Pasientvolum og behandlingskvalitet ved kreftkirurgi

Notat fra Kunnskapssenteret
Systematisk litteratursøk med sortering
Desember 2014

kunnskapssenteret

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Notat: ISBN 978-82-8121-914-4

Desember 2014

kunnskapssenteret

Tittel	Pasientvolum og behandlingskvalitet ved kreftkirurgi
English title	Hospital or surgeon volume and quality of care for cancer surgery
Institusjon	Nasjonalt kunnskapssenter for helsetjenesten
Ansvarlig	Magne Nylenna, direktør
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ISBN	978-82-8121-914-4
Notat	2014
Prosjektnummer	927
Publikasjonstype	Notat - Systematisk litteratursøk med sortering
Antall sider	25 (69 inklusiv vedlegg)
Oppdragsgiver	Helsedirektoratet
Emneord(MeSH)	Neoplasms, Specialties, Surgical, Surgical Procedures, Operative, Hospitals, High-Volume Patient Care Team
Sitering	Hamidi V, Skår Å, Harboe I, Klemp M. Pasientvolum og behandlingskvalitet ved kreftkirurgi. Notat 2014. Oslo: Nasjonalt kunnskapssenter for helsetjenesten, 2014.

Nasjonalt kunnskapssenter for helsetjenesten fremskaffer og formidler kunnskap om effekt av metoder, virkemidler og tiltak og om kvalitet innen alle deler av helsetjenesten. Målet er å bidra til gode beslutninger slik at brukerne får best mulig helsetjenester. Kunnskapssenteret er formelt et forvaltningsorgan under Helsedirektoratet, men har ingen myndighetsfunksjoner og kan ikke instrueres i faglige spørsmål.

Nasjonalt kunnskapssenter for helsetjenesten
Oslo, november 2014

Hovedfunn

Nasjonalt kunnskapssenter for helsetjenesten har fått i oppdrag fra Helsedirektoratet å gjennomføre et systematisk litteratursøk med etterfølgende sortering etter litteratur/forskning om sammenheng mellom behandlingskvalitet og faktorer som pasientvolum og bruk av tverrfaglige team ved kreftkirurgi.

Metode

Vi utarbeidet søkestrategi for et systematisk litteratursøk etter systematiske oversikter og metodevurderinger. Det ble søkt i bibliografiske databaser etter vitenskapelige publikasjoner. Søket ble utført i november 2014 i Medline, Embase, Cochrane Database of Systematic Reviews, Dare og PubMed. To forskere gikk uavhengig av hverandere gjennom identifiserte publikasjoner/referanser og vurderte relevans i forhold til inklusjonskriteriene.

I tillegge ble det søkt etter offentlige utredninger, metodevurderinger og retninglinjer på nettsidene til Nasjonalt kunnskapssenter for helsetjeneste, SBU (Sverige), Sundhedsstyrelsen (Danmark), FINOHTA (Finland), NICE (England), G-I-N (Guidlines International Network) og AHRQ (Agency for Health Research and Quality, USA).

Resultater

- Vi identifiserte totalt 1114 referanser. Av disse var 50 mulig relevante (44 studier omhandlet volum/kvalitet, 5 studier omhandlet tverrfaglige team og 1 studie både volum og tverrfaglige team).
- Referansene vedrørende sammenheng mellom pasientvolum og behandlingskvalitet ved kreftkirurgi ble sortert i grupper for henholdsvis: kreft generelt, kreft i sentralnervesystemet, kreft i øvre og midtre gastrointestinaltraktus (spiserør, magesekk, lever og bukspyttkjertel), nedre gastrointestinaltraktus (tykk- og endetarm), lungekreft, urologisk kreft, gynekologisk kreft og pediatrisk kreft.
- Vi identifiserte i tillegg 15 mulige relevante publikasjoner i søk etter offentlige utredninger og retningslinjer.
- Vi har ikke lest publikasjonene i full tekst eller vurdert kvalitet.

Key messages

The Norwegian Knowledge Centre for the Health Services was commisioned by Norwegian Directorte of Health to conduct a systematic literature search with subsequent sorting of possible relevant publications on patient volume and quality of care in cancer surgery, and the importance of treatment of cancer patients in multidisciplinary teams.

Method

We developed a strategy for a systematic literature search. The search was carried out in seven international literature databases (Medline, Embase, Cochrane Database of Systemic Reviews, Dare and PubMed) in November 2014. Two authors screened the identified references and assessed their relevance realtive to the inclusion criteria based on title and abstract.

