university of groningen / faculty of medical sciences / graduate school for medical sciences

Onderzoeksmaster
Clinical and Psychosocial Epidemiology

Rijksuniversiteit Groningen
Faculteit Medische Wetenschappen/UMCG
Graduate School of Medical Sciences

Stand van zaken Herstelplan, inclusief reflectie

Januari 2013-maart 2014

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Colofon

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Gegevens opleiding:

Naam opleiding:	Clinical and Psychosocial Epidemiology (onderzoeksmaster)
Croho registratienummer:	60399
Orientatie en niveau:	WO Master
Graad:	Master of Science (MSc)
Variant:	voltijd
Studiepunten:	120 ECTS
Accreditatie:	31 augustus 2014

Vooraf

Met de in dit verslag beschreven aanpassingen binnen het programma van de onderzoeksmaster 'Clinical and Psychosocial Epidemiology' hopen we aan de verwachtingen van een strengere selectie en uitdagender onderzoeksprojecten te voldoen. Indien de commissie dit wenst zijn we van harte bereid om de beschreven aanpassingen toe te lichten.

Met vriendelijke groet,
Mede namens dr. M.J. Smit,
directeur Graduate School of Medical Sciences,

Prof. dr. Jan C.C. Borleffs, MD
Prodecaan Onderwijs
Universitair Medisch Centrum Groningen

Prof. dr. L.F.M.H. de Leij
Prodecaan Onderzoek
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Inhoudsopgave

1. Inleiding

De Commissie Beoordeling onderzoeksmasteropleidingen (Bio)medische wetenschappen heeft op 27 juni 2012 een negatief advies uitgebracht over de verlenging van de accreditatie van de onderzoeksmaster Clinical and Psychosocial Epidemiology (CPE) van het UMCG. Het facet instroom werd als onvoldoende beoordeeld en de commissie uitte haar zorg over het eindniveau van de Master Thesis projecten. De commissie had wel vastgesteld dat de opleiding strenger is gaan selecteren in de laatste jaren (t.o.v. de selectieprocedure bij aanvang van de opleiding) en dat sterkere kandidaten zich aanmelden.
Anderzijds achtte de commissie de organisatie van het keuzeproces van studenten en de systematiek van beoordelen sterke kanten van het Master Thesis Project. Om met deze sterke punten een overtuigend hoog eindniveau te waarborgen stelde de commissie twee voorwaarden:
- strenger selecteren;
- studenten uitdagender onderzoeksopdrachten verstrekken voor hun Master Thesis Project.
Wanneer voldaan zal worden aan deze voorwaarden ziet de commissie wel degelijk toekomst voor de onderzoeksmaster CPE.

Op basis van dit oordeel heeft de opleiding op 28 september 2012 een herstelplan ingediend, waarover de commissie unaniem heeft geoordeeld dat het een uitstekend plan is. Op basis van dit oordeel heeft de NVAO een herstelperiode van één jaar toegekend (besluit 25 februari 2013). Middels dit verslag willen we beschrijven hoe het herstelplan in het afgelopen jaar is geïmplementeerd en wat de resultaten van deze aanpassingen zijn (voor zover mogelijk).

Het destijds door de KNAW commissie positief beoordeelde herstelplan is gericht op twee hoofdpunten met zes onderdelen:

Strenger selecteren

1 Strengere selectie bij instroom met name op het gebied van kennis en vaardigheden van statistiek (toelatingstoets);
2 Formulering van concrete selectiecriteria;

Studenten uitdagender onderzoeksopdrachten verstrekken voor hun Master Thesis Project

3 Betere borging van het Master Thesis Project door altijd te kiezen voor directe begeleiding van een 'Principal Investigator' binnen de vier hoofddisciplines van het programma;
4 Het innovatieve karakter van een project zal toegevoegd worden als extra onderdeel in de beschrijving van het Master Thesis Project. Dit onderdeel wordt tevens meegenomen in de beoordeling;
5 De examencommissie zal de voortgang van het project gaan monitoren waarbij gebruik gemaakt wordt van het portfolio;
6 In de coachgroep zal meer aandacht besteed worden aan de verschillende onderdelen van het onderzoeksproces en de voortgang van het project.

Dit verslag bespreekt per hoofdpunt op welke wijze in het CPE programma aanpassingen zijn doorgevoerd volgens het herstelplan.

2. Selectiecriteria en -procedure

Strenger selecteren

Herstelplan punt 1:
Strengere selectie bij instroom met name op het gebied van kennis en vaardigheden van statistiek (toelatingstoets);

Herstelplan punt 2:
Formulering van concrete selectiecriteria;

In het herstelplan (d.d. 28 september 2012) zijn de geformuleerde concrete selectiecriteria en de aangescherpte selectieprocedure beschreven. Een schematische weergave van de procedure met daarin opgenomen de concrete selectiecriteria is toegevoegd in bijlage 1a. De belangrijkste aanpassingen ten opzichte van eerdere jaargangen, zijn hieronder weergegeven.

1. Er wordt specifieker gekeken naar de inhoud van het voorgaande bachelor/master programma, waarbij in ruime mate aandacht is gegeven aan de methodologie en statistiek (inclusief een onderzoeksproject/thesis);
2. Het cijfer voor het onderzoeksproject/thesis moet minimaal 8 (of internationaal equivalent) zijn;
3. Het gemiddelde cijfer van de bachelor moet minimaal 7 (of internationaal equivalent) zijn, maar bij voorkeur een 8 (of internationaal equivalent). Is het gemiddelde cijfer van de bachelor tussen de 7 en 8 dan moeten er aanvullende compenserende prestaties beschikbaar en aantoonbaar zijn (bijvoorbeeld: een publicatie, wetenschappelijke presentaties, een verzwaard programma, bestuurs- of commissiewerk, buitenlandervaring of andere bijzondere activiteiten);
4. Er is een toelatingstoets ingevoerd voor basiskennis statistiek. De twee toelatingstoetsen voor statistiek (één voor jaargang 2013-2014 en één voor jaargang 2014-2015) zijn in bijlage 1b toegevoegd.

In de verscherpte selectieprocedure kunnen studenten met een afgeronde bachelor opleiding zonder methodologie en statistiek en/of zonder een onderzoeksproject niet meer worden toegelaten. De selectieprocedure is opgenomen in de OER en wordt gehanteerd door de toelatingscommissie.

Deze verscherping van de selectieprocedure werd deels al ingezet vanaf het academisch jaar 2012-2013, als onmiddellijke reactie op de opmerkingen van de KNAW commissie, maar vanaf het academisch jaar 2013-2014 zijn alle aanmeldingen volledig conform de aangescherpte criteria geëvalueerd. Het effect van deze maatregel heeft geresulteerd in een daling van het toelatingspercentage (Tabel 1). Het percentage toelatingen in de eerste vier academische jaren lag boven de 40% terwijl het percentage toelatingen vanaf het academisch jaar 2012-2013 lager is dan 20%.

Tabel 1. Overzicht van de aanmeldingen, toelatingen en instroom van studenten over de periode 2007-2013

Academisch jaar	Aanmeldingen (aantal)	Toelatingen		Instroom (aantal)
		Aantal	Percentage	
2007-2008	7	5	71	4
2008-2009	9	4	44	2
2009-2010	14	7	50	6
2010-2011	30	12	40	11
2011-2012	24	14	58	13
2012-2013	39	7	18	7
2013-2014	38	2	8	2

Detail informatie over de aanmeldingen van studenten in het academisch jaar 2013-2014 en over de vooraanmeldingen van studenten in het academisch jaar 2014-2015 wordt hieronder beschreven. Voor de volledigheid zijn ook de karakteristieken van de ingestroomde kandidaten in het academisch jaar 2012-2013 toegevoegd (bijlage 2a). De toelatingstoets statistiek was in dit jaar reeds ingevoerd, voordat het herstelplan werd geïmplementeerd, maar werd op dat moment meegewogen als een van de onderdelen van de evaluaties van studenten en was nog niet doorslaggevend in de beslissing tot toelating. Van de 7 toegelaten studenten waren er 5 Nederlandse studenten van wie er 2 Cum laude en één Summa Cum Laude afgestudeerd zijn. Twee studenten, die in het academisch jaar 2012-2013 zijn toegelaten, zouden met de huidige selectiecriteria niet meer worden toegelaten vanwege een onvoldoende resultaat op de toelatingstoets. In het academisch jaar 2012-2013 compenseerde de twee studenten het resultaat op de toelatingstoets, doordat zij tijdens hun presentatie en het interview voor de toelating van CPE een goede en gedegen kennis van de methodologie en statistiek ten toon spreidde. Voor de selectie van het academisch jaar 2013-2014 zijn de criteria gehanteerd zoals geformuleerd in het herstelplan en zijn studenten met onvoldoende resultaat op de statistische toelatingstoets niet meer toegelaten.

Detail informatie aanmeldingen 2013-2014
Voor het academisch jaar 2013-2014 zijn er in totaal 38 aanmeldingen ontvangen: 8 aanmeldingen van EU/EEA studenten (waarvan 5 Nederlandse studenten) en 30 aanmeldingen van buiten de EU/EEA. Van de 38 aanmeldingen waren er in totaal 12 studenten uitgenodigd voor een interview en het maken van het toelatingsexamen.
De 26 studenten die niet uitgenodigd zijn voor een interview en toelatingsexamen werden afgewezen vanwege het niet voldoen aan een of meer van de toelatingscriteria:

- Aanmeldingsdossier was niet tijdig compleet (n=3);
- Onvoldoende beheersing van de Engelse taal (n=4);
- Het universitaire diploma was niet gelijkwaardig aan het Nederlands Bachelor diploma (n=1);
- De genoten opleiding bevatte geen relevante cursussen over onderzoeksmethodologie en statistiek en/of bevatte geen onderzoeksproject (n=4);
- Gemiddeld bachelor cijfer of cijfers van de relevante methodologie/statistiek cursussen zijn te laag (n=10);
- Motivatie sluit niet aan bij de leerdoelen van CPE (n=3);
- Bachelor niet tijdig afgerond (n=1).

Twaalf studenten zijn uitgenodigd voor een interview en het toelatingsexamen. Eén student heeft zich teruggetrokken voor het interview vanwege de voorkeur voor een andere opleiding. Twee studenten zijn uiteindelijk aangenomen en 9 studenten zijn alsnog afgewezen. De reden voor de afwijzingen was onvoldoende methodologische kennis blijkend uit de discussie tijdens het interview en/of de resultaten van het toelatingsexamen. De toelatingstoets was doorslaggevend voor de afwijzing bij 4 studenten, het interview bij 2 studenten en een combinatie van beiden onderdelen voor 3 studenten. De toelatingstoets speelt dus een belangrijke rol en is een goede aanvulling in de beslissingsprocedure. De twee kandidaten die zijn aangenomen compenseerden hun gemiddelde bachelorcijfers met aanvullende studie activiteiten die relevant zijn voor de opleiding CPE. Eén kandidaat had een extra stage gevolgd bij de afdeling epidemiologie aan het UMCG, terwijl de tweede kandidaat een eigen onderzoek had opgezet. Bijlage 2b laat de evaluatie van de aanmeldingen voor het academisch jaar 2013-2014 zien.

Detail informatie eerste aanmeldingen 2014-2015
Voor het komende academisch jaar 2014-2015 zijn er inmiddels 19 aanmeldingen geëvalueerd. Op basis van de aanmeldingen in eerdere jaren mag verwacht worden dat de meeste aanmeldingen nog komen voor de deadline van 1 april (niet-EU/EEA studenten) en 1 juni (EU/EEA studenten). Van de eerste 19 aanmeldingen zijn zeven studenten uitgenodigd voor een interview en de toelatingstoets, terwijl de andere 12 studenten zijn afgewezen vanwege het niet voldoen aan een of meer van de toelatingscriteria:

- Onvoldoende beheersing van de Engelse taal (n=1);
- Het universitaire diploma was niet gelijkwaardig aan het Nederlands Bachelor diploma (n=4);
- De genoten opleiding bevatte onvoldoende relevante cursussen over statistiek en onderzoeksmethodologie en/of bevatte geen onderzoeksproject (n=3);
- Motivatie sluit niet aan bij de leerdoelen van CPE (n=2);
- Aanmeldingsdossier was niet compleet (n=1);
- Vorig jaar afgewezen, geen aanvullingen in dossier (n=1).

Eén van de zeven studenten is aangenomen (een studente uit Wenen die dit jaar naar verwachting met het predikaat Cum Laude afstudeert). Twee studenten hebben zich teruggetrokken: één student na het interview en één student net na de toelatingstoets statistiek. Zij heeft zich tijdens het toelatingsexamen gerealiseerd dat haar statistische kennis onvoldoende is voor de opleiding en is halverwege het examen gestopt. De andere vier kandidaten zijn afgewezen. Deze studenten hadden allen onvoldoende methodologische kennis (blijkend uit de discussie tijdens het interview en/of de resultaten van het toelatingsexamen). Eén student had daarbij niet de juiste motivatie.

Bijlage 2c geeft de details van deze evaluaties voor het academisch jaar 2014-2015.

Reflectie op de strengere selectie
De geformuleerde selectiecriteria en aangescherpte selectieprocedure blijken goed hanteerbaar voor het evalueren van studenten die zich aanmelden bij CPE. Bijlage 2a, 2b en 2c ondersteunen dit, doordat we minutieus bijhouden aan welke criteria studenten wel/niet voldoen. Het heeft echter wel een groot effect op de instroom van studenten.

Door de strenge selectieprocedure is het aantal studenten in de opleiding gedaald in de academische jaren 2012-2013 en 2013-2014. Wij streven ernaar om te groeien naar een jaarlijkse instroom van 10-15 goede studenten. Om de beste kandidaten op bachelor (BSc) niveau te kunnen selecteren voor toelating tot de CPE onderzoeksmaster is het nodig de kwaliteit en kwantiteit van de aanmeldingen verder te verbeteren. Om dit te bereiken zijn we in het academisch jaar 2013-2014 begonnen met een gerichtere public relations (PR) en werving voor de opleiding die uit drie onderdelen bestaat:
a) <u>Scouting van bachelorstudenten</u>
De onderzoeksmaster CPE is uniek in zijn multidisciplinaire benadering en leidt de volgende generatie onderzoekers op door actieve participatie in onderzoeksgroepen binnen het UMCG die tot de absolute wereldtop in hun veld behoren. Excellentie van de onderzoeksgroepen en de aanwezige infrastructuur wordt breed herkend zoals door toekenning van diverse VICI subsidies en deelname in diverse grote internationale consortia (zie bijlage 1 van het herstelplan). Juist dit internationale netwerk van de deelnemende onderzoeksgroepen gebruiken wij om via de Principal Investigators[1] van het onderzoekinstituut SHARE, de juiste doelgroep BSc-studenten beter te bereiken. Via het internationale netwerk van de Principal Investigators die deelnemen in CPE, benaderen we vanuit de onderzoeksgroep de studenten met een ambitie in onderzoek bij wie al enige onderzoekspotentie gesignaleerd is (door een onderzoeker).

[1] Principal Investigator (PI), zoals vastgesteld door de Raad van Bestuur van het UMCG, is een staflid die minstens 8 publicaties in de afgelopen 3 jaar in de top 25% van het relevante ISI-veld heeft. De kwalificatie principal investigator wordt jaarlijks geëvalueerd, waarbij gebruik gemaakt wordt van de meest recente impact factoren.

Voorbeelden hiervan zijn:
- Netwerk van onderzoekers van het WHO initiatief 'World Mental Health Survey' (Prof. Dr. P. de Jonge, www.hcp.med.harvard.edu/wmh);
- McMaster University and McGill University (Prof. Dr. E.R. van de Heuvel/ Prof. Dr. U. Bultmann);
- Graduate School 'Kosice Institute for Society and Health' (KISH) bij de Safarik Universiteit in Kosice, Slowakije (Prof. Dr. S.A. Reijneveld & Dr. J.P. van Dijk, http://www.kish.upjs.sk/)
- Samenwerking met het Nederlands Interdisciplinair Demografisch Insituut (NIDI)/ Europees Netwerk Demografen (Prof. Dr. R.P. Stolk)
- Samenwerkingsverband tussen Europa en Canada over standardisatie en harmonisatie van biobank studies (Prof. Dr. R.P. Stolk is coördinator).

SHARE Principal Investigators die binnen hun internationale netwerk op werkbezoek of op congres gaan, krijgen ondersteuning (materiaal en financiën) vanuit de opleiding om actief te kunnen werven.

Tot nu toe heeft het ontbroken aan een goede instroom van Groningse studenten die nu blijkbaar massaal kiezen voor hun eigen masters en onvoldoende op de hoogte zijn van wat andere faculteiten hun te bieden hebben. Naast het gebruik van het internationale netwerk van onze principal Investigators, zullen we in het voorjaar van 2014 bovendien starten met een campagne gericht op de beste Groningse studenten (honours bachelors en studenten die een 8 of meer gemiddeld hebben op hun cijferlijsten tot nu toe). De beste Groningse studenten worden uitgenodigd voor een voorlichtingsavond om ze te informeren en in contact te brengen met het honours master programma en de researchmasters.

b) Directe werving bij een aantal topuniversiteiten met aansluitende Ba-opleiding
Daarnaast hebben we een aantal Europese topuniversiteiten geïdentificeerd waar op BSc-niveau een passende opleiding bestaat, maar waar geen passende MSc-master op dit terrein aangeboden wordt. Op dit moment ontwikkelen wij een strategie om op deze opleidingen actief te gaan werven voor getalenteerde BSc kandidaten met interesse in de internationale onderzoeksmaster CPE. Voorbeelden zijn University of Oxford, ETH Zürich, Karolinska Institute Stockholm en Lund University.

c) Inzetten alumni
Tenslotte gebruiken we het netwerk van de huidige CPE-studenten en de CPE-alumni om bij de betreffende ‘home university’ actief te adverteren met onze opleiding en zo goede kandidaten te werven.

Naast deze gerichte aanpak hebben we dit jaar ook onze algemene PR en wervingsactiviteiten geïntensiveerd en uitgebreid naar sociale media, zoals Twitter vanuit de docenten, Facebook (open pagina’s) en wordt er een nieuwe, professionele website gerealiseerd die het verkrijgen van de relevante informatie en het contact leggen met de docenten en het opleidingsbureau sterk vereenvoudigd. Aanmeldingen worden direct verwerkt en de kandidaten krijgen direct informatie over de status van de aanvraag en de termijnen waarbinnen de diverse stappen in het selectieproces zullen worden afgerond.

