der sætter sig i vores hjerner, **har sandsynligvis en del danske selvmordsforsøg på samvittigheden.**
- Det viser et nyt stort studie, som har undersøgt sammenhængen mellem infektioner med parasitten *Toxoplasma gondii* og selvmordsforsøg blandt over 45.000 danske kvinder. **Risikoen for, at de inficerede kvinder ville forsøge at begå selvmord var øget med 50 procent.**
- Undersøgelsen viser også, at **26 procent af kvinderne var inficerede** – og formodentlig er tallet lige så stort blandt mænd"
- <http://videnskab.dk/krop-sundhed/kattelort-parasit-koblet-til-danske-selvmoedsforsog>
- <http://archpsyc.jamanetwork.com/article.aspx?articleid=1206779>
- "Toxoplasmosis is a common "cat parasite", and has previously been in the spotlight owing to its **observed effect on risk-taking and other human behaviours.** To some extent, it has also been **associated with mental illness.** A study led by researchers from Karolinska Institutet now **demonstrates for the first time how the parasite enters the brain to influence its host."**
- <http://www.uu.se/en/news/news-document/?id=2213&typ=artikel&area=2&lang=en>
- En gruppe kinesiske forskere, tog derfor en række mennesker og testede dem for toxoplasmose. De havde 600 med skizofreni, 600 med affektiv lidelse og 400 i en kontrolgruppe. **Resultaterne var klare. De psykiatriske patienter havde lang flere og meget kraftigere antistoffer mod toxoplasmose.**
- <http://www.netpsych.dk/nyhedsbrev/Archive.aspx?mode=show&id=90>

Skizofreni, OCD, bipolar ADHD mv.

- “By finding out how important a factor *T. gondii* infection is, this work might inform our attitude to researching the subject,” Smith said. **“Instead of ridiculing the idea of a connection between *T. gondii* and schizophrenia because it seems so extraordinary, we can sit down and consider the evidence...”**
- Using a standard epidemiological modeling format, but taking into account all of the age-related changes in the relevant factors, **Smith found the average PAF during an average lifetime to be 21.4 percent.**
- “In other words, we ask, if you could stop infections with this parasite, how many cases could you prevent?” Smith said. **“Over a lifetime, we found that you could prevent one-fifth of all cases. That, to me, is significant.”**
- <http://www.upenn.edu/pennnews/news/epidemiological-study-penn-vet-professor-investigates-parasite-schizophrenia-connection>
- *Conclusions: Our results supported the longstanding hypothesis of correlation between *T. gondii* infection and schizophrenia. We also considered this infection as a possible etiological factor in the development of schizophrenia.*
- http://scimetr.com/?page=article&article_id=15386
- **Toxoplasma's links to schizophrenia, bipolar disorder and increased risk taking**
- A number of studies published in recent years have suggested that toxoplasma infection increases the chances of someone developing serious psychological disturbances, such as schizophrenia and bipolar disorder.
- <http://www.independent.co.uk/news/science/toxoplasmas-links-to-schizophrenia-bipolar-disorder-and-increased-risk-taking-8102706.html>
- Our results demonstrated that mice from Toxoplasma infection and MK-801 administration (as the model of schizophrenia) were impaired in learning and memory capability, and they had more serious depression and stereotypy compared with the control mice, especially the mice from congenital Toxoplasma infection... **Collectively, these results suggested a potential association between Toxoplasma infection and schizophrenia.**
- <http://www.ncbi.nlm.nih.gov/pubmed/23999146>
- Opsigtsvækkende studie: Katteparasitten ***T. gondii*** kan give skizofreni og OCD
- Forskere har fundet en sammenhæng mellem en parasit kaldet *T. gondii* og udviklingen af **skizofreni, maniodepressiv sindslidelse, afhængighed og tvangstanker**. Hver fjerde dansker er allerede inficeret.
- **Det hollandske studie er dermed det største af sin slags og det mest omfattende nogensinde.**
- **»Specielt i forhold til skizofreni så vi en klar sammenhæng, hvor smittede med *Toxoplasma gondii* havde dobbelt så høj risiko for at udvikle lidelsen som smittefrie personer.»**
- <http://videnskab.dk/krop-sundhed/opsigtsvaekkende-studie-katteparasitten-t-gondii-kan-give-skizofreni-og-ocd>
- <http://politiken.dk/forbrugogliv/sundhedogmotion/sygdom/ECE2715590/katteparasit-kan-give-mennesker-skizofreni/#loggedin>
- A study of 199 patients with **bipolar disorder** reported an increased prevalence compared to controls
- <http://www.stanleyresearch.org/patient-and-provider-resources/toxoplasmosis-schizophrenia-research/toxoplasmosis-and-other-diseases/>