In addition, we searched after public reports and guidelines on the website of the Norwegian Knowledge Centre for Health Services, SBU (Sweden), Danish Health and Medicines Authority (Denmark), FINOHTA (Finland), NICE (England), GIN (Guidlines International Network) and AHRQ (Agency for Healthcare Research and Quality, US).

Results

- We identified a total of 1114 references, of which there were 50 relevant publications. Volume and multidisiplinary teams were identified in 44 and 5 studies, respectively. One study was about both volume and multidisciplinary teams.
- The relevant publications were sorted into groups based on different types of cancer surgery as cancer generally, cancer of the central nervous system, cancer of the upper and middle gastrointestinal tract (esophagus, stomach, liver and pancreas), the lower gastrointestinal tract (colon and rectum), lung cancer , urological cancer, gynecological cancer and pediatric cancer.
- We identified 15 possible relevant publications in search of public reports and guidelines.

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Forord

Helse- og omsorgsdepartementet har gitt Helsedirektoratet i oppdrag å gjennomgå status for kreftkirurgi i Norge. I den forbindelse har Nasjonalt kunnskapssenter for helsetjenesten blitt bedt om å finne forskningsgrunnlag og litteratur om sammenheng mellom behandlingskvalitet ved kreftkirurgi og faktorer som pasientvolum og bruk av tverrfaglige team. Litteraturen i vår referanseliste kan utgjøre et relevant dokumentasjonsgrunnlag for etablering av nasjonale kvalitets og robusthetskrav til sykehus som skal gjennomføre kreftbehandling.

Prosjektgruppen har bestått av:

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- Åse Skår, seniorrådgiver, Kunnskapssenteret
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Avdelingsdirektør	*Forskningsleder*	*Prosjektleder*

Innledning

Styrker og svakheter ved litteratursøk med sortering

Ved litteratursøk gjennomfører vi systematiske litteratursøk for en gitt problemstilling. Resultatene fra søket blir gjennomgått basert på tittel og eventuelt sammendrag for å finne relevante treff. Artiklene er ikke innhentet i fulltekst. Det gjør at vi kan ha inkludert titler som viser seg ikke å være relevante ved gjennomlesning av fulltekst. Vi benytter kun databaser for identifisering av litteratur og kan derfor ha gått glipp av relevante publikasjoner. Andre måter å identifisere studier på, som søk i referanselister, kontakt med eksperter på fagfeltet og upublisert litteratur, er utført i begrenset omfang for dette oppdraget. Vi gjennomfører ingen kvalitetsvurdering av publikasjonene.

Ved en full forskningsoversikt ville vi ha innhentet artiklene i fulltekst for endelig vurdering opp mot inklusjonskritene. Inkluderte studier ville så blitt kvalitetsvurdert i henhold til våre sjekklister og resultater sammenstilt, gradert og diskutert.

Begrunnelse for valg av søkestrategi

Vi har lagt bestillingen fra Helsedirektoratet til grunn for valg av søkestrategi. Bestillingen inneholdt to hoved problemstillinger som var å se på eventuelle sammenhenger mellom

i) volum på sykehus- og kirurgnivå
ii) bruk av tverrfaglig team,

og ulike behandlingsrelaterte kvalitetsindikatorer ved kreftkirurgi.

Vi har laget en søkestrategi som omfattet begge problemstillinger. Siden det ved innledende søk ble identifisert ganske mange systematiske oversikter innen de fleste områder av kreftkirurgi og av relativt ny dato, har vi begrenset søket til publikasjoner som bygger på systematiske oversikter. Ved en fullstendig forskningsoversikt ville vi ha inkludert systematiske oversikter først, og bare søkt etter primærstudier der som de systematiske oversiktene ikke besvarte våre problemstillinger, eller for å oppdatere oversikten.

Identifisering av relevante publikasjoner er gjort på basis av tittel og sammendrag. Det er ikke alle publikasjonene som synes å tilfredsstille kriteriene for en systematisk oversikt (SR), og de blir klassifisert som oversiktsartikler (R).

I 2001 utførte Kunnskapssenteret en systematisk gjennomgang av litteraturen om sammenheng mellom pasientvolum og behandlingskvalitet i forskjellige typer av behandling som omfattet prosedyrer, blant annet kreftkirurgi (1). I dette notatet begrenset vi derfor søket til systematiske oversikter publisert etter 2001.