Met deze gerichte werving proberen wij voldoende en kwalitatief sterke aanmeldingen voor CPE te realiseren, zodat we met ons verbeterde selectieproces jaarlijks 10-15 excellente kandidaten kunnen selecteren die dan met de opleiding zullen starten. Deze vernieuwde activiteiten zullen geen invloed hebben op het huidige en verscherpte selectieproces.

3 Master Thesis projecten

Herstelplan punt 3:
Betere borging van het master thesisproject door altijd te kiezen voor directe begeleiding van een 'Principal Investigator' binnen de vier hoofddisciplines van het programma.

Om te waarborgen dat elk Master Thesis Project begeleid wordt door een Principal Investigator van één van de vier hoofddisciplines van het programma (Epidemiologie, Psychiatrische Epidemiologie, Gezondheidspsychologie en Public Health Research) worden alleen de Principal Investigators binnen de genoemde hoofddisciplines uitgenodigd om een project in te dienen in een, speciaal voor de opleiding opgezette, onderzoeksprojectendatabase. Bij de uitnodiging aan Principal Investigators om een onderzoeksproject in te dienen, wordt aangegeven dat het geven van begeleiding aan een student een voorwaarde is voor het project. Nadat een project is ingediend controleert de programmacoördinator of de begeleider en de afdeling voldoen aan de gestelde voorwaarden. Vervolgens wordt een project gepubliceerd op de website, ook toegankelijk voor de studenten. Een lijst van keuze onderwerpen voor de master thesisprojecten in 2013 is toegevoegd (Bijlage 3a).

Wanneer een student een begeleider heeft gevonden, heeft de student minstens één keer in de twee weken overleg met de begeleidende Principal Investigator over de inhoud en de voortgang van het project. Tijdens de coach groep bijeenkomsten en in de cursus 'Projectmanagement' wordt o.a. besproken of er voldoende begeleiding is. Zo niet, dan zal de programmadirecteur dit bespreken met de begeleider en zorgen voor voldoende begeleiding. Tot nu toe is dit nog niet nodig geweest.

Al voor de implementatie van het herstelplan, in het academisch jaar 2012-2013, werden 11 van de 12 projecten begeleid door een Principal Investigator. Bovendien vonden alle projecten destijds al plaats binnen één van de vier hoofddisciplines van het programma. Een overzicht van de Master Thesis projecten die zijn afgerond in 2013 is gegeven in bijlage 3b. Alle projecten gestart in maart 2012 zijn op tijd afgerond in 2013.

De projecten die gestart zijn in maart 2013 na het positieve advies over het herstelplan, voldoen allemaal aan de voorwaarden zoals hierboven beschreven: alle projecten worden begeleid door een principal investigator uit één van de vier hoofdstromen en de studenten hebben wekelijks of tweewekelijks een gesprek met hun begeleider. Een overzicht van de projecten met hun begeleiders is beschreven in bijlage 3c. Alle projecten zullen in juni 2014 naar verwachting worden afgerond.

Herstelplan punt 4:
Het innovatieve karakter van een project zal toegevoegd worden als extra onderdeel in de beschrijving van het Master Thesis Project. Dit onderdeel wordt tevens meegenomen in de beoordeling.

In de student handleiding voor het schrijven van een master thesis projectvoorstel is nu expliciet opgenomen dat het innovatieve karakter van het project beschreven moet worden (' -*state the innovative character of the project in terms of contents and design/methods*', zie bijlage 4a, toelichting bij 'Relevance (Significance)').
Om te benadrukken dat dit een belangrijk onderdeel is, is het punt ook apart opgenomen in het evaluatieformulier van de reviewer[2] ('Reviewer's Report', zie bijlage 4b) en is het als apart onderdeel opgenomen in het beoordelingsformulier van het Master Thesis Projectvoorstel[3] (Bijlage 4c).

[2] Het master thesisprojectvoorstel wordt voorafgaand aan de beoordeling gereviewed door een medestudent en één van de vier leden van de programmaraad (niet de eigen begeleider). Op basis van het review commentaar schrijft de student een rebuttal dat tevens verwerkt moet worden in de presentatie van het master thesis projectvoorstel.

Een overzicht van de Master Thesis Projectvoorstellen van 2013 is beschreven in bijlage 4d. In aanvulling op de lijst van publicaties beschreven in de zelfevaluatie van maart 2011, is in bijlage 4e een overzicht opgenomen van abstracts, congrespresentaties, en publicaties van de afgelopen 2 jaar waar studenten hun eigen resultaten van het Master Thesis Project gepresenteerd hebben. In de periode 2012-2014, zijn er acht publicaties uit het onderzoek van de Master Thesis projecten voortgekomen en er worden er ook nog een aantal publicaties verwacht van de projecten uit het academisch jaar 2012-2013. De studenten worden sterk aangemoedigd om in het 2e jaar een abstract in te dienen bij het jaarlijkse congres van de Vereniging voor Epidemiologie (het 'WEON') of het jaarlijkse UMCG congres voor (bio)medische studenten. De kosten voor deelname, reizen en verblijf worden door de opleiding vergoed. Bijlage 4d laat zien dat studenten hier gehoor aan geven. Het werk van Biniyam Demissei was één van de drie genomineerde projecten voor de Studentenprijs 2013 van de Vereniging voor Epidemiologie en Ricardo de Miranda Azevedo ontving de prijs voor de Beste Poster Presentatie (Psychiatrie) bij de ISCOMS 2013. Dit overzicht geeft enigszins aan hoe het onderzoek van de Master Thesis projecten tot op heden gewaardeerd wordt door andere onderzoekers die niet betrokken zijn bij de CPE onderzoeksmaster. Door meer te focussen op innovatie van de Master Thesis projecten, verwachten we een nog beter wetenschappelijk resultaat van de projecten uit het academisch jaar 2013-2014. Drie van de 6 studenten in het 2e jaar hebben reeds een abstract voor een congres ingediend (de laatste vier abstracts in bijlage 4e).

Aanscherping beoordelingsprocedure Master Thesis Project

In aanvulling op de toevoeging van het innovatieve karakter in de beoordelingsprocedure, is vanaf 2013-2014 tevens de beoordelingsprocedure aangescherpt:

1) *Aparte deelcijfers voor de praktische uitvoering en de master thesis*.
   Om beter inzicht te krijgen in de uitvoering van het project en de kwaliteit van het verslag als aparte onderdelen, zal de eigen begeleider voor elk afzonderlijk onderdeel een cijfer geven (zie aangepaste formulieren in bijlagen 4e en 4f). Tot nu toe gaf de eigen begeleider één cijfer voor de master thesis en de praktische uitvoering van het project samen. Als gevolg van deze procedure was het cijfer van de eigen begeleider moeilijk te vergelijken met het cijfer van de tweede beoordelaar van de master thesis die alleen de inhoud beoordeeld.
2) *IJkpunt cijfer*
   Om de becijfering beter af te stemmen tussen de verschillende beoordelaars is gecommuniceerd dat het cijfer 7 geldt als ijkpunt voor een reguliere master thesis. Indien het cijfer voor het verslag van de begeleider meer dan 1 punt verschilt van het cijfer van de tweede beoordelaar dan worden de beoordelaars gevraagd om met elkaar te overleggen en te komen tot een cijfer waar ze beiden achter kunnen staan.

De Master Thesis projecten zoals beschreven in bijlage 3c zullen geëvalueerd worden volgens deze aangescherpte procedure. De afstudeerwerken van het cohort studenten dat begonnen is in het academisch jaar 2012-2013 zullen per 1 juli 2014 beschikbaar zijn.

[3] Het master thesisprojectvoorstel (inclusief rebuttal) wordt beoordeeld door de begeleider en een tweede onafhankelijke beoordelaar (één van de vier leden van de programmaraad). De presentatie van het projectvoorstel, beoordeeld door twee onafhankelijke examinatoren (niet de eigen begeleider) wordt tevens meegenomen in het eindcijfer (10%).

Herstelplan punt 5:
De examencommissie zal de voortgang van het project gaan monitoren waarbij gebruik gemaakt wordt van het portfolio.

Binnen het blackboard systeem NESTOR is er naast het gezamenlijke deel met algemene- en cursusinformatie, hiervoor een individueel onderdeel aangemaakt om de voortgang te bewaken. In dit individuele onderdeel, genoemd 'Personal Traject' kan de student allerlei informatie uploaden, die gecontroleerd wordt door de scientific coach. De scientific coach controleert hierbij of de student de gevraagde documenten van voldoende kwaliteit aanlevert.

Het ' personal traject' bevat de volgende onderdelen (bijlage 5a, figuur 1):

- Personal Development: In dit onderdeel moet de student het Curriculum Vitae, de individuele leerdoelen en de voortgangsdocumenten plaatsen (bijlage 5a, figuur 2). Zodra de student een document geplaatst heeft, zal de scientific coach de kwaliteit beoordelen. De scientific coach geeft achter het geplaatste document in NESTOR aan of de kwaliteit voldoende is ('Approved by coach: yes/no'). Tevens is er ruimte voor de scientific coach om feedback te geven en kan de coach ook nog aanvullende informatie uploaden voor de student. In een schematisch overzicht kan de scientific coach de voortgang van het hele proces volgen (bijlage 5a, figuur 3).
- Master Project: De studenten kunnen hier hun documenten uploaden voor het review proces of ter beoordeling. De student hoeft de documenten niet meer per email te verzenden. Zodra een document geplaatst is, krijgt de reviewer, dan wel de beoordelaar een mailtje dat het document klaar staat voor review of beoordeling. Het review commentaar en de beoordeling kan ook weer geplaatst worden binnen dit deel van NESTOR. In dit onderdeel volgt de scientific coach of de individuele student de documenten op tijd geplaatst heeft.
- Seminars: De studenten wonen minimaal 10 seminars per jaar bij en van elk seminar schrijven ze een korte reflectie. Net als bij het onderdeel 'Personal Development' beoordeelt de scientific coach de kwaliteit en kwantiteit van de geplaatste documenten. De scientific coach geeft in NESTOR aan of het geplaatste document van voldoende kwaliteit is en voegt eventueel feedback toe.
- Research Meetings: Net als bij het onderdeel ' seminars' schrijven de studenten een korte reflectie van de twee-wekelijkse onderzoeksbijeenkomsten van de afdelingen Epidemiologie en Psychiatrische Epidemiologie (ICPE). De scientific coach beoordeelt ook hier de geplaatste documenten, geeft aan of de kwaliteit van de geplaatste documenten voldoende is, en geeft feedback indien nodig.

Om de voortgang van de studie, en het Master Thesis Project in het bijzonder, goed te bewaken voor de student is er een protocol opgesteld voor een gesprekkencyclus (Bijlage 5b). Volgens dit protocol dient er minimaal elk half jaar een voortgangsgesprek plaats te vinden tussen de student en de scientific coach. De scientific coach is een 'Principal Investigator' met kennis van het onderwerp en de gevolgde methodiek maar niet verantwoordelijk voor de directe begeleiding van de student,die verantwoordelijk is voor de monitoring van de studievoortgang van de student. De voortgang van de studenten wordt tevens besproken in de programmaraad (aan het einde van het 1^{e} jaar en halverwege het tweede jaar).

Herstelplan punt 6:
In de coach groep zal meer aandacht besteed worden aan de verschillende onderdelen van het onderzoeksproces en de voortgang van het project.

Voordat de studenten starten met het schrijven van een onderzoeksvoorstel voor het Master Thesis Project (in de maand maart van het eerste jaar), wordt tijdens de coachgroep bijeenkomsten aandacht besteed aan de empirische cyclus, het formuleren van een goede onderzoeksvraag op basis van een duidelijke hypothese, en de interpretatie van onderzoeksresultaten onder meer van ander onderzoek dat als voorbeeldmateriaal wordt gebruikt. De studenten presenteren en bediscussiëren in de coachgroepbijeenkomsten ook de eigen onderzoeksresultaten. Om meer structuur te geven aan de coachgroepbijeenkomsten en te waarborgen dat bovenstaande onderwerpen aan bod komen is een handleiding opgesteld (bijlage 6).

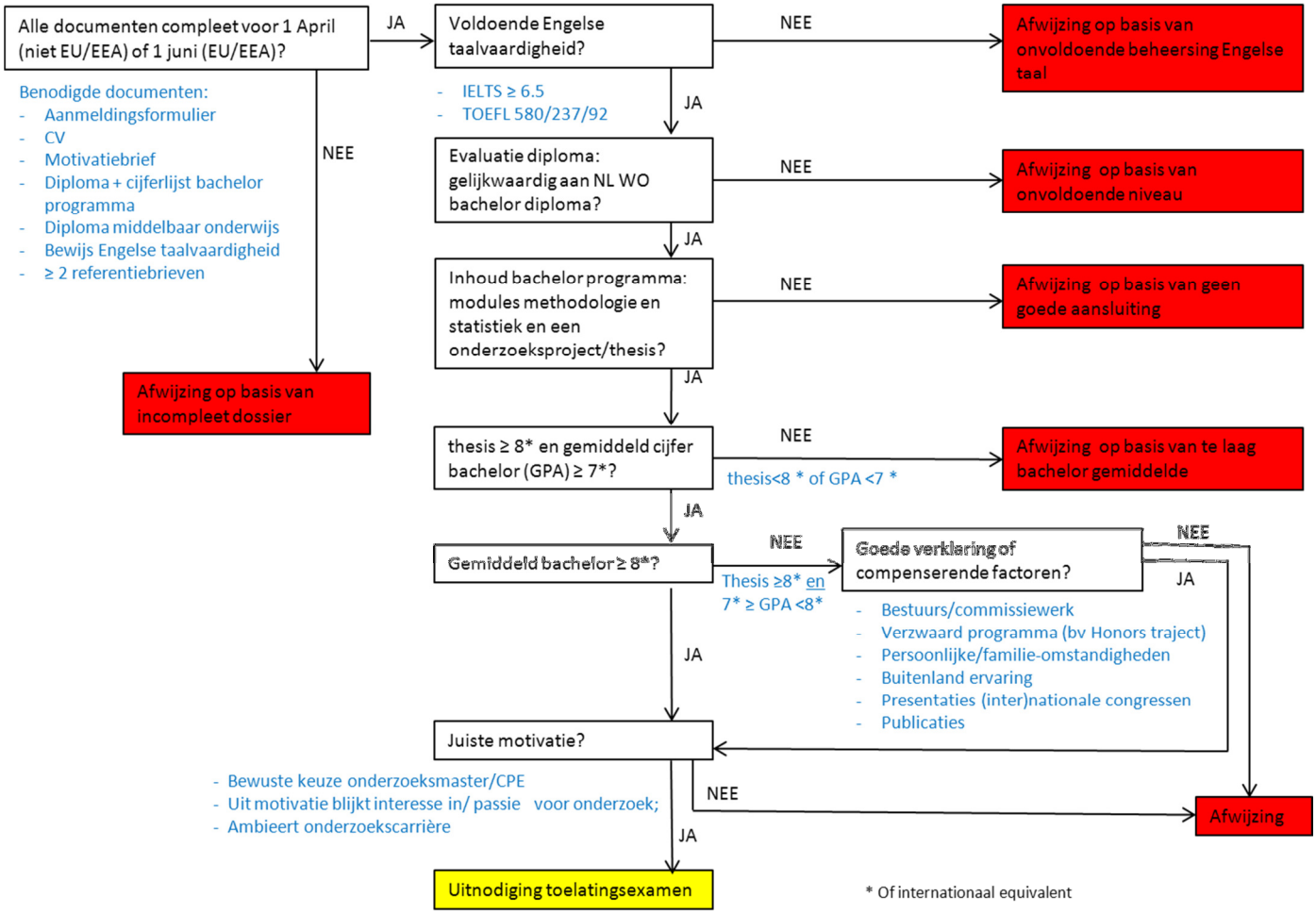
Kennis van de verschillende onderdelen van het onderzoeksproces wordt daarnaast ook opgedaan bij de seminars en de twee-wekelijkse onderzoeksbijeenkomsten van de afdelingen Epidemiologie en Psychiatrische Epidemiologie. Dit alles stimuleert de studenten om kritisch te leren nadenken over een goede opzet van onderzoek en in het streven onderzoeksvragen te leren formuleren die tot een toegevoegde waarde leiden binnen hun eigen vakgebied.
De voortgang van de master thesisprojecten wordt maandelijks besproken binnen de coachgroep waarbij de planning zoals die omschreven is in het master thesisprojectvoorstel als leidraad genomen wordt.

Reflectie op uitdagender Master Thesis Projecten
Door de begeleiding van de studenten volledig te beperken tot Principal Investigators uit de vier hoofdstromen van de opleiding heeft er voor gezorgd dat de studenten direct betrokken raken bij het onderzoek van de meest succesvolle onderzoekers binnen deze vier hoofdstromen. Hierdoor zullen de Master Thesis Projecten hoogstwaarschijnlijk uitdagender worden en zal het niveau van de Master Thesis Projecten verhogen.