Cancer og autoimmune sygdomme, f.eks Diabetes

- Katteparasit **øger risikoen for kræft i hjernen**
- En international undersøgelse viser, **at risikoen for at udvikle kræft i hjernen stiger med 80 procent**, hvis man er inficeret med en udbredt parasit fra katte. Den fjerdedel af danskerne, der er inficeret med katteparasitten *Toxoplasma gondii*, på dansk kaldet haresyge, har højere risiko for at få kræft i hjernen.
- Det viser en undersøgelse udført af franske og amerikanske forskere. De konkluderer, at på tværs af de 37 lande, som de har undersøgt, er ondartet hjernekræft 80 procent mere udbredt blandt folk, der er inficeret med parasitten, end blandt resten af befolkningen.
- **'Vores resultater er tilstrækkeligt stærke til at slå til lyd for, at *Toxoplasma gondii* potentielt øger risikoen for hjernekræft'**, konkluderer forskerne i en artikel i det videnskabelige tidsskrift *Biology Letters*.
- <http://ing.dk/artikel/katteparasit-oger-risikoen-kræft-i-hjernen-131304>
- **Mind-Controlling Parasite May Increase Brain Cancer Risk**
- **Mind-altering parasites already linked to neurosis and schizophrenia might also be linked to brain cancer, scientists now find.**
- <http://www.livescience.com/15241-mind-controlling-parasite-increase-brain-cancer-risk.html>
- **T. Gondii forbindes også med Diabetes I og andre autoimmune sygdomme**
 - <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3918195/>
 - <http://www.hindawi.com/journals/jpath/2013/965046/>
 - Der er dokumenteret mange pathways mellem TG og Diabetes, der er dertfor grund til at antage at TG er kausal for et antal tilfælde af **Diabetes I, men også Diabetes II og overdreven fedme**
- We realized that many of these pathways were also in play in various **neurodegenerative diseases, such as Alzheimer's and even schizophrenia. Some may contribute to atherosclerosis or diabetes.** When this powerful immune response remains on the job it can have effects that might be harmful.
- <http://sciencelife.uchospitals.edu/2014/07/22/what-does-it-mean-when-2-billion-people-share-their-brain-with-a-parasite/>

Antages at kunne påvirke hele samfundet...og reducere indlæringsevnen hos børn

- **Can the common brain parasite, *Toxoplasma gondii*, influence human culture?**
- <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1635495/>
- Toxoplasma – the brain parasite that influences human culture.
- Carriers tend to show **long-term personality changes that are small but statistically significant**. Women tend to be more intelligent, affectionate, social and more likely to stick to rules. Men on the other hand tend to be less intelligent, but are more loyal, frugal and mild-tempered. **The one trait that carriers of both genders share is a higher level of neuroticism – they are more prone to guilt, self-doubt and insecurity.**
- <http://phenomena.nationalgeographic.com/2008/10/05/toxoplasma-the-brain-parasite-that-influences-human-culture/>
- Researchers from the University of Iowa and Florida International University have conducted a study examining how the *Toxoplasma gondii* affects test scores in school children aged 12 to 16 years old. The test scores included math, reading, visuospatial reasoning and verbal memory.
- **Children who tested positive for the parasite were associated with lower reading scores.**
- <http://journals.cambridge.org/action/displayAbstract?aid=9841724&fileid=S0031182015000505>
- **What Does It Mean When 2 Billion People Share Their Brain With A Parasite?**
- More effective medicines or a vaccine could protect against the devastating diseases this parasite causes. This recent work raises the possibility that better treatments, by quickly controlling or eliminating infection, may also reduce the age-related illnesses we speculate may associate with toxoplasma for some people.
- <http://sciencelife.uchospitals.edu/2014/07/22/what-does-it-mean-when-2-billion-people-share-their-brain-with-a-parasite/>
- Islands statsminister advarer :
- “..there is for example a protozoan that **causes people’s behavior to change**. If people for instance eat meat abroad that is not properly cooked, they risk ingesting this protozoan and it can lead to changes in behavioral patterns, **and people have even wondered if this could be changing the behavior of whole nations**
- <http://icelandreview.com/news/2014/08/15/pm-fears-behavior-changing-microbe-imported-meat>

Uddrag af linksamling fra omtale i Danske Medier

- <http://videnskab.dk/krop-sundhed/kattelort-parasit-koblet-til-danske-selvmoedsforsog>
- <https://www.180grader.dk/Videnskab/ny-forskning-aendrer-forstelse-af-toxoplasma-this-fundamentally-alters-our-understanding>
- <http://www.information.dk/307931>
- <http://www.dr.dk/sundhed/Forskning/2012/0705095611.htm>
- <http://ing.dk/artikel/katteparasit-oger-risikoen-kraeft-i-hjernen-131304>
- <http://www.dr.dk/arkivP1/Videnskabensverden/Udsendelser/2013/04/parasitten-med-den-store-paavirkning-paa-mennesker.htm>
- <http://www.madforlivet.com/viden-og-forskning/din-kat-kan-goere-dig-syg/>
- <http://ing.dk/artikel/hjernevasker-parasitter-mus-og-maend-113671>
- <http://natgeo.dk/dyr/jaroslav-flegel>
- <http://politiken.dk/forbrugogliv/sundhedogmotion/sygdom/ECE2715590/katteparasit-kan-give-mennesker-skizofreni/>
- http://ekstrabladet.dk/nyheder/videnskab_og_teknik/katteparasit-kan-give-skizofreni-og-ocd-hver-fjerde-er-allerede-smittet/5608071
- <http://www.mx.dk/viden/videnskab/story/11209192>
- <http://videnskab.dk/krop-sundhed/opsigtsvaekkende-studie-katteparasitten-t-gondii-kan-give-skizofreni-og-ocd>