Vi har også søkt etter relevante offentlige utredninger og retningslinjer fra noen land det er naturlig å sammenligne oss med (de nordiske land, Storbritannia og USA).

Problemstilling

Vi har søkt etter litteratur som skal belyse eventuelle sammenhenger mellom volum (sykehusvolum/kirurgvolum) og ulike kvalitetsindikatorer ved kreftkirurgi. I tillegg har vi søkt etter litteratur om betydningen av bruk av tverrfaglig team for kvalitet av kreftbehandling.

Metode

Litteratursøking

Vi søkte systematisk etter litteratur i følgende bibliografiske databaser:

- Medline
- Embase
- Cochrane Library
- CRD (Centre for Reviews and Dissemination)
- PubMed

Forskningsbibliotekar Ingrid Harboe planla og utførte samtlige søk. Den fullstendige søkestrategien er gjengitt i vedlegg til denne rapporten. Søk etter studier ble avsluttet november 2014.

Vi la bestillingen til grunn ved utarbeiding av litteratursøket og søkte etter publiserte systematiske oversikter som oppfylte våre inklusjonskriterier.

Ved bruk av søkeordene «kirurgi, kreft og volum» i ulike kombinasjoner og språk, har vi i tillegg søkt etter relevante publikasjoner (metodevurderinger og retningslinjer) på nettsider til Nasjonalt kunnskapssenter for helsetjeneste, SBU (Sverige), Sundhedsstyrelsen (Danmark), FINOHTA (Finland), NICE (England), G-I-N (Guidlines International Network) og AHRQ (Agency for Health Research and Quality, USA).

Inklusjonskriterier

Vi inkluderte studier som sammenlignet behandlingsresultater for pasienter behandlet ved sykehus eller av leger med forskjellig pasient volum eller vurderte betydningen av behandling av kreftpasienter i tverrfaglige team.

Populasjon:	Pasienter med behov for kreftkirurgi
Faktorer som kan ha betydning:	1) Volum • Behandlingsvolum for sykehus • Behandlingsvolum for den enkelte kirurg • Spesialiserings- eller kompetansenivå for sykehus

	• Spesialiserings- , kompetanse- eller erfaringsnivå hos kirurg 2) Bruk av tverrfaglig team
Sammenlikning:	1) Sykehus, behandlingsteam eller kirurger med andre behandlingsvolum eller spesialisering- eller kompetansenivå 2) Ikke bruk av tverrfaglige team
Utfall:	Overlevelsesdata på kort og lang sikt, komplikasjoner, perioperativ sykelighet og dødelighet, liggetid på sykehus i forbindelse med operasjon, recidiv frekvens, seneffekter eller andre relevante kvalitetsindikatorer
Studiedesign	Systematiske oversikter
Språk:	Ingen begrensning i søket

Artikkelutvelging

To medarbeidere gikk gjennom (VH og ÅS) alle titler og sammendrag for å vurdere relevans i henhold til inklusjonskriteriene. Vurderingene gjorde de uavhengig av hverandre og sammenlignet i etterkant. Der det var uenighet om vurderingene, ble inklusjon eller eksklusjon avgjort ved konsensus.

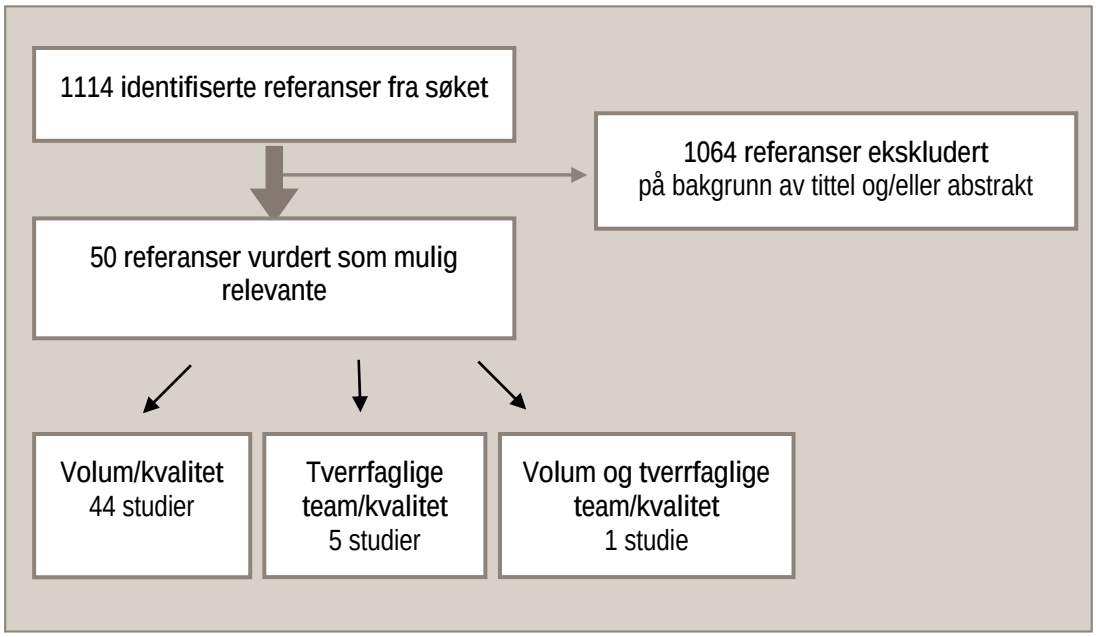
Utvelging av litteratur ble kun gjort basert på tittel og sammendrag. Vi bestilte ikke fulltekst av artiklene.