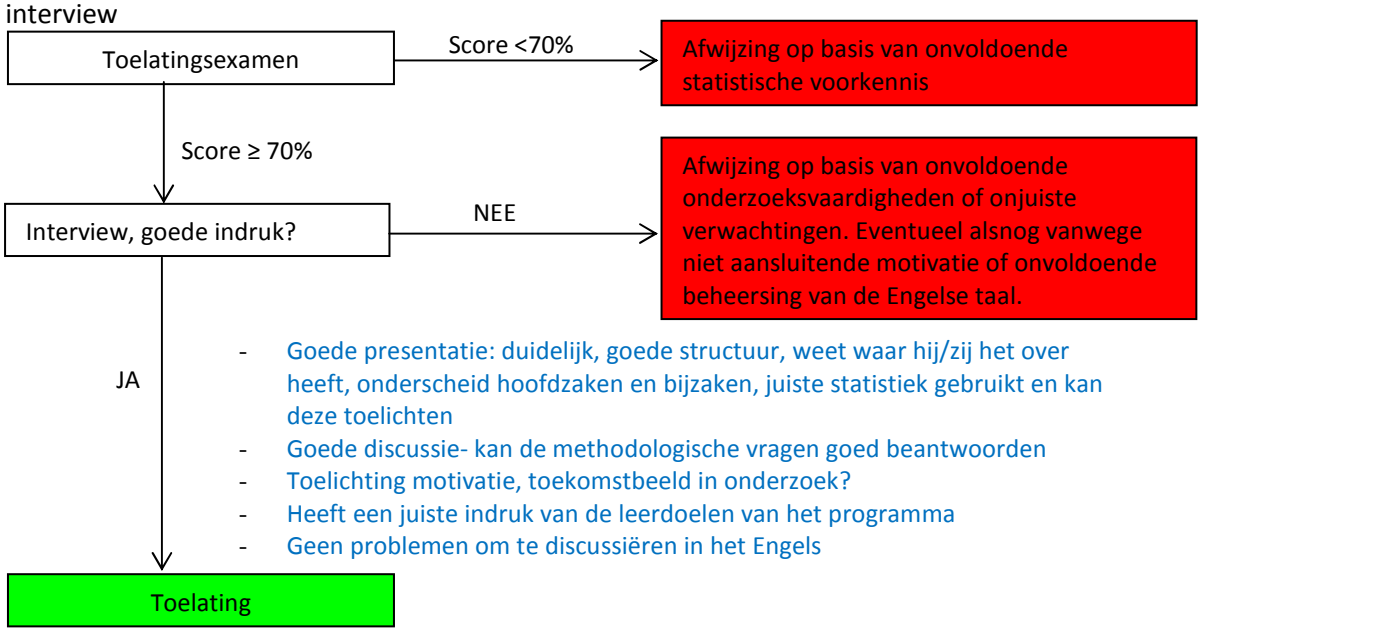
De toevoeging van het innovatieve karakter van het project in het projectvoorstel is goed verlopen. De studenten en begeleiders zijn hierdoor beter gefocust op wat de onderzoeksprojecten aan innovatie zullen bijdragen. Het wordt nu ook als apart onderdeel beoordeeld, al in de fase van het projectvoorstel zodat het onderdeel nog kan worden verscherpt tijdens het Master Thesis Project. Op dit moment is het echter nog onduidelijk of dit tot betere wetenschappelijke prestaties van de studenten van de onderzoeksmaster zullen leiden.

De voortgang van de projecten is op dit moment goed. Alle projecten van afgelopen jaar zijn op tijd afgerond en hebben geen vertraging opgelopen. Dit komt mede doordat er binnen de opleiding veel aandacht wordt geschonken aan de voortgang, zowel in coach groepen als via ons electronisch systeem Nestor.

Bijlage 1a. Schematische weergave van de selectie procedure voor CPE (m.i.v. 2012-2013)- voorselectie



Schematische weergave van de selectie procedure voor CPE (m.i.v. 2012-2013)- toelatingsexamen en interview



Bijlage 1b. Toelatingstoets 2012 en 2013

INTAKE EXAM STATISTICS – RESEARCH MASTER CPE (2012)
The questions in this exam test the chapters 1 to 10 of *Fundamentals of Biostatistics*, by Bernard Rosner, edition 7, Brooks/Cole. It is allowed to use this book during the exam.

By submitting the answers to the questions of this exam, you solely pledge that you have personally taken this exam without the help of anybody else.

Question 1
In a study on energy intake, the weights at baseline were measured for 120 individuals. The sample mean was calculated as 78.5 kg, the standard deviation as 11.3 kg. After the study was closed, it became clear that the measurement device had a bias: all observed weights were too small. In fact each person had 10% more weight than was recorded.
The standard deviation of the real weights is

a) smaller than 11.3 kg
b) 11.3 kg
c) 12.43 kg
d) larger than 11.3 kg, but it is not possible to calculate it exactly

Question 2
A diagnostic test for disease D has a sensitivity of 0.9 and a specificity of 0.8. The test is used on all individuals of a population that consists of 900 healthy individuals and 100 individuals suffering from disease D.
What is the probability P that an individual from this population with a positive test result really suffers from disease D?

a) P is smaller than 0.25
b) P is lager than or equal to 0.25 and smaller than 0.5
c) P is lager than or equal to 0.5 and smaller than 0.75
d) P is lager than or equal to 0.75

Question 3
In a population, 10% of the individuals have blood group B. If we assume that being a blood donor is independent of the blood group and blood donors are mutually independent, what is the probability (rounded to two decimals) that in a random sample of 20 blood donors from this population more than two individuals have blood group B?

a) 0.29
b) 0.39
c) 0.61
d) 0.68

Question 4
In a large population of students, the systolic blood pressure is normally distributed with mean 120 mm Hg and variance 100 mm Hg. P is the probability that the sample mean of 25 randomly selected individuals from this population is larger than 125 mm Hg.
This probability P

a) is smaller than or equal to 0.001
b) is larger than 0.001 and smaller than or equal to 0.01
c) is larger than 0.01 and smaller than or equal to 0.1
d) is larger than 0.1

Question 5
In a study among 500 pregnant women, 35 smoked during pregnancy. From this sample, the researchers calculated a 95% confidence interval for the proportion of women smoking during pregnancy. The upper limit of this confidence interval is

a) smaller than 0.08
b) larger than or equal to 0.08 and smaller than 0.09
c) larger than or equal to 0.09 and smaller than 0.10
d) larger than or equal to 0.10

Question 6
A researcher would like to calculate the sample size needed for her study. She wants to compare two groups on the basis of normally distributed variables. She expects to show a difference of 10 between the two population means and intends to use a two sided test with a significance level of 0.05 and a power of 80%. The number of participants is

a) smaller than 40 in each group
b) more than 39 but less than 51 in each group
c) more than 50 in each group
d) impossible to calculate without further information

Question 7
In a study concerning weight loss, the weights (in kg) of 16 individuals were measured twice; before and after a diet. For each person the weight loss was calculated. This weight loss is considered to be normally distributed and the researchers test the null hypothesis "mean weight loss = 10 kg" against the one sided alternative "mean weight loss > 10 kg"
The mean weight loss in the sample was 12 kg with a standard deviation of 3.9 kg. The null hypothesis was tested, using a significance level of 0.05.
To test the null hypothesis

a) we can use the table of the standard normal distribution, the null hypothesis is rejected
b) we can use the table of the standard normal distribution, we cannot reject the null hypothesis
c) we can use the table of the t distribution, the null hypothesis is rejected
d) we can use the table of the t distribution, we cannot reject the null hypothesis

Question 8
In an arbitrary school, 72 children were interviewed about their smoking behaviour. The research question is to find out if boys and girls have the same percentage of smokers or not.

gender * smoking Crosstabulation

Count

		smoking		
		smoking	non-smoking	Total
gender	boys	6	6	12
	girls	10	50	60
Total		16	56	72

To analyze the data in this table,

a) the Chi-square test is valid; the P-value is smaller than or equal to 0.05
b) the Chi-square test is valid; the P-value is larger than 0.05
c) the Chi-square test is not valid; we can use Fisher's exact test
d) the Chi-square test is not valid; we can use McNemar's test

Question 9

Two wards of two hospitals ("first" and "second") were compared with regard to the length of stay of their patients. The distributions of the variable length of stay had the same shape in both hospitals. The Mann-Whitney test was performed and gave an exact P-value of 0.001. Also some descriptive statistics were given:

Ranks

	hospital	N	Mean Rank	Sum of Ranks
length of stay	first	11	7.59	83.50
	second	13	16.65	216.50
	Total	24		

The level of significance is 0.05. We can conclude that

a) we cannot use the Mann-Whitney test if we do not know if the distributions are skewed
b) the first hospital has a significant longer stay
c) the second hospital has a significant longer stay
d) there is a significant difference in length of stay between the two hospitals, but we need more information to see which hospital has the longest length of stay

Question 10

In a case control study, 100 patients with malaria were matched to 100 controls. In the group of cases, 50 spent their summer holidays near the equator. In the control group only 20 did. The odds ratio of getting malaria for the group who had their summer holidays near the equator relative to the group who spent their holidays elsewhere was calculated as 4.

The 95% confidence interval for the odds ratio in the population is rounded

a) [3.8 ; 4.2]
b) [3.4 ; 4.6]
c) [2.1 ; 7.5]
d) [2.9 ; 5.6]

Question 11

Measuring exactly the body length of a newborn is nearly impossible. The reading error is a random variable with a normal distribution with mean 0 cm and standard deviation 1 cm.

What is the probability that the observed length of a randomly chosen newborn is 1.5 cm too small or even smaller (compared to his / her actual length)?

a) 0.065
b) 0.13
c) 0.87
d) 0.935

Question 12

In the year 2008, blood pressures were measured in a sample of 200 women. A 95% reference (or prediction) interval was calculated as well as a 95% confidence interval for the mean blood pressure. In 2012, this study will be repeated with a sample of 400 women and both intervals will be calculated again. We assume that the standard deviation in both studies will be the same.

a) we expect the reference interval to be wider in 2012 than in 2008
b) we expect the reference interval to be smaller in 2012 than in 2008
c) we expect the confidence interval to be wider in 2012 than in 2008
d) we expect the confidence interval to be smaller in 2012 than in 2008

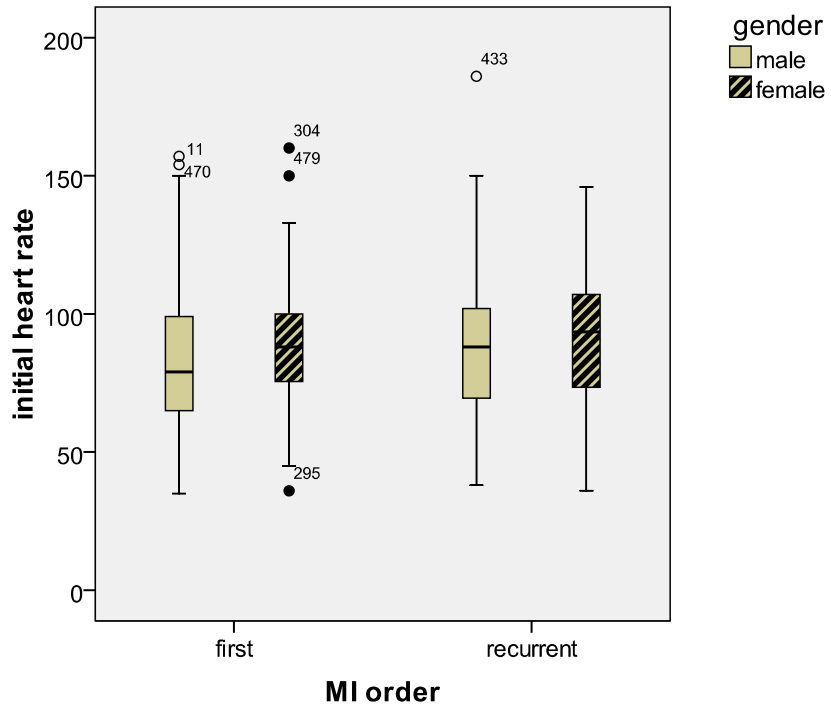
Question 13.
The T4 value can be used as a diagnostic test to separate diseased persons (Hypothyroid) from non-diseased persons (Euthyroid). If the T4 value is low, this is an indication of the disease.

T4 value	**Hypothyroid**	**Euthyroid**
5 or less	18	1
5.1 – 7	7	17
7.1 - 9	4	36
More than 9	3	39
Totals:	32	93

From the table below you can see that if you increase the cut-off value for the test

a) both sensitivity and specificity will increase
b) the sensitivity will increase but the specificity will decrease
c) the sensitivity will decrease but the specificity will increase
d) both sensitivity and specificity will decrease

In a large hospital, 500 patients were hospitalized with an acute Myocardial Infarction (MI). Several variables were recorded: sex, initial heart rate (beats per minute), whether the patient had a first or recurrent MI and whether the patient died within five days or not. The following output was generated.



		Died within five days		
		yes	no	total
sex	women	18	182	200
	men	8	292	300
	total	26	474	500

Question 14
From the graph we can see that

a) the highest recorded heart rate is 433 beats per minute
b) the median initial heart rate of men with a recurrent MI is higher than the median initial heart rate of men with a first MI
c) women have a significant higher heart rate than men
d) all a, b and c are true

Question 15
From the table, the relative risk of dying within five days for women relative to men is

a) smaller than or equal to 0.28
b) higher than 0.28 but smaller than or equal to 1
c) higher than 1 but smaller than or equal to 3.5
d) higher than 3.5

Question 16
From the table, the proportion of all patients that died within five days can be calculated together with its 90% confidence interval.

a) the value 0.070 is contained in the 90% confidence interval for this proportion
b) the value 0.070 is **not** contained in the 90% confidence interval for this proportion

Question 17
In a large study of adolescents, 165 out of 712 boys reported that they always used a seat belt compared with 91 of 641 girls. The standard error of the difference in proportions of boys and girls who always use their seat belts is rounded

a) 0.01
b) 0.02
c) 0.03
d) 0.04

Question 18
From seven patients, the ages were recorded:

Patient	1	2	3	4	5	6	7
Age	34	36	41	38	27	52	36

For the statistical analysis, the ages were ranked. The rank of the age of patient number 4 will be

a) 5
b) 4½
c) 4
d) 3½

INTAKE EXAM STATISTICS – RESEARCH MASTER CPE (2013)

The questions in this exam test the chapters 1 to 10 of *Fundamentals of Biostatistics*, by Bernard Rosner, edition 7, Brooks/Cole. It is allowed to use this book during the exam. A table with standard normal probabilities is provided at the end of the exam.

By submitting the answers to the questions of this exam, you solely pledge that you have personally taken this exam without the help of anybody else.

Diabetes and Urinary Infections in Pregnant Women

Urinary infections in pregnant women may contribute to adverse pregnancy outcomes for both mother and child. Diabetes mellitus is considered an important risk factor for urinary infections. The prevalence of diabetes mellitus (worldwide) is approximately 3%. In a cross-sectional study, 6000 pregnant women were randomly selected from the Netherlands and tested for urinary infections. The number of infected women with and without diabetes is provided in the following contingency table.

Diabetes * Infections Crosstabulation

Count

		Infections		Total
		No	Yes	
Diabetes	No	5520	290	5810
	Yes	161	29	190
Total		5681	319	6000

Question 1:

Based on the prevalence of diabetes mellitus of 3% the probability that one or more women from a random sample of 20 women would have diabetes is

a) Smaller than 0.25
b) Smaller than 0.50, but larger than 0.25
c) Smaller than 0.75, but larger than 0.50
d) Larger than 0.75

Question 2:

Based on the contingency table above the prevalence of urinary infections of pregnant women without diabetes mellitus is estimated at

a) 319/6000
b) 319/5681
c) 290/5810
d) 290/6000

Question 3:

The estimated prevalence of diabetes mellitus from the contingency table is determined at 190/6000. The standard error of this estimated proportion is

a) Smaller than 0.001
b) Smaller than 0.01, but larger than 0.001
c) Smaller than 0.1, but larger than 0.01
d) Larger than 0.1

Question 4:
The researchers wanted to know whether urinary infections and diabetes are associated. To answer this question they could calculate a test statistic for the contingency table:

e) The Chi-square test is valid and the P-value is smaller than or equal to 0.05
f) The Chi-square test is valid and the P-value is larger than 0.05
g) The Chi-square test is not valid, but we can use Fisher's exact test
h) The Chi-square test is not valid, but we can use McNemar's test

Question 5:
The odds ratio for urinary infections of pregnant women with diabetes mellitus compared to pregnant women without diabetes mellitus is estimated at approximately

a) 0.292
b) 0.327
c) 3.428
d) 19.03

Birth Weights of Children
In a birth cohort of 211 children (99 girls and 112 boys), the birth weight of these children (g) was investigated. In a linear regression analysis the effect of mother's weight (kg), gender (0=boy, 1=girl), and parity (0=first born, 1=not first born) on birth weight was determined. Part of the output of this linear regression analysis is provided below.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2520929,720	3	840309,907	4,536	,004[b]
	Residual	38345276,204	207	185242,880		
	Total	40866205,924	210			

a. Dependent Variable: birthweight (g)
b. Predictors: (Constant), gender of the child, parity, mother's weight (kg)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3125,171	196,214		15,927	,0000
	Mother's weight (kg)	6,528	3,040	,148		,0329
	Parity	131,869	59,908	,150		,0288
	Gender of the child	-118,299	60,026	-,134		,0501

a. Dependent Variable: birthweight (g)

Question 6:
The estimate of 131.869 for parity in the regression output means that

a) Each first born child is 131.869 grams lighter than each child that is not first born
b) Each first born child is 131.869 grams heavier than each child that is not first born
c) First born children are on average 131.869 grams lighter than children that are not first born
d) First born children are on average 131.869 grams heavier than children that are not first born

Question 7:
Based on the estimated regression equation, the predicted birth weight of a first born female child with a mother of 70 kg is equal to

a) 3463.832 gram
b) 3582.131 gram
c) 3595.701 gram
d) 3714.000 gram

Question 8:
The t-values in the output of the linear regression analysis are missing. The t-value for the effect of mother's weight that should have been reported (with three decimals) in this output

a) Is equal to 2.147
b) Is equal to 0.148
c) Is equal to 0.450
d) Cannot be calculated from the information of the table

Question 9:
Unfortunately, the birth weights of the children were obtained with a scale that was not properly calibrated. After some studies it turned out that the weights of the children were too low and all birth weights should have been 10% higher. In case the linear regression analysis above would have been conducted on the correct birth weights, what would have changed in the output?

a) Nothing, everything would be exactly the same
b) Only the intercept of the equation would increase with 10%
c) Only the unstandardized coefficients would increase with 10%
d) The unstandardized coefficients and the standard errors would increase with 10%.

<u>Memory Scores of the Elderly</u>
In a cohort study on the elderly, the memory of the participants were determined with the Immediate recall Buschke Memory Test. In total 432 participants (200 males and 232 females) were given 16 words that they should memorize in a short period of time. After they were finished memorizing, the investigators immediately tested the participants and denoted the correct number of words that each participant could recall.
The frequency distribution of the memory scores for males and the output of the Wilcoxon rank sum test on memory scores between males and females are provided below

# Words	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Frequency	0	0	2	10	15	41	32	34	24	19	15	5	2	1	0	0	0

Wilcoxon Scores (Rank Sums) for Variable Memory Classified by Variable Gender					
Gender	**N**	**Sum of Scores**	**Expected Under H0**	**Std Dev Under H0**	**Mean Score**
Female	232	57317.50	50228.0	1283.84787	247.058190
Male	200	36210.50	43300.0	1283.84787	181.052500
Average scores were used for ties.					

Question 10:
The median memory score for males

a) Is equal to 5
b) Is equal to 6.5
c) Is equal to 8
d) Cannot be determined

Question 11:
From the memory scores of males, the average number of correctly memorized words and the standard deviation in the scores were determined at 6.67 and 2.15, respectively. Based on the assumption that memory scores are approximately normally distributed, the 95% confidence interval on the mean memory score for males is approximately

a) Is approximately [2.46 ; 10.88]
b) Is approximately [6.37 ; 6.97]
c) Is approximately [5.00 ; 9.00]
d) Cannot be determined

Question 12:
From the memory scores of males, the average number of correctly memorized words and the standard deviation in the scores were determined at 6.67 and 2.15, respectively. Based on the assumption that memory scores are approximately normally distributed, the probability that an arbitrary male memorizes less than or equal to 10 words is

a) 0.885
b) 0.061
c) 0.939
d) Cannot be determined

Question 13:
Assume that the a priori probability of correctly answering each word is equal to 0.90 for both genders. The expected number of participants that would recall all words correctly is equal to

a) Approximately 0 participants
b) Approximately 43 participants
c) Approximately 80 participants
d) Approximately 389 participants

Question 14:
The investigators were interested in differences in memory between males and females. The investigators concluded that

a) They cannot use the Mann-Whitney test, since memory is binomially distributed
b) Females have a significant better memory at the significance level of 0.05
c) Males have a significant better memory at the significance level of 0.05
d) There is a significant difference in memory, but we need more information to determine which gender has a better memory.

Question 15:
The investigators decided that they wanted to investigate the effect of education on memory for males. Education was categorized as low, medium, and high. The investigators expected that the variation in memory scores would vary with education. To test the hypothesis that education does not affect the mean memory scores at a significance level of 0.05, the investigators should select

a) the standard one-way analysis of variance method
b) the Mann-Whitney test
c) Kruskal-Wallis test
d) None of the above

Screening Breast Cancer
Screening on breast cancer can be performed with an MRI. Based on an meta-analysis the sensitivity and specificity for women of all age groups were determined at 0.8 and 0.85. (A meta-analysis is an analysis of data from different cohort studies with the intention to obtain pooled estimates from the cohort studies.)

Question 16:
In case the prevalence of breast cancer is equal to approximately 12%, the probability that a woman has truly breast cancer when she has received a positive test results from the MRI

a) Smaller than 0.25
b) Smaller than 0.50, but larger than 0.25
c) Smaller than 0.75, but larger than 0.50
d) Larger than 0.75

Question 17:
The sensitivity and specificity of the MRI may depend on the age of the women. A study was set-up to determine whether the sensitivity of the MRI is affected by age. A random sample stratified by age (≤40 years and >40 years) was intended. To determine a difference of 10% in sensitivity between the two age groups (75% versus 85% sensitivity), how large should the total sample size be for a type I error of 0.05 and a power of 0.80

a) Smaller than 250
b) Smaller than 500, but larger than 250
c) Smaller than 750, but larger than 500
d) Larger than 750

Question 18:
An alternative for screening breast cancer is an mammography, which has a specificity of approximately 90%. In one of the cohort studies that was selected for the meta-analysis, all women in the study underwent both an MRI and a mammography. To test the hypothesis that the specificity of both screening methods are equal one should use

a) McNemar's test
b) Pearson's Chi-square Test
c) Cochran-Mantel-Haenszel test
d) None of the above

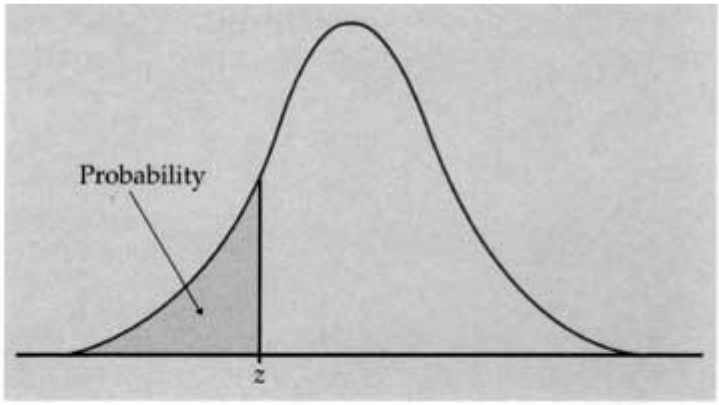


Table entry for z is the area under the standard normal curve to the left of z.

TABLE A Standard normal probabilities

z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
−3.4	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0003	.0002
−3.3	.0005	.0005	.0005	.0004	.0004	.0004	.0004	.0004	.0004	.0003
−3.2	.0007	.0007	.0006	.0006	.0006	.0006	.0006	.0005	.0005	.0005
−3.1	.0010	.0009	.0009	.0009	.0008	.0008	.0008	.0008	.0007	.0007
−3.0	.0013	.0013	.0013	.0012	.0012	.0011	.0011	.0011	.0010	.0010
−2.9	.0019	.0018	.0018	.0017	.0016	.0016	.0015	.0015	.0014	.0014
−2.8	.0026	.0025	.0024	.0023	.0023	.0022	.0021	.0021	.0020	.0019
−2.7	.0035	.0034	.0033	.0032	.0031	.0030	.0029	.0028	.0027	.0026
−2.6	.0047	.0045	.0044	.0043	.0041	.0040	.0039	.0038	.0037	.0036
−2.5	.0062	.0060	.0059	.0057	.0055	.0054	.0052	.0051	.0049	.0048
−2.4	.0082	.0080	.0078	.0075	.0073	.0071	.0069	.0068	.0066	.0064
−2.3	.0107	.0104	.0102	.0099	.0096	.0094	.0091	.0089	.0087	.0084
−2.2	.0139	.0136	.0132	.0129	.0125	.0122	.0119	.0116	.0113	.0110
−2.1	.0179	.0174	.0170	.0166	.0162	.0158	.0154	.0150	.0146	.0143
−2.0	.0228	.0222	.0217	.0212	.0207	.0202	.0197	.0192	.0188	.0183
−1.9	.0287	.0281	.0274	.0268	.0262	.0256	.0250	.0244	.0239	.0233
−1.8	.0359	.0351	.0344	.0336	.0329	.0322	.0314	.0307	.0301	.0294
−1.7	.0446	.0436	.0427	.0418	.0409	.0401	.0392	.0384	.0375	.0367
−1.6	.0548	.0537	.0526	.0516	.0505	.0495	.0485	.0475	.0465	.0455
−1.5	.0668	.0655	.0643	.0630	.0618	.0606	.0594	.0582	.0571	.0559
−1.4	.0808	.0793	.0778	.0764	.0749	.0735	.0721	.0708	.0694	.0681
−1.3	.0968	.0951	.0934	.0918	.0901	.0885	.0869	.0853	.0838	.0823
−1.2	.1151	.1131	.1112	.1093	.1075	.1056	.1038	.1020	.1003	.0985
−1.1	.1357	.1335	.1314	.1292	.1271	.1251	.1230	.1210	.1190	.1170
−1.0	.1587	.1562	.1539	.1515	.1492	.1469	.1446	.1423	.1401	.1379
−0.9	.1841	.1814	.1788	.1762	.1736	.1711	.1685	.1660	.1635	.1611
−0.8	.2119	.2090	.2061	.2033	.2005	.1977	.1949	.1922	.1894	.1867
−0.7	.2420	.2389	.2358	.2327	.2296	.2266	.2236	.2206	.2177	.2148
−0.6	.2743	.2709	.2676	.2643	.2611	.2578	.2546	.2514	.2483	.2451
−0.5	.3085	.3050	.3015	.2981	.2946	.2912	.2877	.2843	.2810	.2776
−0.4	.3446	.3409	.3372	.3336	.3300	.3264	.3228	.3192	.3156	.3121
−0.3	.3821	.3783	.3745	.3707	.3669	.3632	.3594	.3557	.3520	.3483
−0.2	.4207	.4168	.4129	.4090	.4052	.4013	.3974	.3936	.3897	.3859
−0.1	.4602	.4562	.4522	.4483	.4443	.4404	.4364	.4325	.4286	.4247
−0.0	.5000	.4960	.4920	.4880	.4840	.4801	.4761	.4721	.4681	.4641

Bijlage 2a. Instroom 2012-2013

Application nr	Tijdig compleet?	Engelse taalvaardigheid	Diploma gelijkwaardig NL BSc WO?	Inhoud programma: incl methodologie	Inhoud programma: incl thesis/ project	Cijfer thesis/ research project	GPA/ schaal	compensatie factoren	Motivatie (brief): Bewuste keuze CPE	Motivatie (brief): interesse in onderzoek	Motivatie (brief): Ambieert onderzoeks-carrière	Interview/ Toelatingsexamen?	Evalatie interview: Presentatie	Evalatie interview: Discussie	Evalatie interview: Motivatie	Evalatie interview: Juiste beeld CPE	Evalatie interview: Engels	Uitslag toelatingstoets	**Beslissing toelatings-commissie**
2012-1	+	+	+ (RUG)	+	+	8/10	8,4/10 Cum Laude		+	+	+/-	ja	+	+	+	+	+	+	toelaten
2012-5	+	+	+ (WUR)	+	+	7,0/10	6,5/10	Actief in de algemene introductiecommissie van de WUR	+	+	+	ja	++	++	+	+	+	–	toelaten
2012-8	+	+	+	+	+	88/100 (4/4)	GPA=3.9/4 with honors; Rank 2/263	Double degree BSc	+	+	+/-	ja	++	++	+	+	+	+	toelaten
2012-23	+	+	+	+	+	A	MSc CGPA 3,9/4, BSc CGPA 3,8/4	publicatie	+	+	+	ja	+	+	+	+	+	+	toelaten
2012-33	+	+	+ (Leiden)	+	+	10/10 (NL)	9/10; Cum Laude	co-auteur publicatie; VWO in 5 jr afgerond; 1ste National Biology Olympiad, 3e International Biology Olympiad Peking (n=250)	+	+	+	ja	++	+	+	+	+	+	toelaten
2012-34	+	+	+ (RUG)	+	+	7,5/10	7/10	Zitting in studievereniging Psychology (penningmeester, voorzitter).	+	+	+	ja	+	+	+	+	+	–	toelaten
2012-35	+	+	+ BSc Honours (A'dam)	+	+	A+	3,9/4 Summa Cum Laude		+	+	+	ja	+	++	+	+	+	+	toelaten

Bijlage 2b. Evaluatie aanmeldingen academisch jaar 2013-2014

Application nr	Tijdig compleet?	Engelse taalvaardigheid	Diploma gelijkwaardig NL BSc WO?	Inhoud programma: incl methodologie	Inhoud programma: incl thesis/ project	Cijfer thesis/ research project	GPA/ schaal	compensatie factoren	Motivatie (brief): Bewuste keuze CPE	Motivatie (brief): interesse in onderzoek	Motivatie (brief): Ambieert onderzoeks-carrière	Interview/ Toelatingsexamen?	Evalatie interview: Presentatie	Evalatie interview: Discussie	Evalatie interview: Motivatie	Evalatie interview: Juiste beeld CPE	Evalatie interview: Engels	Uitslag toelatingstoets	**Beslissing toelatings-commissie**
niet EU/EEA																			
2013-01	+	verklaring Engelstalig onderwijs	+	+	+	A	3,8/4	publicatie (in press)	+	+	?	ja	+	+	+/-	+	+	_	Afwijzen onvoldoende statistische kennis
2013-05	+	Engelstalig onderwijs	+/-	+	+	A	A, 1st class honors	werkervaring als research assistent, aantal awards o.a. uit UK	+	+	+	ja	+	_	+	+	+	_	Afwijzen onvoldoende statistische kennis
2013-08	+	+	+	+	+	A	3,85/4		+	+	+	ja	+	+/-	+	+	+	+	Afwijzen (discussie tijdens het interview niet overtuigend --> twijfel, dus afwijzen)
2013-09	+	+	+	+	+	B (rank 3 van 550 theses)	90/100; rank 3/80	publicatie, enige onderzoekservaring veldwerk, excellentie awards, president student association, buitenland-stage	+	+	+	ja	+	+/-	+	+	+	_	Afwijzen onvoldoende statistische kennis
2013-15	+	Verklaring engelstalig onderwijs.	+	+	+	A	3,9/4	Relevante werkervaring (lecturer Epidemiology, Biostatistics, and Research methodology), congrespresentaties, publicaties.	+	+	+	ja	+	_	+	+	+	+	Afwijzing geen goede discussie, onvoldoende methodologische kennis
2013-16	+	+	+	+	+	74% (defense 76%)	67% (65-70% = B+)	Werkzaam als Medical Officer bij Internat. Centre for Diarrhoeal Disease Research	+	+	?	ja	+	+/-	+	+	+	_	Afwijzen onvoldoende methodologische kennis
2013-20	+	+	+	+	+	BSc: A; Thesis MSc: 'excellent'	3,4/4	Publicaties, 3mnd cursus 'Leadership and management skills'.	+	?	+/-	ja	+	+/-	+	+	+	_	Afwijzen onvoldoende statistische kennis

Application nr	Tijdig compleet?	Engelse taalvaardigheid	Diploma gelijkwaardig NL BSc WO?	Inhoud programma: incl methodologie	Inhoud programma: incl thesis/ project	Cijfer thesis/ research project	GPA/ schaal	compensatie factoren	Motivatie (brief): Bewuste keuze CPE	Motivatie (brief): interesse in onderzoek	Motivatie (brief): Ambieert onderzoeks-carrière	Interview/ Toelatingsexamen?	Evalatie interview: Presentatie	Evalatie interview: Discussie	Evalatie interview: Motivatie	Evalatie interview: Juiste beeld CPE	Evalatie interview: Engels	Uitslag toelatingstoets	**Beslissing toelatings-commissie**
EU/EEA																			
2013-07	+	+	+	+	+	nog niet afgerond (1ejaarssym-posium 8.0; Bio-medisch onderzoek 8.0)	7,5/10		+	+	+	ja	+	_	++	+	+	_	Afwijzen onvoldoende statistische kennis
2013-24	+	+	+	+/-	+	6,8/10	7,5/10	verzwaard programma bachelor	+/-	+	+/-	+/-	+	+/-	_	_	+	_	Afwijzen onvoldoende statistische kennis & niet overtuigende motivatie voor onder-zoek; cijfer thesis te laag
2013-25	+	+	+	+	+	8/10	7/10	publicatie, newsletter editor. Uitstekende referen-ties UMCG, o.a. stage Epidemio-logie. Door persoonlijke (familie) om-standigheden: lager gemid-delde Bsc programma	+	+	+	ja	+	+	+	+	+	+	Toelaten
2013-28	+	+	+	+	+	7,5/10	7,5/10	Bestuurs- en commissie-werk	+/-	+	+	ja	?	?	?	?	?	?	Teruggetrok-ken na uitnodiging voor het interview-andere opleiding
2013-30	+	+	+	+	+	8/10	7/10	verzwaard programma bachelor (35 ECTS extra) in nominale tijd van 3 jaar; BSc project zelf opgezet; in 2013 onderzoeks-assistant	+	+	+	ja	+	+	+	+	+	+	Toelaten

Application nr	Tijdig compleet?	Engelse taalvaardigheid	Diploma gelijkwaardig NL BSc WO?	Inhoud programma: incl methodologie	Inhoud programma: incl thesis/ project	Cijfer thesis/ research project	GPA/ schaal	compensatie factoren	Motivatie (brief): Bewuste keuze CPE	Motivatie (brief): interesse in onderzoek	Motivatie (brief): Ambieert onderzoeks-carrière	Interview/ Toelatingsexamen?
Niet EU/EEA												
2013-02	+	verklaring Engelstalig onderwijs	–	+	+	B	3,01/4 (B)		+	+/-	+/-	Afwijzen (niveau onvoldoende)
2013-03	+	verklaring Engelstalig onderwijs	+	+	+	B	2,58/4		+	+/-	+/-	Afwijzen (cijfers relevante vakken en bachelor gemiddelde onvoldoende)
2013-04	–	?	–	+	+	59%	pass		?	?	?	Afwijzen (incompleet dossier)
2013-06	–	?	–	+/-	?	?	?		?	?	?	Afwijzen (incompleet dossier)
2013-10	+	verklaring engelstalig onderwijs	+	+	+	A	BSc: 3,4/4	publicatie accepted; award top 10 essay	+	+	+	Afwijzen (twijfel, cijfers relevante vakken te laag)
2013-11	+	verklaring engelstalig onderwijs	+	+	+	very good	BSc 3,6 (Distinction); MSc 3,48 (A-B)		+	+	+	Afwijzen (cijfers wisselvallig)
2013-12	–	+	+/-	+/-	?	?	2069/2800 (=74%) First division		?	?	?	Afwijzen (incompleet dossier)
2013-13	+	–	+	+	+	B	BSc: 2.6, MSc 3,1	relevante werkervaring (instructor epidemiology,biostatistics, research methodology)	–	+/-	+/-	Afwijzen (onvoldoende beheersing Engelse taal, bachelor gemiddelde te laag)
2013-14	+	engelstalig onderwijs	+	+	+	excellent	BA: 2,6 / MA: 3,7	geen	+	+	+	Afwijzen (cijfers relevante vakken en bachelor gemiddelde te laag)
2013-17	+	verklaring engelstalig onderwijs	+	+	+	2.2 ('lower second division')	2.1 (upper second division)		+	+	+	Afwijzen (bachelor gemiddelde te laag & onvoldoende cijfer thesis)
2013-18	+	–	–	+/-	+	B (project defense A)	3,9/5 (2nd class honours/upper division)		+	+	?	Afwijzen (bachelor gemiddelde te laag & onvoldoende cijfer thesis)
2013-19	+	verklaring engelstalig onderwijs	+	–	–	geen thesis	3,2/4=B+		+	+	+/-	Afwijzen (geen goede aansluiting)
2013-21	+	+	+	+	+	thesis project (6.6/7), senior thesis (6.0/7)	6,2/7; Rank 4/25.	Extra cursus afgelopen jaar: Biostatistical methods I (Nihes) en SPSS advanced.	+	+	+/-	Afwijzen (ook aangemeld voor 2012: tijdens het ïnterview werd toen duidelijk dat haar motivatie niet goed aansluit bij CPE)
2013-22	+	+	+	+	–	geen thesis	3.63/4, rank 21/57 (top39%)		+/-	+/-	+/-	Afwijzen (te laag bachelor gemid-delde;geen overtuigende motivatie voor CPE)