Resultat

Resultat av søk

Det systematiske søket etter oversikter resulterte i 1114 referanser. Vi vurderte 50 av de identifiserte referansene til å være mulig relevante i henhold til inklusjonskriteriene. 44 referanser omhandlet volum, 5 omhandlet tverrfaglige team og 1 både volum og tverrfaglige team.

Hovedårsaken til eksklusjon var at publikasjonen ikke var en oversiktsartikkel eller ikke redegjorde for en systematisk metode for identifisering av litteratur.



Figur 1. Flytskjema over identifisering av systematiske oversikter som tilfredsstilte inklusjonskriteriene

Vi identifiserte 15 publikasjoner i søk etter offentlige utredninger, metodevurderinger og retningslinjer. I tillegg har vi identifisert 8 publikasjoner som kan ha en viss relevans for problemstillingen. Disse er presentert i vedlegg 3.

Resultat av sorteringen etter oversikter

De mulig relevante referansene ble sortert ut fra krefttype eller faktorer som kan påvirke behandlingskvalitet ved kirurgi (se tabell 1 og 2). I vedlegg 2 presenterer vi referansene fordelt i kategoriene og alfabetisk etter førsteforfatter. Vi oppgir forfattere, tittel på publikasjonen, publikasjonssted og sammendrag av artikkelen slik de fremkom i de elektroniske databasene.

Tabell 1: *Antall oversiktsartikler sortert etter faktorer som kan påvirke resultat av kreftkirurgi*

	Antall
Sykehus (behandlingsvolum, spesifisering, kompetansenivå)	45
Kirurg (behandlingsvolum, spesialisering, kompetanse- eller erfaringsnivå)	25
Tverrfaglige team	6

Tabell 2: *Antall oversiktsartikler sortert etter krefttype*

	Antall referanser: 50
Kreft generelt/ flere typer av kreftkirurgi	9 (8 volum, 1 tverrfaglige team)
Kreft i sentralnervesystemet (CNS)	2 (1 volum, 1 tverrfaglige team)
Brystkreft	2 (1 volum, 1 tverrfaglige team)
Kreft i øvre og midtre gastrointestinaltraktus (spiserør, magesekk, lever, bukspyttkjertel)	17 (volum)
Kreft i nedre gastrointestinaltraktus (tykk- og endetarm)	9 (8 volum, 1 tverrfaglige team)
Lungekreft	2 (1 volum, 1 tverrfaglige team)
Urologisk kreft (prostata, nyre, blære, testikkel)	6 (volum)
Gynekologisk kreft	2 (1 volum, 1 volum og tverrfaglige team)
Pediatrisk kreft	1 (volum)

1) Sammenheng mellom volum og behandlingskvalitet

Kreft Generelt/flere typer av kreftkirurgi

Tabell 3: *Oversikt over relevante studier (generelt kreftkirurgi/flere typer av kreft)*