Application nr	Tijdig compleet?	Engelse taalvaardigheid	Diploma gelijkwaardig NL BSc WO?	Inhoud programma: incl methodologie	Inhoud programma: incl thesis/ project	Cijfer thesis/ research project	GPA/ schaal	compensatie factoren	Motivatie (brief): Bewuste keuze CPE	Motivatie (brief): interesse in onderzoek	Motivatie (brief): Ambieert onderzoeks-carrière	Interview/ Toelatingsexamen?
2013-23	+	engelstalig onderwijs	+	–	–	geen thesis	GPA = 65.7 (>=60%=1st division)	Publicaties als co-author; poster presentaties congressen	?	?	?	Afwijzen (geen goede aansluiting en motivatie sluit niet aan)
EM2 - Babel	+	–	+	–	–	–	81/100 (1st degree)		– CPE keuze 3	?	?	Afwijzen (geen goede aansluiting, onvoldoende beheersing Engelse taal)
EM- Angle 1	+	verklaring engelstalig onderwijs	+	+	+	B, 'pass by supplementary examina-tion'	niet gegeven		CPE keus 2	?	?	Afwijzen (te lage cijfers voor relevante vakken en research projects)
EM- Angle 2	+/-	?	+	–	–	geen thesis	3,2/5 (B)		CPE keus 2	–	–	Afwijzen (geen goede aansluiting)
EM- Angle 3	+	+	+/-	+	+	B+	3,4 ; (2nd class honors, upper division, B)		?	?	?	Afwijzen (te laag bachelor gemiddelde)
EM - LOTUSIII	+	+	+	+/-	+	A	3,8 Cum Laude	publicaties	CPE keus 2	?	?	is al toegelaten bij keuze 1 (Farmaco epidemiologie)
EM- Fatima al Fihri 1	+	–	–	–	–	geen thesis			CPE keus 2			Afwijzen (onvoldoende niveau, onvoldoende beheersing Engelse taal)
EM- Fatima al Fihri 2	+	IELTS gepland	+	–	–	geen thesis	pass		wil naar de VS	–	–	Afwijzen (geen goede aansluiting en motivatie sluit niet aan)
EM- Alrakis II	+	+	+	–	–	geen thesis	ordinary diploma'		CPE keus 2	–	–	Afwijzing (geen goede aansluiting, geen aansluitende motivatie)
EU/EEA												
2013-26	+	IELTS gepland (Engels motivatiebrief +/-)	+	–	+	5.75/6	'very good', GPA 5.44/6;		?	+/-	+/-	Afwijzing (geen goede aansluiting en geen overtuigende motivatie voor CPE)
2013-27	+	?		+	+	nog niet afgerond	tot nu toe (110 ECTS): 6,7	Verschillende stages w.o. 4 mnd stage Max Planck Inst.. Door familie omstandigheden (2009-13) studievertraging en lagere cijfers.	+	+	+	Afwijzen (te vroeg; nog 20 ECTS doen--> nog niet op BSc niveau).
2013-29	+	+	+	+	+	Thesis project nog niet afgerond	6,8 (155 ECTS)		+	+	+	teruggetrokken; bachelor niet op tijd afgerond

Bijlage 2c. Evaluatie eerste aanmeldingen academisch jaar 2014-2015.

Application nr	Tijdig compleet?	Engelse taalvaardigheid	Diploma gelijkwaardig NL BSc WO?	Inhoud programma: incl methodologie	Inhoud programma: incl thesis/ project	Cijfer thesis/ research project	GPA/ schaal	compensatie factoren	Motivatie (brief): Bewuste keuze CPE	Motivatie (brief): interesse in onderzoek	Motivatie (brief): Ambieert onderzoeks-carrière	Interview/ Toelatingsexamen?	Evalatie interview: Presentatie	Evalatie interview: Discussie	Evalatie interview: Motivatie	Evalatie interview: Juiste beeld CPE	Evalatie interview: Engels	Uitslag toelatingstoets	**Beslissing toelatings-commissie**
2014-02	+	Verklaring Engelstalig onderwijs	+	+	+	MSc thesis B; BSc thesis A	MSc 3,65/4 (good-excellent); BSc 3,65/4	publicatie 1e auteur; lecturer methodologie o.a.	+	+/-	+	ja	+	+	+	ja	+	_	Afwijzen: onvoldoende statistische kennis
2014-04	+	Verklaring Engelstalig onderwijs	+	+	+	A	GPA MSc 3.7/4; BSc 3.9/4 (good-excellent)	publicatie 1e auteu (2013)	+/-	+	?	ja	+/-	_	_	_	+	+	Afwijzen: motivatie sluit niet aan en onvoldoende methodologische kennis
2014-05	+	+	+/-	+	+	A	GPA BSc 3.7 (Cum Laude) en MD 3.1	publicaties	+/-	+	+	ja	+/-	+/-	+	+	+	_	afwijzen: nog onvoldoende methodologische kennis
2014-06	+	+	+	+	+	76	Gemidd niet ge-geven. Meeste cijfers >80 (BSc).	publicatie	+	+	+	ja	+	-	?	?	_	?	heeft haar aanmelding teruggetrokken; reden is dat ze tijdens het toelatingsexamen ontdekte dat haar statistiek kennis onvoldoende zou zijn.
2014-09	+	Verklaring Engelstalig onderwijs	+	+	+	A	GPA MSc 3.8/4; BSc 3.8/4.	publicaties, onderzoekservaring, extra methodologische cursussen gevolgd (georganiseerd door John Hopkins en Harvard)	+	+	+	ja	+	+	+	+	+	_	afwijzen: onvoldoende statistiek kennis (heeft vorig jaar ook het toelatingsexamen gedaan met onvoldoende resultaat)
2014-18	+	+	+	+	+	BSc thesis I: 1/5 (excellent)	Top bijna alleen 1-en (excellent), een enkele 2.	6 mnd exchange student Canada (2008)	++	+	+	ja	++	+	+	+	+ +	+	<u>TOELATEN!</u>
2014-21	+	+	+	+	+	A	GPA 3.8/4.3 (=93,9%)		+/-	+	+	ja	+	_	+	?	+	?	heeft haar aanmelding teruggetrokken

Bijlage 3a. Onderwerpen Master Thesis Projecten 2012-2013

Department of Epidemiology	
LifeLines	
Incidence of cancer in LifeLines, in relation to family risk and comorbidity	Prof. dr. G.H. de Bock
Methods for longitudinal data analysis	Prof. dr. E.R. van den Heuvel
Clinical epidemiology/Patient Oriented Outcomes	
Development of methods to assess when health states are considered as worse than death	Dr. P.F.M. Krabbe
Quality of life weights for complications and disease states after radiotherapy in the head and neck region	Dr. T.L. Feenstra
Simultaneous evaluation of multiple outcomes in reproductive medicine and obstetrics	Dr. H. Groen
Genetic epidemiology	
To identify disease causing pleiotropic genes	Dr. B.Z. Alizadeh
Genetics (gwa) of lung function decline and changes in airway responsiveness in the Vlagtwedde Vlaardingen Cohort study	Prof. dr. H.M. Boezen
Candidate gene studies on remission of asthma	Dr. J.M. Vonk
Genetic influences on heart rate variability and their effect on cardiovascular outcomes in the PREVEND study	Prof. dr. H. Snieder
Health Psychology	
How can partners help to relieve patients' fatigue?	Prof. dr. M. Hagedoorn
Which factors influence patients' decisions regarding uptake of care?	Prof. dr. A.V. Ranchor
The empirical basis of mindfulness and self-compassion: assessment and the effects of interventions including these concepts	Prof. dr. R. Sanderman
Psychiatric Epidemiology	
Parental history of depression & anxiety; impact & mechanisms (NESDA)	Dr. C.A. Hartman
Making Measurement Smarter: Adaptive Testing for Depression	Prof. dr. P. de Jonge
The UPPER study: a combined diary-neuroimaging approach	Prof. dr. A.J. Oldehinkel
Public Health Research	
Labour market inclusion of young people	Prof. dr. U. Bültmann
Health literacy and ageing workers	Prof. dr. S.A. Reijneveld
Long-term outcomes in children born preterm (growth, development, or the role of socioeconomic factors)	Prof. dr. S.A. Reijneveld

Bijlage 3b. Master Thesis Projecten afgerond in het academisch jaar 2012-2013

Student	Titel Master Thesis	Begeleider	Onderzoeks-groep	Eindcijfer Master Thesis Project[2]
FK	Multimorbidity in Psychotic Disorders and their Unaffected Siblings: An Epidemiological Perspective	prof. dr. H. Snieder (PI)[1]	Epidemiology	7,4
RA	Symptom Dimensions of Depression in Patients with Coronary Heart Disease and The Association With Cardiovascular Prognosis; A meta-analysis.	prof. dr. P. de Jonge (PI)	Psychiatrische Epidemiologie-ICPE	8,2
XL	Candidate genes in relation to major depressive disorder trajectories across time: improved replication with a refined phenotype based on chronic course?	dr. C. Hartman (PI)	Psychiatrische Epidemiologie-ICPE	8,7
CZ	The association between work-family conflict and work functioning; A systematic review, cross-sectional study	prof. dr. U. Bultmann (PI)	Public Health Research	5,9
APF	Effectiveness of psychological interventions for cancer patients: a meta-analysis.	prof. dr. R. Sanderman (PI)	Health Psychology	7,8
XAP	Mammography and magnetic resonance imaging (MRI) screening in women with BRCA gene mutations: Risk- stratified & age-stratified individual patient data (IPD) meta-analysis	prof. dr. G.H. de Bock (PI)	Epidemiology	8,1
BD	The application of competing risks methodology in cardiovascular risk prediction models: Should non-cardiovascular mortality be considered in the Systematic Coronary Risk Evaluation (SCORE) model?	prof. dr. H. Hillege (PI)	Epidemiology	7
SM	Maternal pre-pregnancy obesity in relation to childhood obesity in the Gecko Drenthe Birth Cohort	dr. S. Scholtens	Epidemiology	7,1
JC	Symptom trajectories of mood disorders and their relation to disability over time	prof. dr. P. de Jonge (PI)/ prof. dr. U. Bultmann (PI)	Public Health Research	8,9
VR	The offshore work environment: First steps of an intervention mapping approach aiming to enhance healthy ageing at work	prof. dr. U. Bultmann (PI)	Public Health Research	8,2
LE	Clustering and correlates of multiple health risk behaviours in children; A cross-sectional study.	dr. E. Corpeleijn (PI)	Epidemiology/ MRC Epidemiology Unit Cambridge	8
JTMR	The effect of classroom ventilation on respiratory health on primary school children	prof. dr. H.M. Boezen (PI)	Epidemiology	6,9

[1] PI= Principal Investigator;

[2] Evaluatie Master Thesis Projecten 2012-2013 was nog volgens de procedure voorafgaand aan het herstelplan (zie paragraaf 2.2.8 van de zelfevaluatie, pag. 27):

- Beoordeling van het verslag en de praktische uitvoering van het project door de begeleider (60%);
- Beoordeling van het verslag door een tweede onafhankelijke beoordelaar (één van de vier leden van de programmaraad) (30%);
- Beoordeling eindpresentatie (10%).

Bijlage 3c. Lopende Master Thesis Projecten die naar verwachting afgerond zullen worden in het academisch jaar 2013-2014

Student	Title project	Supervisor (Principal Investigator [PI])	Onderzoeks-groep
ATA	Bi-phenotype genome-wide association analysis (GWAS) to identify pleiotropic genes that affect depression and inflammation *	Prof. H. Snieder (PI)	Epidemiology
AB	Parental History of depression and Anxiety: Impact and Mechanisms *	dr. C. Hartman (PI)	Psychiatrische Epidemiologie -ICPE
SG	Vitamin B6, B12 and folic acid deficiency in relation to postoperative change in cognitive functioning in elderly patients with a diagnosis of cancer: PICNIC (pilot) study	Prof. G.H. de Bock (PI)	Epidemiology
FM	Individual differences in the association between adolescent stress exposure and adolescent antisocial behavior	Prof. T. Oldehinkel (PI)	Psychiatrische Epidemiologie -ICPE
YAdV	The influence of baseline severity of anxiety disorders on antidepressant efficacy *	Prof. P. de Jonge (PI)	Psychiatrische Epidemiologie -ICPE
MZ	How can partners help to relieve patients' fatigue	Prof. M. Hagedoorn (PI)	Health Psychology

* Een abstract (ingediend voor het ISCOMS congres 2014) is toegevoegd in Bijlage 4d.

Bijlage 4a. Handleiding voor de student bij het schrijven van het Master Thesis Projectvoorstel

Research proposal Master Thesis Project

The research proposal has a standard structure according to the Dutch National Council on Medical Research (ZonMw). The report should include the following:

1. Name student & supervisor(s)
2. Title
3. Summary
4. Project Group
5. Relevance of the research topic
6. Knowledge transfer and perspectives
7. Background of the research topic: a critical review of literature resulting in a research question
8. Research aim and specific research questions / hypotheses
9. Study Design
10. Study population, including recruitment and statistical power analysis
11. Outcome measurements: primary, secondary
12. Confounders, effect modifiers
13. Statistical analysis
14. Expertise
15. List of references of 10 most important articles
16. Extra information on approval or permits

Appendix: proposal elective courses

Research Proposal Form

I. Project information

Title

maximum 3 lines

Summary

maximum 50 lines

Keywords

maximum 8

Project group

maximum 10 members

Provide here at least the names of two project members: one member in the role of “Project leader and commissioner" and one member in the role of “Administrative executive”. The project leader and commissioner is responsible for the content and the daily supervision of the project. In case it is the same person as the applicant, please report this. In case the project is awarded, the project leader and commissioner will act as contact person, with whom ZonMW corresponds about the progress of the project (in terms of content).

The administrative executive is the legal body who in accordance with the articles of association is qualified or authorized to represent the organization.

Project group (other members)

There is space for the names of a maximum of ten persons. Report the persons who are expected to provide a substantial contribution to the proposed project. Report per person: name, department or discipline, institution, function within the project.

II. Content

Relevance (Significance)

maximum 50 lines

Describe the relevance of the project for the research program (of the funding agency) and in relation to the problem definition
- report as (concrete) clear and specific as possible the expected results and profits
- state the innovative character of the project in terms of contents and design/methods
- explain that this project is not a duplication of ongoing or earlier projects

Knowledge transfer (Implementation)

maximaal 50 regels

Point out the relevant groups which have an interest in the expected outcomes (gains) of the research project. Alongside with (well-known) colleagues, for whom you will publish the results and present the results at conferences, it primarily concerns users not directly connected to your research environment, but for whom the results or the approach might be useful (applicable) for another project or a possible follow-up activity. Describe these groups as clear as possible and provide, if possible, the hierarchy of importance. Moreover, describe in short the aims you would like to achieve with the transfer of the knowledge, derived from the project, or for the promotion of the use of the results by these groups. The activities to perform the aims for the knowledge transfer can vary according to the type of the project.

It is very important to indicate how you would like to inform the relevant groups about your research project in an early phase and the preliminary (half-term) results and how and in which phase you will involve them in the project. Describe the activities including the communication media (vehicles, tools) and channels to use. Moreover, describe in which phase of the project the activities will be performed and which other parties, besides yourself, could play an active role in the performance of these activities.

To recapitulate:
- formulate a clear objective for knowledge transfer
- point out future users and target groups
- name activities to reach the objective

Problem definition (Background)

maximum 50 lines

Provide a clear description of:
- the research problem and the background
- the reason/justification for submitting an application / proposal
- what we already know about the topic? what does this application add to the existing body of knowledge, to advance understanding, and what is its meaning?
- provide if possible a succinct context analysis
- provide a description of the target group if a target group is concerned and report relevant

differences regarding gender, age, ethical background and other relevant characteristics

Objective (& research questions/specific aims/hypotheses)
maximum 15 lines

· Objective - describe in clear, specific, and succinct terms what the project is about (to do)
· Following the objective – formulate a research question/specific aim

Approach (including feasibility, time schedule)
maximum 100 lines
(In case you would like to add schemes and/or figures to your proposal, you have to add them as pdf documents.)

Description of the approach:
Describe the approach (methods and analyses) used to answer the research questions or objectives, including the theoretical and/or empirical background.
Describe the study design, the study population or data sources, a description of the intervention(s), the (primary and secondary) outcome measures, the sample size calculation and the data analyses. As far as a target group is concerned, provide in the description of the approach how you will pay attention to factors like gender, age, ethnic background and/or other relevant characteristics that are important for addressing the objectives, and to what extent you will collaborate with the intermediate and/or ultimate target group (patient/consumer perspective).

Expertise (Knowledge of the subject)
Maximum 50 lines
(In case you would like to add schemes and/or figures to your proposal, you have to add them as pdf documents.)

This part is important for the assessment of the project group or person. Expertise means the competence that stems from the experience concerning the contents and practical or methodological experience that is needed to conduct the project successfully. Furthermore, the familiarity with the specific research field is important.
Describe here the earlier activities and products and the available relevant knowledge or skills of the project group or person. Products relate to publications, reports, guidelines, protocols and interventions.
Provide information about the impact of the mentioned products.

In addition, provide the number and kind of obtained subsidies (grants) and (inter)national contacts with colleagues and target groups. In case of an personal grant application, provide your resume (CV) as an appendix.

Publications
maximum 75 lines

III Extra information

Please provide information whether the project needs approval from a (recognized) medical ethics committee (in Dutch: METC) or an animal experiment committee (in Dutch: DEC).
Please report whether a permit conform the Population Screening Act (WBO) Research applies (is needed) and whether it is already obtained.
If you need other than the abovementioned permits or you have already obtained these, please report this in the field “Other permits”.