	Studie-design	Dato for søk	Krefttype	Sykehus (volum, spesialise-ring, etc)	Kirurg (volum, spesialise-ring, erfa-ring,etc)	Hovedutfall	Kommentar
Amato 2013 (2)	SR	?-2012	Bryst, lunge, tykk- og endetarm, nyre, liver, magesekk, blære, spi-serør, pankreas, prostata	x		Dødelighet innen sykehus, 30-da-gers dødelighet	Språk: italiensk (engelsk abstrakt)
Bilimoria 2009 (3)	SR		Kreftkirurgi		x		
Davoli 2005 (4)	Oversikt over oversik-ter	1995-2005	Spiserør, pankreas, prostata, ko-lecystektomi	x		Dødelighet innen sykehus, 5-års overlevelse	
Killeen 2005 (5)	SR	1984-2005	Pankreas, spiserør, magesekk, endetarm	x		Dødelighet	
Kloosteeboer 2013 (6)	Exten-sive R		Pankreas, blære, lunge tykk- og en-detarm, bryst, spise-rør, mage-sekk	x		Dødelighet	
Pieper 2013 (7)	Oversikt over oversik-ter	?-2012	Kirurgi ink. kreft	x			
Weitz 2004 (8)	R (Med-line)		Kreftkirurgi	x		Perioperativ dø-delighet og morbi-ditet, livskvalitet etter kirurgi, lang-tidsprognose, økonomiske utfall	

Wouters 2010 (9)	SR		Pankreas, blære, lunge, tykk- og ende-tarm, bryst	x		Postoperativ dø-delighet	

SR: systematisk oversikt

R: oversikt

Kreft i sentralnervesystemet (CNS)

Tabell 4: *Oversikt over relevante studier (kreft i sentralnervesystemet)*

	Stu-diede-sign	Dato for søk	Krefttype	Sykehus (volum, spe-sialisering, etc)	Kirurg (volum, spesialise-ring, erfa-ring,etc)	Hovedutfall	Kommentar
Wong 2012 (10)	SR	1995-2010	CNS	x		Dødelighet, komplikasjoner	

SR: systematisk oversikt

Brystkreft

Tabell 5: *Oversikt over relevante studier (brystkreft)*

	Stu-diede-sign	Dato for søk	Krefttype	Sykehus (volum, spe-sialisering, etc)	Kirurg (volum, spesialise-ring, erfa-ring,etc)	Hovedutfall	Kommentar
Gooiker 2013 (11)	SR		Brystkreft	x	x	Dødelighet in-nen sykehus, overlevelse	

SR: systematisk oversikt

Kreft i øvre og midtre gastrointestinaltraktus (spiserør, magesekk, pankreas, lever)

Tabell 6: *Oversikt over relevante studier (kreft i øvre gastrointestinaltraktus)*

	Stu-diede-sign	Dato for søk	Krefttype	Sykehus (volum, spesialise-ring, etc)	Kirurg (volum, spesialise-ring, erfa-ring,etc)	Hovedutfall	Kommentar
Bollschweiler 2008 (12)	SR		Spiserør, pankreas	x	x	Dødelighet in-nen sykehus, overlevelse	

Boughrassa 2011 (13)	Meto-devur-dering?	?	Spiserør	x	x	Postoperativ dødelighet	Språk: fransk (engelsk abs-trakt)
Brusselaers 2014 (14)	SR	1990-2013	Spiserør	x	x	Langtidsoverle-velse	
Dikken 2013 (15)	SR	1990-2011	Magesekk	x		Postoperativ dødelighet, to-taloverlevelse	
Gori 2014 (16)	SR? (Med-line)	1998-2012	Spiserør, magesekk	x		30-dagers dø-delighet	
Gruen 2009 (17)	SR		Spiserør, magesekk, lever, pank-reas	x		Korttidsdødelig-het	
Halm 2002 (18)	SR? (Med-line)	1998-2000	Pankreas, spiserør	x	x		
La Torre (19)	SR		Pankreas	x		5-års overle-velse, positiv re-seksjonsmargin	
Mahar 2012 (20)	SR	1985-2009	Magesekk	x	x	Dødelighet	
Markar 2012 (21)	SR	2000-?	Spiserør	x		Dødelighet in-nen sykehus, 30-dagers dø-delighet, liggetid på sykehus, postoperativ komplikasjoner	
Metzger 2004 (22)	SR?	1994-2004 (?)	Spiserør	x		Postoperativ dødelighet, og komplikasjoner, langtids-prognose	
Meyer 2005 (23)	SR		Magesekk	x	x		
Richardson 2013 (24)	SR	1995-2012	Leverkirurgi ink. kreft	x		Dødelighet, morbiditet, lig-getid på syke-hus, langtids overlevelse	
Stiekema 2012 (25)	SR	1990-2011	Magesekk	x		Dødelighet, to-taloverlevelse	

Tol 2012 (26)	SR		Spiserør, magesekk, lever, pankreas	x	x	Dødelighet
Van Heek 2005 (27)	SR	1994-2004	Pankreas	x		Dødelighet innen sykehus, 30-dagers dødelighet
Wouters 2012 (28)	SR	1995-2010	Spiserør	x	x	Postoperativ dødelighet, overlevelse

SR: systematisk oversikt

Kreft i nedre gastrointestinaltraktus (tykk- og endetarmkreft)

Tabell 7: *Oversikt over relevante studier (kreft i nedre gastrointestinaltraktus)*

	Studiedesign	Dato for søk	Krefttype	Sykehus (volum, spesialisering, etc)	Kirurg (volum, spesialisering, erfaring,etc)	Hovedutfall	Kommentar
Archampong 2012 (29)	SR	1990-2011	Tykk- og endetarmkreft, tykktarm, endetarm	x	x	5-års overlevelse (total, sykdomsspesifikk), operativ dødelighet, 5-års lokale tilbakefall, anastomose lekkaje, permanant stomi, abdominoperineal fjerning av endetarm	
Archampong 2010 (30)	SR	1990-2010	Endetarm		x	Totaloverlevelse, 30-dagers dødelighet, anastomose lekkaje, permanant stomi, abdominoperineal fjerning av endetarm	Språk: fransk (engelsk abstrakt)
Iversen 2007 (31)	SR	1992-?	Tykk- og endetarmkreft	x	x	Postoperativ morbiditet, dødelighet innen sykehus, 30-dagers dødelighet	

Iversen 2007 (32)	SR	1992-?	Tykk- og endetarm-kreft	x	x	Tilbakefall-fri overlevelse, to-taloverlevelse	
Kelly 2013 (33)	SR	?-2012	Tykk- og endetarm-kreft		x	30-dagers dø-delighet, lokal tilbakefall, anas-tomose lekkaje, sårinfeksjon, kreft-spesifikk overlevelse	
Nugent 2010 (34)	SR? (Pub-Med)	1997-2009	Endetarm	x	x	Korttidsmorbidi-tet, langtidsutfall (sfinkter beva-ring, dødelighet, lokal tilbakefall)	
Salz 2008 (35)	SR ? (Pub-med)		Endetarm	x	x	Komplikasjoner, postoperativ dø-delighet, overle-velse, tilbakefall	
Van Gijn (36)	SR		Tykk- og endetarm-kreft	x	x	Postoperativ dødelighet, langtidsoverle-velse	

SR: systematisk oversikt

Lungekreft

Tabell 8: *Oversikt over relevante studier (lungekreft)*

	Stu-diede-sign	Dato for søk	Krefttype	Sykehus (volum, spe-sialisering, etc)	Kirurg (volum, spesialise-ring, erfa-ring,etc)	Hovedutfall	Kommentar
Von Meyenfeldt 2012 (37)	SR	1990-2011	Lungekreft	x	x	Dødelighet, overlevelse	

SR: systematisk oversikt

Urologisk kreft (prostata, nyre, blære, testikkel)

Tabell 9: *Oversikt over relevante studier (urologisk kreft)*

	Studie-design	Dato for søk	Krefttype	Sykehus (volum, spesialise-ring, etc)	Kirurg (volum, spesialise-ring, erfa-ring,etc)	Hovedutfall	Kommentar
Barocas 2010 (38)	R (Pub-Med)		Prostata	x	x	Peroperativ og langtidsutfall	

						(liggetid på sykehus, perioperativ komplikasjoner, prioperativ dødelighet, reinnleggelse, …)	
Joudi 2004 (39)	R (Medline)	1966-2004	Prostata, blære, nyre, testikkel	x	x	Postoperativ dødelighet og morbiditet, langtidsoverlevelse	Sannsynlig dobbelpublikasjon
Joudi 2005 (40)	R (Medline)	1966-2004	Prostata, blære, nyre, testikkel	x	x	Langtidsmorbiditet, totaldødelighet, langtidsoverlevelse	
Nutall 2004 (41)	SR		Blære, nyre, prostata	x	x		
Trinh 2013 (42)	SR	1995-2011	Prostata	x	x	Perioperativ, onkologiske og funksjonelle utfall	
Wilt 2008 (43)	SR	198-2007	Prostata	x	x	Dødelighet, morbiditet, komplikasjoner, liggetid på sykehus	