Appendix

* Elective courses

To obtain further knowledge in the area of the individual Master’s thesis, students can choose from a wide range of elective courses. The courses can be either on a specific methodology, for example advanced prognostic research or multilevel analysis, or on a specific disease, for example advanced diabetes epidemiology. Describe for each course the title, period, and ECTS. If not yet known exactly which course, describe the topics in which elective courses are preferable.
The principal investigator who supervises the student’s Master’s thesis decides, together with the student, on the programme of elective courses. Courses outside those provided by graduate schools with a formal agreement with the Graduate School for Health Research (SHARE) must be approved by the programme director.

Bijlage 4b. Review formulier Master Thesis Projectvoorstel

Reviewer's Report (max. 3 pages)

The reviewer's report is allowed to a maximum of 3 pages	
Name prog/sub-prog	CPE Master Thesis Project proposal
Student:	
Project title :	

Criteria Score					
Objective, problem definition and assignment	Very good	good	sufficient	Fair	poor

Consider the following factors:
- how clear and specific the objective is;
- how clear and verifiable the problem definition/assignment is and whether it is consistent with the objective;
- the value added to existing knowledge or practice;
- the theoretical or empirical evidence presented in support of the problem definition/assignment

Please give reasons for your score: (number of lines is adjustable to the length of the explanation)

Strategy	Very good	good	sufficient	Fair	poor

Consider the following factors:
- clarity;
- adequacy in terms of problem definition/assignment;
- adequacy of chosen methods and analyses;
- if there is a target group:
  - o the way in which the strategy reflects the factors gender, age, ethnicity and/or other characteristics relevant to the objective;
  - o degree of collaboration with intermediate and/or ultimate target group (the patient/client perspective).
- adequacy of process and effect evaluation design.

Please give reasons for your score: (number of lines is adjustable to the length of the explanation)

Project group	Very good	good	sufficient	Fair	poor

Consider the following factors:
relevant expertise;
familiarity with area in question;
prior activities and products.

Please give reasons for your score: (number of lines is adjustable to the length of the explanation)

Feasibility	Very good	good	sufficient	Fair	poor

Consider the following factors:
will it be possible to achieve the objective(s) using this strategy?
availability of facilities/staff;
realistic phasing and timetable.

Please give reasons for your score: (number of lines is adjustable to the length of the explanation)

Innovative character of the project	Very good	good	sufficient	Fair	poor

Consider the following factors:
the project is innovative;
the innovative character of the project is well recognised and described;

Please give reasons for your score: (number of lines is adjustable to the length of the explanation)

Overall quality assessment	Very good	good	sufficient	Fair	poor

Please give reasons for your score: (number of lines is adjustable to the length of the explanation)

Bijlage 4c. Beoordelingsformulier Master Thesis Projectvoorstel

Grading Form for the MT Research Proposal

Name evaluator:		Supervisor/ Evaluator 2				
Student:						
Project title :						
Department:						
The research protocol is evaluated on the protocol paragraphs qualified by described arguments. In addition, the overall score will be taken into account based upon comprehensiveness, writing style, and feasibility. Please include the rebuttal to the review comments in your evaluation and comments. **Please complete: VG=very good ('9'), G=good ('8'), S=sufficient ('7'), F=fair ('6'), P=poor ('5')**						
Title, project group, and Summary						
Title clear, referring to study aim. The project group includes relevant expertise with respect to the project contents and knowledge transfer. Summary is correct and comprehendible description of the proposal without too much detail, including perspectives	(+/- 10%)	VG	G	S	F	P
Comments:						
Relevance, Knowledge Transfer						
Clear description of the relevance of the study. Knowledge transfer should apply to objectives, target groups and activities for implementation of the study results.	(+/- 10%)	VG	G	S	F	P
Comments:						
Innovative character project						
The innovative features in terms of contents and design/methods are well stated.	(+/- 10%)	VG	G	S	F	P
Comments:						
Background, Research Aim & Research questions or hypotheses						
Clear description of on the study subject leading to the research aim. Research questions or hypotheses need a sharp wording.	(+/- 20%)	VG	G	S	F	P
Comments:						

Approach						
Study design, study population (inclusion and exclusion), population recruitment, non-response, handling sources of bias, description of intervention and control condition, outcome measures, confounders, statistical analyses. Feasibility.	(+/- 40%)	VG	G	S	F	P
Comments:						
Expertise & References						
Which expertise on the subject is needed. At least 10 relevant references	(+/-5%)	VG	G	S	F	P
Comments:						
Overall quality assessment						
	(+/-5%)	VG	G	S	F	P
Comprehensiveness, writing style, and feasibility.						
Comments:						

Agree with choice elective courses? Yes / no
If not, please motivate:

Other suggestions for elective courses:

Any additional comments:

Grade:

Date:

Signature:

Bijlage 4d. Overzicht van publicaties and congres presentaties in 2012-2014

Publicaties

de Miranda Azevedo R, Roest AM, Hoen PW, de Jonge P. Cognitive/affective and somatic/affective symptoms of depression in patients with heart disease and their association with cardiovascular prognosis: a meta-analysis. Psychol Med. 2014 Jan 27:1-15

Darvishian M, Gefenaite G, Turner RM, Pechlivanoglou P,Van der Hoek W, Van den Heuvel E, Hak E. After adjusting for bias in meta-analysis seasonal influenza vaccine remains effective in community-dwelling elderly. Journal of Clinical Epidemiology (accepted).

Dontje ML, van der Wal MH, Stolk RP, Brügemann J, Jaarsma T, Wijtvliet PE, van der Schans CP, de Greef MH. Daily Physical Activity in Stable Heart Failure Patients. J Cardiovasc Nurs. 2013 Feb 14.

Alferink M, van der Werf TS, Sopoh GE, Agossadou DC, Barogui YT, Assouto F, Agossadou C, Stewart RE, Stienstra Y, Ranchor AV. Perceptions on the effectiveness of treatment and the timeline of Buruli ulcer influence pre-hospital delay reported by healthy individuals. PLoS Negl Trop Dis. 2013;7(1):e2014.

Struijs SY, Groenewold NA, Oude Voshaar RC, de Jonge P. Cognitive vulnerability differentially predicts symptom dimensions of depression. J Affect Disord. 2013 Jun 17.

Vos JR, de Bock GH, Teixeira N, van der Kolk DM, Jansen L, Mourits MJ, Oosterwijk JC. Proven non-carriers in BRCA families have an earlier age of onset of breast cancer. Eur J Cancer. 2013 Mar 11.

van Valkenhoef G, Tervonen T, **Zhao J**, de Brock B, Hillege HL, Postmus D. Multicriteria benefit-risk assessment using network meta-analysis. J Clin Epidemiol. 2012 Apr;65(4):394-403.

Snippe E, Maters GA, Wempe JB, Hagedoorn M, Sanderman R. Discrepancies between patients' and partners' perceptions of unsupportive behavior in chronic obstructive pulmonary disease. J Fam Psychol. 2012 Jun;26(3):464-9.

Demissei BG, Postmus D, Hillege HL. Should non-cardiovascular mortality be considered in the SCORE model? Findings from the Prevention of Renal and Vascular End-stage Disease (PREVEND) cohort. European Journal of Preventive Cardiology. Planned to be submitted in March 2014.

Darvishian M, Gefenaite G, Hak E. Seasonal influenza vaccine effectiveness among the community-dwelling elderly: a mixed-effects meta-regression of case-control studies. The Lancet Infectious Diseases. Planned to be submitted in March 2014.

Roest AM, de Jonge P, Williams C, Thombs BD, **de Vries YA**, Schoevers R, Turner EH. Reporting bias in clinical trials investigating the efficacy of second generation antidepressants in the treatment of anxiety disorders. BMJ. Planned to be submitted in March 2014.

Congres presentaties(abstracts zijn hieronder toegevoegd)

de M. Azevedo R; Roest AM, de Jonge P. Symptom Dimensions of Depression in Patients with coronary Heart Disease and The Association With Cardiac Prognosis - A systematic review and meta-analysis.
- Poster presentatie ISCOMS congress 2013, UMCG Groningen.
- Presentatie European Association of Psychosomatic Medicine, Cambridge.

Khan MFH, Islam A, Quee PJ, Snieder H, van den Heuvel ER, Bruggeman R, Alizadeh BZ, The GROUP Study. Multimorbidity in Non-Affective Psychosis: An Epidemiological Perspective.
- Presentatie ISCOMS 2013, UMCG Groningen.
- Poster presentatie WEON 2013, Utrecht.
- Presentatie 4th European Conference on Schizophrenia Research ECSR 2013, Berlijn.

Phi XA, Houssami N, Leach M, Podo F, Sardanelli F, Warner E, Trop I, De Bock GH. Which screening strategy should be offered to women with BRCA gene mutations? Preliminary findings of an individual patient data meta-analysis. Presentatie ISCOMS 2013, UMCG Groningen & WEON 2013, Utrecht.

Darvishian M, Gefenaite G, Hak E. Seasonal influenza vaccine effectiveness in community-dwelling elderly: a meta-analysis of cohort studies. Presentatie ISCOMS 2012, UMCG Groningen & WEON 2013, Utrecht.

Nigatu YT, Bültmann U, Rosmalen JG, Reijneveld SA. Prospective association between obesity and depression: a longitudinal cohort study in the general population. Presentatie ISCOMS 2012, UMCG Groningen.

Demissei BG , Postmus D, Hillege HL. The Competing risk effect of non-cardiovascular mortality on total cardiovascular risk prediction: Non-cardiovascular mortality should be considered in the Systematic coronary risk evaluation (SCORE) model! Presentation WEON 2013, UMCG Groningen.

Amare AT, Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) depression working Group, Global Lipids Genetics Consortium, Nigatu YT, Hsu Y-H, Lahti J, Alizadeh BZ, Snieder H. A bivariate Genome Wide Association Study (GWAS) of depressive symptoms and lipid levels has identified pleiotropic gene loci. Abstract ISCOMS 2014, UMCG Groningen. Submitted.

Amare AT, Hsu Y-T, Su S, Lahti J, Prins BP, Alizadeh BZ, Snieder H. Evidence of association between genes in the HLA region to depressive symptoms and plasma levels of inflammatory markers (TNF-α, IL-6): A bivariate Genome-Wide Association Study (GWAS). Abstract.

Bloemen AJP, Boschloo L, Havinga P, Schoevers R, Hartman CA. Neuropsychological functioning as a risk factor for the onset of depressive and/or anxiety disorders in offspring with parental psychopathology. Abstract ISCOMS 2014, UMCG Groningen. Submitted.

Ymkje Anna de Vries, Annelieke Roest, Peter de Jonge. The influence of baseline severity on antidepressant efficacy for anxiety disorders: a meta-analysis. Abstract ISCOMS 2014, UMCG Groningen. Submitted.

Symptom Dimensions of Depression in Patients with coronary Heart Disease and The Association With Cardiac Prognosis - A systematic review and meta-analysis.

Ricardo de M. Azevedo, BSc; Annelieke M. Roest, PhD; Peter de Jonge, PhD. Interdisciplinary Center Psychopathology and Emotion regulation (ICPE), University Medical Center Groningen.

Objective: To appraise the association between symptom dimensions of depression following coronary heart disease (CHD) with cardiac prognosis.
Methods: A meta-analysis was performed based on a systematic search in MEDLINE, EMBASE and PSYCINFO without language restrictions. Studies were included if the design was prospective (minimum follow-up 1 year), depression was measured with valid and reliable instruments and the study provided separate analyses for cognitive/affective and somatic/affective symptoms. Endpoints included all-cause mortality, cardiac mortality and cardiac events.
Results: Thirteen papers fulfilled the selection criteria. These studies reported follow-up (4.8 years) of 11,128 patients. Somatic/affective symptoms were associated with adverse prognosis (HR Random, 1.19;95%CI:1.10–1.29;p<.001) but cognitive/affective symptoms were not (HR Random, 1.04;95%CI:0.97–1.12;p =.251). In a subgroup of studies that used a 1 standard deviation (SD) increase in the depressive symptom dimensions to calculate their risk estimates, only the somatic/affective dimension was associated with adverse prognosis (HR Random, 1.32;95%CI:1.17–1.48;p<.001). With the exception of a subgroup assessing studies that did not adjust for both depression dimensions (Cognitive: HR Random, 1.10;95%CI,1.04–1.17;p=.003), the pattern of findings did not change.
Conclusions: Somatic/affective depressive symptoms were more strongly and consistently associated with mortality and cardiac events in patients with CHD compared with cognitive/affective symptoms. An increase of 1-SD in the somatic/affective subscale was associated with a 32% increased risk of adverse outcome.

Multimorbidity in Non-Affective Psychosis: An Epidemiological Perspective

Khan MFH[1], Islam A[2], Quee PJ[2], Snieder H[1], van den Heuvel ER[1], Bruggeman R[2], Alizadeh BZ[1,2] , The GROUP Study

[1,]Department of Epidemiology, University Medical Center Groningen, University of Groningen, The Netherlands.

[2]Department of Psychiatry & Rob Giel Research Center, University Medical Center Groningen, University of Groningen, The Netherlands.

Background: Multimorbidity imposes overwhelming complexity over non-affective psychosis, not only in patients but also in relatives and expected to be significantly higher than in non-psychotic patients. Systematic investigation of multiple diseases together is indeed yet to be done. The aim of the study is to determine the epidemiology of multimorbidity in patients with non-affective psychosis and their relative compared to non-psychotic subjects.

Method: The study was performed within the framework of a prospective cohort study 'The Genetic Risk and Outcome of Psychosis, GROUP'. The data of 3,432 participants (975 patients, 1,003 siblings, 888 parents and 566 healthy controls) with self-reported 23 complaints as well as a lifetime diagnosis of 4 psychiatric and 119 somatic diseases (retrieved and matched from different sources e.g. detailed medical reports and structured self-reported data) were analyzed separately. Multimorbidity defined as the presence of two or more complaints/diseases in the same individual. Multimorbidity in patients (except the index disease 'non-affective psychosis') was compared to that of others. Data were analyzed through univariate statistics by gender and age groups (up to 20 years, 21 to 40 years and 41 to 65 years and over).

Result: Overall, psychotic patients showed a significantly (P<.0001) higher prevalence of multimorbidity of complaints (59.2%) compared to their siblings (48.3%) and non-psychotic subjects (45.2%). Age stratified analysis showed significantly (P<.0001) increased frequency of multimorbidity in patients (59.7%) than siblings (48%) and non-psychotic subjects (41%) at age of 21-40 years, being even a significant (P<.05) difference between siblings and non-psychotic subjects. Gender stratified analysis showed a significantly (P<.0001) increased frequency of multimorbidity in male patients (58.7%) of 21-40 years and their brothers (42.9%) compared to non-psychotic subjects (31.6%), being even a significant (P<.05) difference between siblings and non-psychotic subjects. Although we found no significant difference while analyzing 123 diseases, we observed an increasing trend of multimorbidity of diseases in patients than siblings and non-psychotic subjects across all gender and age groups.

Conclusion: Multimorbidity is a common medical complain, being significantly more frequent in psychotic patients but also in their relatives compared to non-psychotic subjects particularly in middle aged men. This also suggests a familial underlying factor.

Which screening strategy should be offered to women with *BRCA gene* mutations? Preliminary findings of an individual patient data meta-analysis

Phi XA[1], Houssami N[2], Leach M[3], Podo F[4], Sardanelli F[5], Warner E[6], Trop I[7], De Bock GH[1].

[1] Department of Epidemiology, University of Groningen, University Medical Center Groningen, Groningen, The Netherlands
[2] Screening and Test Evaluation Program (STEP), School of Public Health, Sydney Medical School, University of Sydney, Sydney, Australia
[3] On behalf of MARIBS, Section of Magnetic Resonance, Institute of Cancer Research and Royal Marsden NHS Foundation Trust, Sutton, United Kingdom
[4] On behalf of HIBCRITS, Department of Cell Biology and Neurosciences, National Institute of Health, Rome, Italy
[5] On behalf of HIBCRITS, Department of Medical and Surgical Science, University of Milan School of Medicine, Scientific Institute (IRCCS) Policlinico San Donato, Unite of Radiology, San Donato Milanese, Milan, Italy
6 Department of Medicine, Division of Medical Oncology, Sunnybrook Health Sciences Centre, University of Toronto, Toronto, Canada
[7] Centre of Breast Imaging, Hospital of Montreal, Montreal, Quebec, Canada

Background: There is no consensus on the most effective strategy (mammography or MRI) for breast cancer screening in women with *BRCA1* or *BRCA2* mutations. We aimed to evaluate the contribution of MRI to mammography in breast screening in women with *BRCA1* or *BRCA2* mutations (of all ages) using individual patient data meta-analysis.
Methods: Individual patient data were sought through contact with investigators from 13 published high-risk screening studies identified in a literature search. Seven investigators participated and for this interim analysis four databases were pooled and reported. For each study, the required information was extracted and a report was made and sent back to the authors for clarification and confirmation. Only women with a *BRCA1* or *BRCA2* mutation were included. A Bi-Rads 3,4,5 were considered as positive imaging result. The standard reference was needle or excision biopsy or confirmed as interval cancer. Pooled analysis was carried out under the assumption of study homogeneity. Sensitivity and specificity were calculated in cases where both MRI and mammography were performed and compared between mammography and the combination of MRI and mammography using McNemar χ^2.
Findings: There were data on 1,178 women (mean age= 44.22 SE = 0.296) and 4,804 screenings. There were 124 detected tumors including 6 interval cancers. The sensitivity and specificity of mammography were 33.87% and 94.04% respectively. Those of the combination of MRI and mammography were 92.74% and 81.60% correspondingly.
Interpretation: In women with *BRCA1* or *BRCA2* mutation, MRI is an effective adjunct to conventional breast cancer screening – Mammography as it increased the sensitivity of screening modality including MRI and mammography compared to mammography alone.

Seasonal influenza vaccine effectiveness in community-dwelling elderly: a meta-analysis of cohort studies

Maryam Darvishian [1, 2], Giedre Gefenaite [1, 2], Eelko Hak [1, 2]

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[2] Department of Epidemiology, University Medical Center Groningen, Groningen, The Netherlands

Introduction

Yearly influenza epidemics results in severe morbidity and mortality worldwide. Compared to healthy adults, the elderly people are at higher risk of severe complications and death following influenza infection. As recommended by the World Health Organization (WHO), vaccination is the most effective way to prevent the impact of influenza in the elderly population. However, despite recommendations, a considerable percentage of elderly people remain unvaccinated. Uncertainties about benefits of the vaccination among policy makers and patients is one of the main reasons for low vaccine uptake. The aim of our study was to review the evidence of the influenza vaccine effectiveness in the non-institutionalized elderly.