SR: systematisk oversikt

R: oversikt

Gynekologisk kreft

Tabell 10: *Oversikt over relevante studier (gynekologisk kreft)*

	Studiedesign	Dato for søk	Krefttype	Sykehus (volum, spesialisering, etc)	Kirurg (volum, spesialisering, erfaring,etc)	Hovedutfall	Kommentar
du Bois (44)	SR ? (Medline)		Eggstokkreft	x	x	Overlevelse	
Vernooij 2007 (45)	SR	1991-2006	Eggstokkreft	x		Overlevelse, postoprativ komplikasjoner	

SR: systematisk oversikt

Pediatrisk kreft

Tabell 11: *Oversikt over relevante studier (pediatrisk kreft)*

	Studiedesign	Dato for søk	Krefttype	Sykehus (volum, spesialisering, etc)	Kirurg (volum, spesialisering, erfaring,etc)	Hovedutfall	Kommentar
Knops 2013 (46)	SR		Pediatrisk kreft	x			

SR: systematiske oversikt

2) Betydningen av tverrfaglige team (MDT)

Tabell 12: *Oversikt over relevante studier (tverrfaglige team)*

	Studiedesign	Dato for søk	Krefttype
Corry 2008 (47)	SR	1990-2013	Lungekreft
Houssami 2006 (48)	SR		Brystkreft
Lamb 2011 (49)	SR	?-2009	Kreft generelt
McLaughlin 2013 (50)	SR		Skallebasis kirurgi inkl.kreft
Shah 2013 (51)	SR		Tykk- og endetarmkreft
Vernooij 2007 (45)	SR	1991-2006	Eggstokkreft

Offentlige utredninger og retningslinjer

Nasjonalt kunnskapssenter for helsetjenesten

Kunnskapssenteret har publisert flere publikasjoner om sammenheng mellom volum og behandlingskvalitet ved kreftkirurgi:

- *Pasientvolum og kvalitet ved operasjoner for kreft i lever (dato for søk: 2001-2008)*

http://www.kunnskapssenteret.no/publikasjoner/pasientvolum-og-behandlings-kvalitet-ved-operasjoner-for-kreft-i-lever

- *Pasientvolum og kvalitet ved behandling av kreft i magesekken (dato for søk: 2001-2008)*

http://www.kunnskapssenteret.no/publikasjoner/pasientvolum-og-kvalitet-ved-behandling-av-kreft-i-magesekken

- *Pasientvolum og kvalitet ved koloncancerkirurgi (dato for søk. 2001-2008)*

http://www.kunnskapssenteret.no/publikasjoner/pasientvolum-og-kvalitet-ved-koloncancerkirurgi

- *Pasientvolum og kvalitet ved radikal kirurgisk behandling av prostatakreft*

http://www.kunnskapssenteret.no/publikasjoner/pasientvolum-og-kvalitet-ved-radikal-kirurgisk-behandling-av-prostatakreft

- *Pasientvolum og behandlingskvalitet (ink. Flere typer kreftkirurgi: kolrektal kreft, brystkreft, leverkreft, prostatakreft, øsofagus, magesekk, lungekreft) (dato for søk: 1997-2000)*

http://www.kunnskapssenteret.no/publikasjoner/_attachment/10916?=true&_ts=12c7de68374

SBU – Statens beredning för medicinsk utvärdering Sverige

Volym och resultat i sjukvården 2014
http://www.sbu.se/sv/Publicerat/Upplysningstjanst/Volym-resultat-sjukvarden/

Volym och resultat i sjukvården, notat 2014
http://www.sbu.se/upload/upplysningstjanst/pdf_er/Volym%20och%20resultat%20i%20sjukvården.pdf

Volym och resultat - En inventering av det vetenskapliga underlaget på kirurgins område. Januari 2011
http://www.sbu.se/upload/Publikationer/Content0/2/volym_resultat.pdf

Volym och kvalitet - En förstudie 2005
http://www.sbu.se/upload/Publikationer/Content0/2/Volym_och_kvalitet.pdf

Sundhedsstyrelsen Danmark

Cystektomi i Danmark 2000-2005
http://sundhedsstyrelsen.dk/~/media/7314D94B4DDE4719B49A44E370B98B84.ashx

Bilag til Kræftplan II Øvre mave/tarm-kræft 2005
http://sundhedsstyrelsen.dk/publ/Publ2005/PLAN/Kraeftplan2/bilag/Bilag_9_1_G_Oevre_mave_tarm_kraeft.pdf