Method

To identify the cohort studies assessing influenza vaccine effectiveness we searched three electronic databases (Cochrane library, MEDLINE and EMBASE) until September 2011. The search was limited to studies in English language. Literature search resulted in 1,785 hits. After screening the titles, abstracts and full text, 14 studies met the inclusion and exclusion criteria and were included in the meta-analysis. Information on the following outcomes could be abstracted: influenza, influenza-like illness (ILI), hospitalization for influenza or pneumonia and all-cause mortality. Pooled risk ratios (RR) and their 95% confidence intervals (CI) were calculated using random effects models. Vaccine effectiveness (VE) was calculated as VE= (1-RR) × 100%.

Results

In the meta-analysis of the 14 cohort studies, inactivated influenza vaccine was 41% effective against influenza, though not significant (RR 0.59; 95% CI 0.31-1.12), but significantly associated with reduction in ILI (RR 0.62; 95% CI 0.42-0.93), hospitalization for influenza or pneumonia (RR 0.73; 95% CI 0.63-0.84) and all-cause mortality (RR 0.60; 95% CI 0.45-0.82). Subset analysis of non-season or non-vaccine matched seasons for mortality showed RR>1.

Conclusion

Inactivated influenza vaccine is associated with reduced risk of influenza-like illness, hospitalization for influenza or pneumonia and all-cause mortality in the elderly population. Such vaccination should remain a part of routine prevention program for this population.

Keywords

Inactivated seasonal influenza vaccine, Effectiveness, Community-dwelling elderly

Prospective association between obesity and depression: a longitudinal cohort study in the general population

Y.T. Nigatu [1], U. Bültmann PHD[1], J.G. Rosmalen PHD[2], S.A. Reijneveld MD/PHD[1]
[1]Department of Health sciences, University Medical Center Groningen, Groningen, The Netherlands
[2]Interdisciplinary Center for Psychiatric Epidemiology ,University Medical Center Groningen, Groningen, The Netherlands

Abstract

Introduction

Both depression and obesity are widely spread problems with major public health implications. Results of prior studies of obesity and depression relationship are contradictory, limited to self-report assessments, and relatively fewer prospective studies done in Dutch population. Therefore, it is worthwhile to examine the relationship between the two conditions over time to target prevention and intervention strategies. The aim of the present study was to examine 1) whether there is a bidirectional relationship between obesity and major depression and 2) whether urinary free cortisol level is a mediator of this relationship.

Methods

The study was performed in the PREVEND cohort study on 1094 participants, on whom data were collected in 2002/3 and 2004/6. Major depression disorder (single and recurrent) episode was assessed by the Composite International Diagnostic Interview (CIDI 2.1).Obesity was defined as > 85th percentile of Body Mass Index (BMI). Multiple logistic regression was used to assess whether obesity predicts major depression or the reverse, adjusted for potential confounders.

Results

The incidence of obesity, major depression single episode and recurrent episode was 15.8, 24.5 and 1.6 per 1000 person-years observation, respectively. Prospective analysis showed that obesity predicted onset of recurrent episode of major depression (RR=13.1, 95%CI [1.15, 149.15]), excluding those who fulfilled the criteria of recurrent depression at the baseline and adjusted for potential confounders. Major depression, both single and recurrent episodes, did not predict the onset of obesity during two years follow-up. Mediation analysis showed that urinary free cortisol didn't have role in the relationship between obesity and depression.

Conclusion

Obesity predicts the onset of recurrent depression but the reverse was not true. Cortisol had no mediating role in the relationship. Hence, care providers should be aware that mood should be monitored in obese people.

Key words: Obesity, Depression, Longitudinal

The Competing risk effect of non-cardiovascular mortality on total cardiovascular risk prediction: Non-cardiovascular mortality should be considered in the Systematic coronary risk evaluation (SCORE) model!

Demissei BG[1], Postmus D[1], Hillege HL[1,2]

[1]Department of Epidemiology, University Medical Center Groningen, University of Groningen, the Netherlands

[2]Department of Cardiology, University Medical Center Groningen, University of Groningen, the Netherlands

Background: The current version of the Systematic Coronary Risk Evaluation (SCORE) model doesn't take the competing risk of non-cardiovascular deaths into account. The aim of this study was to assess the impact of non-cardiovascular mortality on the predictive ability and potential yield of traditional cardiovascular risk factors regarding 10-year cardiovascular mortality in the general population.

Method: 5871 Participants, from the Prevention of Renal and Vascular End stage Disease (PREVEND) study, aged 40 years and older who were free of atherosclerotic cardiovascular disease (CVD) at baseline were included. A standard Cox-model and Fine & Gray model (in which non-CVD deaths were treated as competing events) were fit.

Result: During a median follow-up of 10.5 years, 130 deaths from CVD and 375 deaths from non-CVD causes were reported. Compared to standard Cox-model, the Fine & Gray model showed better calibration, particularly at higher levels of actual risk. The two models showed comparable discrimination ability; however 7.3% of individuals classified into high risk group by the standard Cox-model were reclassified into low risk group by the Fine & Gray model.

Conclusion: A competing risks model taking non-cardiovascular mortality into account yields more accurate estimates of 10-year risk of CVD mortality with more appropriate classification of individuals into the different cardiovascular risk groups. This will reduce unnecessary overtreatment and associated medical and economical consequences resulting from misclassification of individuals into the high risk group. We strongly propagate that the competing risk of non-cardiovascular mortality should be accounted for in the SCORE risk prediction model.

A bivariate Genome Wide Association Study (GWAS) of depressive symptoms and lipid levels has identified pleiotropic gene loci

Azmeraw T. Amare[1], Cohorts for Heart and Aging Research in Genomic Epidemiology (CHARGE) depression working Group, Global Lipids Genetics Consortium, Yeshambel T. Nigatu[2], Yi-Hsiang Hsu[3,4,5], Jari Lahti[6], Behrooz Z Alizadeh[1], Harold Snieder[1]

[1]Department of Epidemiology, [2]Department of Health sciences, University Medical Center Groningen, University of Groningen, Groningen, the Netherlands;
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ABSTRACT

Introduction: Depression is a heritable mental health disorder that significantly contributes to global disease burden. Levels of low-density lipoprotein (LDL) cholesterol, high-density lipoprotein (HDL) cholesterol, triglycerides and total cholesterol are also heritable. Twin studies have shown that shared genetic effects contribute to the correlation of depressive symptoms and common lipid traits (i.e. with low-density lipoprotein (LDL), high-density lipoprotein (HDL), triglycerides and total cholesterol). However, the common genetic variants associated with depressive symptoms and lipid levels have not yet been discovered.

Objective: We aimed to discover single nucleotide polymorphisms (SNPs) associated with depressive symptoms and lipid levels.

Methods: Univariate meta-GWAS summary statistics (Z-scores) of depressive symptoms and lipid levels, previously performed by two independent research groups were further evaluated for bivariate pleiotropy using the O'Brien's method (OB) and the Direct Combination of Dependent Test Statistics (dLC) approach. These methods combine test statistics (β|Z score) of two univariate meta-GWAs and calculate a global bivariate test statistics (OB|dLC) and p-value for each SNP. Any SNP with Bonferroni corrected genomewide p-value <5x10-8 was presented as genome-wide significant pleiotropic variant. In our study, four independent bivariate GWAS analysis were performed between depressive symptoms and four common lipid traits: i) LDL, ii) HDL, iii) triglycerides, and iv) total cholesterol.

Result: We evaluated 2,319,245 genotyped and imputed SNPs, and have identified several genome-wide significant SNPs (P <5×10-8) with bivariate pleiotropy between depressive symptoms and
i) HDL on chromosome (chr) 6: rs1265099*,* (gene: *PSORS1C2*), rs715299, *NOTCH4,* chr 10: rs2148489, *TECTB*, chr 11: rs2291119, *MADD*, rs1017875; rs7123436; rs7130876, *PTPRJ*, and *rs598101, FOLH1*.
ii) LDL on chr 6: rs13191258, *LOC729792*, rs592229*, SKIV2L*, chr 10: rs2148489, *TECTB.*
iii) Total cholesterol on chr 6: rs7750641, *TCF19*, rs592229, *SKIV2L*, rs2071278; rs2148489, *NOTCH4,* chr 10: rs2148489, *TECTB*, chr 11: rs747782; rs1017875; rs7123436; rs7130876, *PTPRJ*.
iv) Triglycerides on chr 5: rs161645; rs6421926; rs60271, *RAB9P1*, chr 6: rs2071278, *NOTCH4* , chr 10: rs2148489, *TECTB*, chr 11: rs326217, *MADD*.

Conclusion: We have identified common SNPs that contribute to depressive symptoms susceptibility and lipid levels. These SNPs may possibly further elucidate the association between depression and cardiovascular diseases that was not well understood in decades of epidemiological study.

Key words: Depression, lipids, Pleiotropy, Bivariate Genome Wide Association Study

Evidence of association between genes in the HLA region to depressive symptoms and plasma levels of inflammatory markers (TNF-α, IL-6): A bivariate Genome-Wide Association Study (GWAS)

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ABSTRACT

Introduction: Depression is a heritable mental health disorder that significantly contributes to global disease burden. Studies have shown that shared genetic effects contribute to both depressive symptoms and level of inflammatory markers, and a substantial common genetic influence have been found between plasma level of inflammatory markers and depressive symptoms as indicated by a significant genetic correlation. However, the common genetic variants associated with depressive symptoms and levels of inflammatory markers have not yet been discovered.

Objective: We aimed to discover single nucleotide polymorphisms (SNPs) associated with depressive symptoms and plasma levels of inflammatory markers (i.e. with tumor necrosis factor alpha-(TNF-α), ii) interleukin 6-(IL-6).

Methods: Univariate meta-GWAS summary statistics (Z-scores) of depression symptoms and plasma level of inflammatory markers (TNF-α, IL-6), previously performed by two independent research groups were further evaluated for bivariate genome wide pleiotropy using O'Brien's method (OB) and Direct Combination of Dependent Test Statistics (dLC) approach developed by Hsu YH, Chen X, Gupta M et al, 2010. Both methods combine test statistics (β|Z score) of two univariate meta-GWAs and calculate a global bivariate test statistics (OB|dLC) and p-value for each SNP. Z scores of each SNP was calculated as Z=β/SE, where β and SE were obtained from the univariate meta-GWAS analysis, and then the data were merged together by common SNP to make the data ready for eLX software that executed the statistical calculation. Any SNP with Bonferroni corrected genome-wide p-value $<5x10^{-8}$ was presented as genome-wide significant pleiotropic variant. In our study, two independent bivariate GWAS analysis were performed between depressive symptoms and two inflammatory markers: i) TNF-α ii) IL-6. **Result:** we have examined~2.4million genotyped and imputed single SNPs , and have identified several genetic loci suggestive of pleiotropy between depressive symptoms and:

i) TNF-α on chromosome(chr) 6: rs13191343, $p=4.64x10^{-7}$; rs13207315, $p= 4.46x10^{-7}$ near *HLA-C* gene, and on chr 8: rs2604383, $p=7.58x10^{-7}$; rs2721207, $p=8.09x10^{-7}$ close to *LOC137012* gene

ii) IL-6 on chr 5: rs2590424, $p=4.17x10^{-7}$ close to *FAM174A* gene, rs13163793, $p=8.13x10^{-7}$; rs279108, $7.27x10^{-7}$ near *ST8SIA4* gene, chr 6: rs9275324, $p=7.04x10^{-7}$, rs9275334, $p=8.35x10^{-7}$, rs9275351, $p=9.14x10^{-7}$, rs9275356, $p=9.29x10^{-7}$ close to *HLA-DQB1* gene, and SNPs on chromosome 20: rs6057618, $p=8.32x10^{-7}$, rs6057619, $p=5.36x10^{-7}$, rs6058807, $p=5.22x10^{-7}$, rs6057621, $p=5.66x10^{-7}$ close to *FLJ33706* gene have shown a near genome wide significant.

In both analysis, genetic variants in the HLA region have shown near genome wide significant bivariate association with both traits. We know that the HLA class genes regulate the immune system that is principally responsible for inflammatory response of the body. Hence, it is convincing if genes of the HLA region are associated with both depressive symptoms and plasma level of inflammatory markers.

Conclusion: The study has identified new genetic variants that are at least suggestive of bivariate pleiotropy with depressive symptoms and levels of inflammatory markers.

Key words: Depression, tumor necrosis factor-alpha, Interluken-6, Bivariate Genome wide association study, pleiotropy

Neuropsychological functioning as a risk factor for the onset of depressive and/or anxiety disorders in offspring with parental psychopathology

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Field of research

Psychiatric Epidemiology

Introduction

Offspring with a parental history of psychopathology have a high risk of developing depressive and/or anxiety disorders. It is therefore essential to improve our understanding of processes that underlie the onset of these disorders in high-risk offspring.

Impaired overall neuropsychological functioning has been associated with depressive disorders, and less so with anxiety disorders. Several studies have found impairments in patients with depressive disorder in remission, suggesting that impairments are more trait than state and could be present before an onset; little is known about anxiety disorders. Whether impairments are also present in healthy offspring at a high risk is unclear. Some studies have shown that neuropsychological functioning can predict the onset of depressive and/or anxiety disorders, however, results are not conclusive. The aim of this study was to further examine whether neuropsychological functioning predicts the onset of depressive and/or anxiety disorders in high-risk offspring.

Methods

This study was a prospective cohort study following offspring with a parental history of psychopathology over a period of 10 years. Diagnoses of psychiatric disorders were established with the Composite International Diagnostic Interview (CIDI) of the World Health Organisation (WHO). Neuropsychological functions were tested with the Amsterdam Neuropsychological Tasks program (ANT). The Cox Regression model was used to determine whether neuropsychological functioning (independent variables) predicts the onset of depressive and/or anxiety disorders (dependent variable).

Results

Final analyses are currently being performed. The results will be expected at the latest by the beginning of April.

Conclusion

Concluding remarks will be given as final results become available.

Key words: Depression, anxiety, neuropsychological functioning, high-risk

The influence of baseline severity on antidepressant efficacy for anxiety disorders: a meta-analysis

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Introduction

Recent studies in major depressive disorder (MDD) have demonstrated that antidepressants only show clinically significant efficacy for severely depressed patients. As a consequence, guidelines for the treatment of milder depression have changed. Little is known, however, about whether this relationship between baseline severity and antidepressant efficacy holds for anxiety disorders, for which antidepressants are also a first-line treatment. We therefore aimed to determine whether baseline severity of anxiety influences antidepressant efficacy.

Methods

We performed a meta-analysis using data from all trials of second-generation antidepressants for the short-term treatment of anxiety disorders that were pre-registered with and submitted to the Food and Drug Administration, thus avoiding publication bias. Anxiety disorders included were generalized anxiety disorder (GAD), social anxiety disorder (SAD), obsessive-compulsive disorder (OCD) and post-traumatic stress disorder (PTSD). Standardized effect sizes (Hedges' g) were calculated from the change score in placebo and drug groups separately. The influence of baseline severity on effect size was modeled in a mixed-effects meta-regression analysis including disorder, group and baseline severity as independent variables.

Results

For PTSD only, a significant positive relationship was found between baseline severity and effect size for the drug group only ($p = 0.012$); however, the difference in slope between drug and placebo group was not significant ($p = 0.159$). The model predicted a drug-placebo difference frequently defined as clinically significant in studies of MDD, ≥0.5, only in SAD at lower severity levels. For no other disorder did the model predict a difference ≥0.5 within the severity range studied.

Conclusion

No consistent relationship between baseline severity and antidepressant efficacy was found. Contrary to MDD, there is therefore no clear evidence that severely anxious patients benefit more from antidepressants than mildly anxious patients. Across the severity range studied, drug-placebo differences were nearly always of modest size (<0.5).

Key words

Anxiety disorders, antidepressants, meta-analysis, baseline severity

Bijlage 4e. Beoordelingsformulier Master Thesis

Grading Form Master Thesis

Name evaluator:		**supervisor/ 2nd evaluator**
Student:		
Project title :		
Department:		
Grade master thesis		

The master thesis is graded evaluating the various aspects of the thesis. In addition, the overall score will be taken into account based upon comprehensiveness and writing style.

Please complete: VG=very good, G=good, S=sufficient, F=fair, P=poor

Title and Summary						
Title clear, referring to study aim. Summary is a correct and comprehensible description of the master project without too much detail, including perspectives/implications.		VG	G	S	F	P
Introduction						
Theoretical framework: - does thesis build on existing scientific knowledge? - are key international publications present? - reflection on literature review ? Research questions, objectives and hypotheses: - Clear and specific description? - link theory and research questions?		VG	G	S	F	P
Methods						
- study design/methodology fits the research question - clear description of methodology in such a way that replication of the results is possible - arguments given for selection of methods? - Right statistical analyses used? - Statistical analyses fit the research questions?		VG	G	S	F	P
Results						
- properly described, including clear tables and figures? - Ordered in a logical and coherent manner, synthesis?		VG	G	S	F	P

Discussion& Conclusion						
- repetition most important findings (main results, not too detailed)? - Research questions answered and linked to the theoretical framework? - Critical reflection on data quality, analyses, and results (relating to existing literature), reflection on theory in conclusion? - Perspectives/implications?		VG	G	S	F	P
Overall quality assessment						
Scientific writing, structure, coherence, length, no abundant info, representative & neatly edited.		VG	G	S	F	P

Any comments:

Date:

Signature:

Bijlage 4f. Beoordelingsformulier praktische uitvoering Master Thesis Project

Grading Form Performance Master Thesis Project

Name evaluator:		Supervisor abroad/ outside UMCG
Student:		
Project title :		
Department:		

EVALUATION MASTER PROJECT (practical performance evaluated by supervisor)

A = excellent
B = good
C = average
D = satisfactory
E = unsatisfatory

How would you describe the:

1.	Interest/ dedication to the work	A	B	C	D	E
2.	Self initiative	A	B	C	D	E
3.	Inventively/ creativity	A	B	C	D	E
4.	Self reliance	A	B	C	D	E
5.	Perseverance	A	B	C	D	E
6.	Ability to be critical	A	B	C	D	E
7.	Insight and integration	A	B	C	D	E
8.	Practical skills	A	B	C	D	E
9.	Working pace	A	B	C	D	E
10.	Quality of the practical work	A	B	C	D	E
11.	Ability to record the work	A	B	C	D	E
12.	Interpersonal skills	A	B	C	D	E
13.	Communication skills					
	a. verbal	A	B	C	D	E
	b. written	A	B	C	D	E

Any comments:

Overall impression:

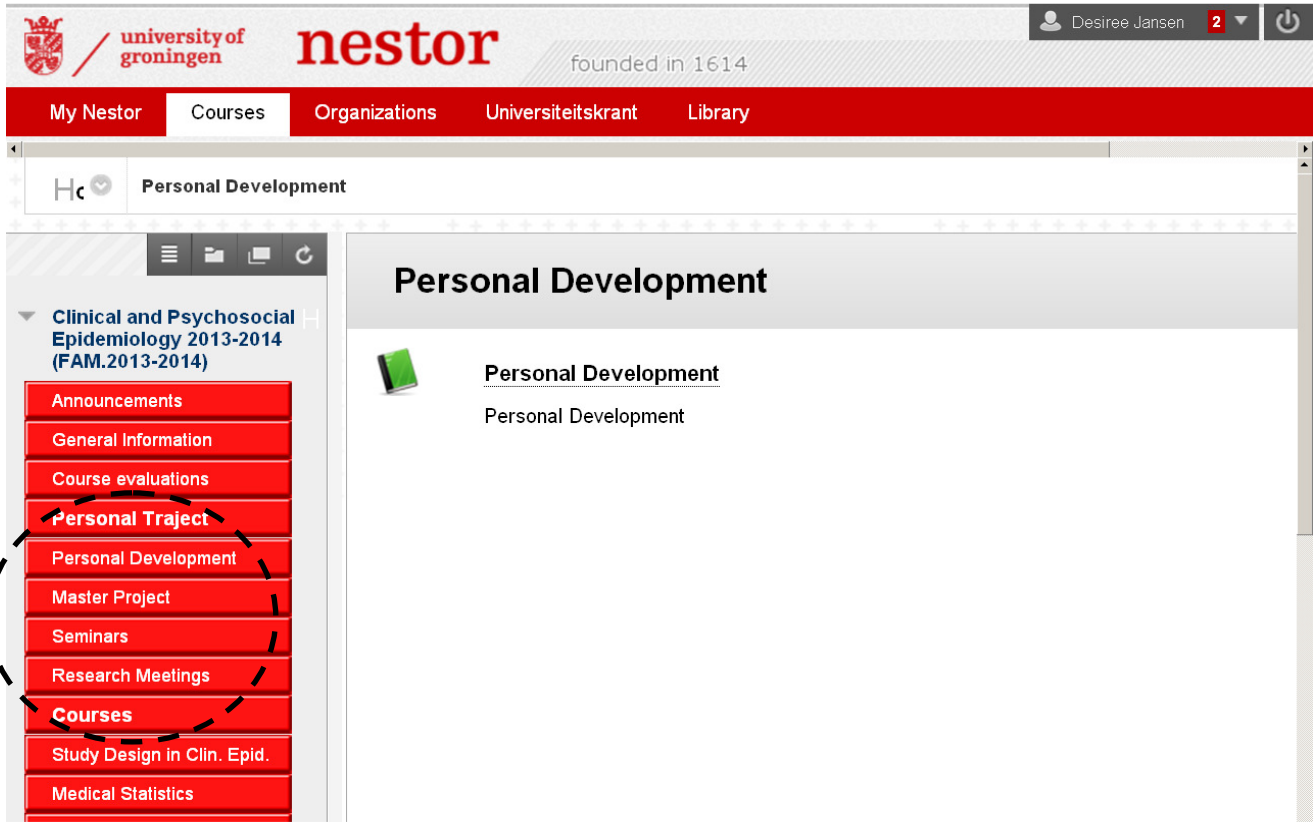
Grade:

I would offer this student a PhD position if I had one available? Yes/No

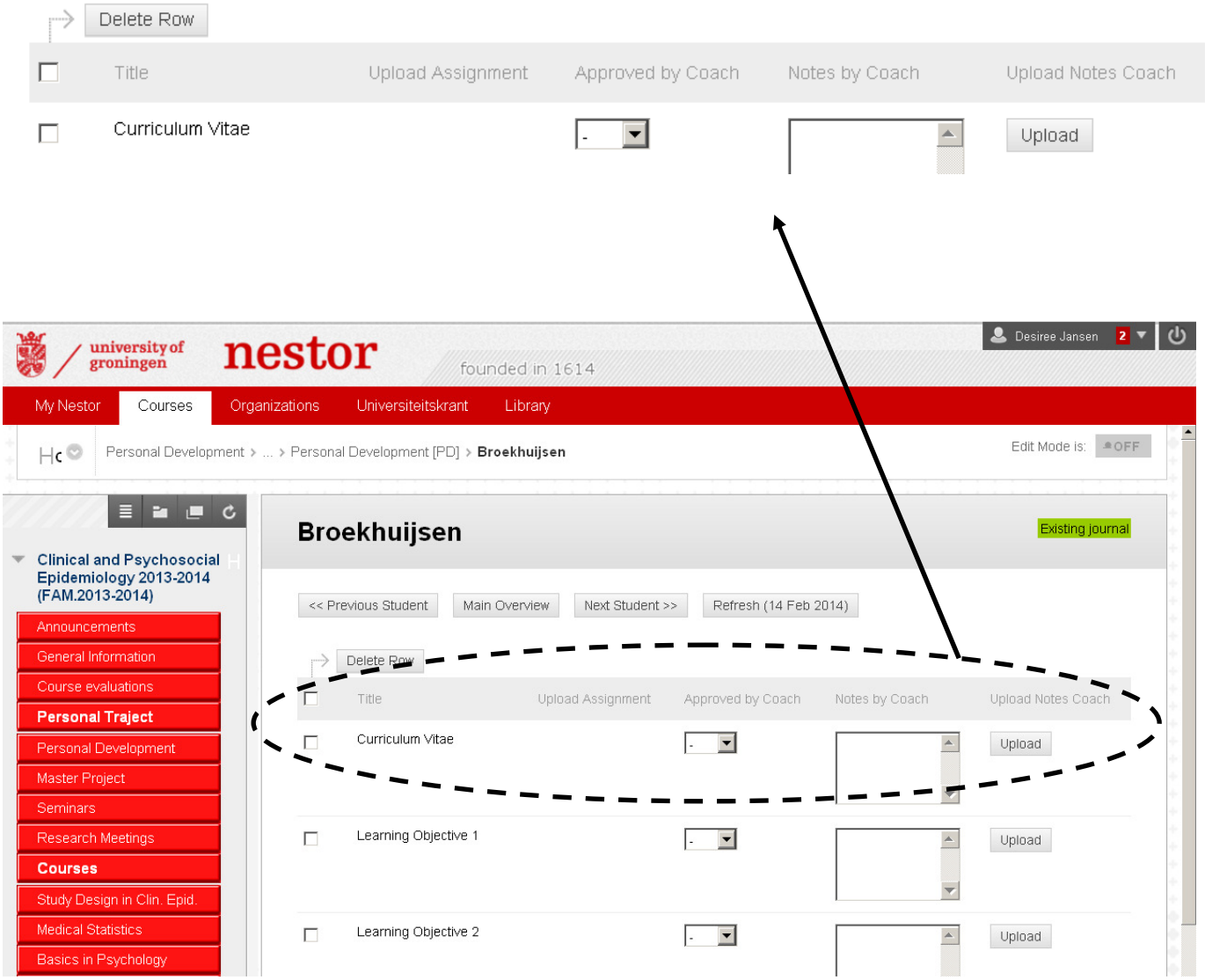
Date:

Supervisor: Signature:

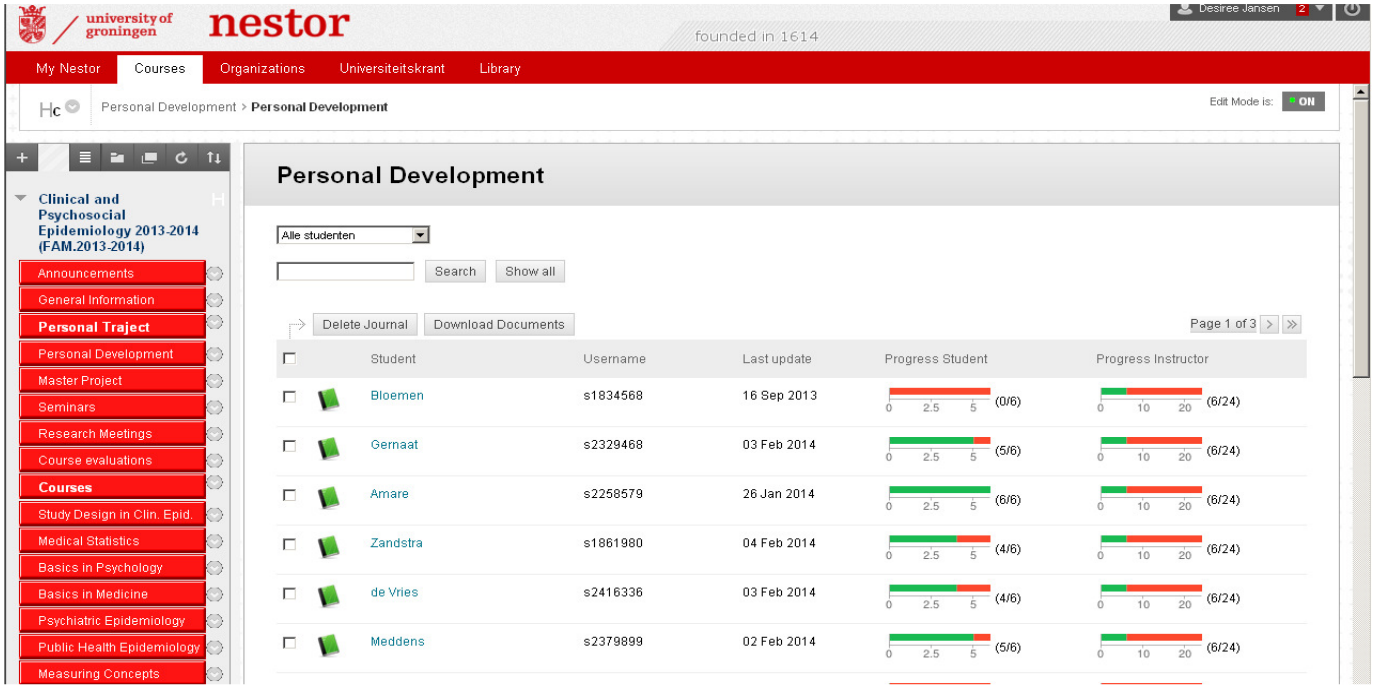
Bijlage 5a. Het portfolio in NESTOR



Figuur 1. Het nieuwe portfolio blok in NESTOR, waar studenten individueel documenten uploaden en de scientific coach de kwaliteit van de documenten kan beoordelen en schriftelijk feedback kan geven.



Figuur 2. Het blok 'Personal Development' waarin de scientific coach goedkeuring en feedback kan geven op de documenten geplaatst door de student (het CV, de individuele leerdoelen en de documenten voor de voortgangsgesprekken).



Figuur 3. Schematisch overzicht voor de scientific coach om de voortgang van de studenten te volgen

Bijlage 5b. Handleiding Evaluaties studievoortgang

Instructions evaluation study progress

Students will discuss their study progress with the scientific coach at least three times during the research master programme (after the first few courses, end year 1, halfway year 2). These individual evaluation meetings are part of the coachgroup meetings.

I Preparation

At least one week before each evaluation meeting, **the student submits** three documents:

1. Study progress, including the progress in the individual learning goals
2. Reflection on the study progress
3. Planning next 6 months

Before the meeting, **the scientific coach evaluates** the documents submitted by the student.

II Evaluation meeting

Guidelines for meeting 1 (after the first courses, in November):

1. Welcome
2. Study progress courses
   - Is the student content with the obtained results?
   - Which courses/topics went well, during which courses/topics did the student experience difficulties? Which factors were essential to obtain (or fail) the learning goal(s)?
   - To maintain the residence permit, non-EU/EEA students need to obtain at least 30 ECTS in the first year (=50% of the study load to be obtained in one year). If there is any indication that a student may fail this condition, inform how the student thinks to deal with this. Are there possibilities to reset exams? Is the student in contact with the programme coordinator or any other student support /counselling?
3. Progress Master Thesis Project
   - Does the student already have any idea about the topic for the Master Thesis Project? How is the student going to decide upon the topic?
4. Progress individual learning goals
5. Participation coachgroup
6. Points of action

Guidelines for the meeting 2 (at the end of year 1):

1. Welcome
2. Study progress courses
   - Is the student content with the obtained results? How does it compare to the obtained study results at last meeting?
   - Which new courses/topics went well, during which courses/topics did the student experience difficulties? Which factors were essential to obtain (or fail) the learning goal(s)? How do these factors compare to the factors discussed during the previous evaluation meeting?
   - To maintain the residence permit, non-EU/EEA students need to obtain at least 30 ECTS in the first year (=50% of the study load to be obtained in one year). If there is any indication that a student may fail this condition, inform how the student thinks to deal with this. Are there possibilities to reset exams? Is the student in contact with the programme coordinator or any other student support /counselling?

- Did the student decide on the elective courses? Did the student already register for the elective courses?
- Did the completed elective course(s) add necessary knowledge/skills for the Master Thesis Project?
- Is the student experiencing any deficiencies in knowledge/skills needed to perform the project? If so, how is the student going to compensate this?

3. Progress Master Thesis Project
   - Is the student able to keep the planning of the project (performance & writing of the thesis: literature review and methods)?
   - Which part of the project is going well, where does the student experiences difficulties?
   - Is the student satisfied with the (daily) supervision?
4. Progress individual learning goals
5. Participation coachgroup
6. Points of action

Guidelines for the meeting 3 (halfway year 2):

1. Welcome
2. Study progress courses
   - Is the student content with the obtained results?
   - Which new courses/topics went well, during which courses/topics did the student experience difficulties? Which factors were essential to obtain (or fail) the learning goal(s)?
   - Are the elective courses completed?
   - Did the completed elective course(s) add necessary knowledge/skills for the Master Thesis Project?
   - Is the student experiencing any deficiencies in knowledge/skills needed to perform the project? If so, how is the student going to compensate this?
3. Progress Master Thesis Project
   - Is the student able to keep the planning of the project (performance & writing of the thesis)?
   - Which parts of the project are going well, where does the student experiences difficulties?
     Did this change compared to the previous evaluation meeting, in what way?
   - Is the student satisfied with the (daily) supervision?
   - Is the student going to submit an abstract to the ISCOMS, WEON or another congress?
   - Is the student planning to write an article?
4. Progress individual learning goals
5. Participation coachgroup
6. Future career plans, PhD?
7. Points of action

III Portfolio

The student adds a report of the meeting within 5 working days to the portfolio in NESTOR. If preferred by the coach, the student sends the report first to the scientific coach for feedback. Finally, the scientific coach needs to approve the quality of the documents submitted by the student. The scientific coach can indicate this within the portfolio to confirm that the student completed the evaluation of the study progress sufficiently.

Bijlage 6. Handleiding coach groep

Guidelines Coachgroups for students and scientific coach

Small groups of students, supervised by a scientific coach from the staff, will meet bi-weekly for two hours during the entire two-year Master's programme. The coaching groups not only discuss progress, but also present more general methodological and ethical issues regarding epidemiology, especially in chronic diseases. Additional topics that are discussed include general research skills such as literature searches and archiving, critically and efficiently evaluating literature, presenting results, writing articles, scientific reasoning, and evidence-based medicine. The groups have the opportunity to invite specialists to their meetings to discuss specific topics.

Meetings
Each meeting will be chaired by one of the students and another student will act as secretary. Preferably, each meeting has at least two main topics prepared by different students. All students are expected to participate actively. The chair and secretary will circulate among the students.
At the end of each meeting the chair discusses the agenda for the next meeting and makes sure that the following is clear to everyone: the topics of next meeting, the required material, and activities and responsibilities of the students (including the roles for chair, secretary, and presenters of next meeting). The secretary distributes the minutes within one day after the meeting.
At each meeting students are expected to provide feedback on the chair, secretary, and presenters. The students who receive feedback include this in their portfolio within one day after the meeting.

Start
At the start of the coachgroup meetings the scientific coach will explain the purpose of the coachgroup and the expectations of the student's input. In addition, information will be provided on the blackboard system NESTOR, with special attention to the 'Personal Traject' part (portfolio). Further, a planning is made for the first year for the function of chair and secretary, and for the presentations of scientific papers.

Topics
In general, the students set the agenda. However, several subjects need to be included:

- The empirical cycle in research, including the formulation of a good research question based on a clear hypothesis. The empirical cycle should be discussed before the start of the Master Thesis Project in March of the first year.
- Each month, a scientific paper should be discussed. One of the students selects an article, and distributes it among the other students at least one week before the meeting, and only after approval of the scientific coach. In addition to the background of the topic, the methodology should be discussed in detail. All students read the article before the meeting and are expected to reflect on the design of the study (including the chosen study population and statistical analyses), the interpretation of the study results, and the points of discussion.
- All students need to discuss the study design and the results of their master thesisproject.
- Study progress. As part of the coachgroup meetings, students will discuss their study progress individually with the scientific coach at least three times during the research master programme (in December of year 1, at the end of year 1, and halfway year 2). At these meetings, the coach will also provide feedback to the student about his/her participation in the discussions at the coachgroup, preparation of presentations, and understanding of general research principles. For details see the 'Instructions evaluation study progress'. Furthermore, each student will discuss his/her progress of the Master Thesis Project on a regular basis. The student discusses the problems encountered during the project (including the amount and quality of supervision) and their activities to overcome or improve these

problems. If problems remain, possible ways to deal with the issue are discussed in the group. The student includes the suggestions for improvement in his/her portfolio.

The scientific coach supervises the planning on this.