Små eller store sygehuse Kvalitet og økonomi – Tro eller viden 2000
http://sundhedsstyrelsen.dk/publ/Publ2000/ecs/Smaa_store_sygeh.pdf

FINOHTA – National institute for health and welfare Finland
Ingen relevante treff

NICE - National Institute for Health and Care Excellence Storbrittania
Ingen relevante treff

G-I-N – Guidelines International Network
Ingen relevante treff

AHRQ - Agency for Healthcare Research and Quality USA
Making Health Care Safer: A Critical Analysis of Patient Safety Practices
Evidence Report/Technology Assessment, No. 43 2001 (Chapter 18)
http://archive.ahrq.gov/research/findings/evidence-based-reports/services/quality/er43/ptsafety/

Making Health Care Safer II: An Updated Critical Analysis of the Evidence for Patient Safety Practices 20 2013
http://www.ahrq.gov/research/findings/evidence-based-reports/services/quality/ptsafetyii-full.pdf

Improving Health Care Quality – Fact sheet 2002
http://archive.ahrq.gov/research/findings/factsheets/errors-safety/improving-quality/improving-health-care-quality.pdf

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Vedlegg1: søkestrategier

Databaser: Ovid MEDLINE, Embase (Ovid), Cochrane Library, CRD, PubMed (epub ahead of print)
Dato, alle søk: 03.11.2014
Studiefilter: I Ovid, filter for systematisk oversikt "reviews (maximizes specificity)" og tekstord (systematic* adj2 (review* or overview*)).tw. I tillegg er det brukt filter for å fjerne dyrestudier og publikasjonstypene news, letter, comment.
Resutlat: 1114 Systematic Reviews/ Health Tecnology Assessments
Søk utført av: Ingrid Harboe, forskningsbibliotekar

Søkestrategier:

Databaser: **Embase** 1974 to 2014 Week 44
Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily, Ovid MEDLINE(R) and Ovid DMEDLINE(R) 1946 to Present
Resultat: 968

#	Searches	Results
1	exp Neoplasms/ use pmoz	2704287
2	exp neoplasm/ use oemez	3461485
3	(neoplasm* or cancer or tumor* or tumour*).tw.	4425616
4	or/1-3	7053957
5	exp Specialties, Surgical/ use pmoz	161455
6	exp surgery/ use oemez	3460203
7	Surgical Procedures, Operative/ use pmoz	51428
8	(surgery or surgeries or surgical).tw.	2901544
9	or/5-8	5360856
10	Hospitals, High-Volume/ use pmoz	276
11	high volume hospital/ use oemez	270
12	(volume or high-volume or caseload or work-load or frequenc*).tw.	2413949

13	(number adj3 surg*).tw.	13172
14	surgeon/ use oemez	71902
15	((surg* or physician*) adj1 experience).tw.	14087
16	or/10-15	2502021
17	4 and 9 and 16	106607
18	exp Patient Care Team/ use pmoz	56316
19	((patient or health* or medical) adj2 team*).tw.	28602
20	((collaborative or multidisciplinary or interdisciplinary or transdisciplinary or integrat*) adj2 (care or team* or working or practice)).tw.	64557
21	or/18-20	138031
22	4 and 9 and 21	6141
23	exp Animals/	37613204
24	Humans/	29083873
25	23 not (23 and 24)	8529331
26	nonhuman/ use oemez	4394052
27	news.pt.	174040
28	comment.pt.	622729
29	editorial.pt.	832685
30	or/25-29	12014200
31	17 not 30	101489
32	limit 31 to "reviews (maximizes specificity)"	1016
33	(systematic* adj2 (review* or overview*)).tw.	146357
34	31 and 33	634
35	32 or 34	1102
36	limit 35 to yr="2001-Current*	1058
37	22 not 30	5996
38	limit 37 to "reviews (maximizes specificity)"	95
39	37 and 33	66
40	38 or 39	108

41	limit 40 to yr="2001-Current"	105
42	remove duplicates from 36	874
43	42 use oemez	688
44	42 use pmoz	186
45	remove duplicates from 41	94
46	45 use oemez	52
47	45 use pmoz	42

Database: Cochrane Library
Resultat: Cochrane Reviews (51), Other Reviews (10), Technology Assessments (5)

#1 MeSH descriptor: [Neoplasms] explode all trees
52791
#2 (neoplasm* or cancer or tumor* or tumour*):ti,ab,kw
84691
#3 #1 or #2
90984
#4 MeSH descriptor: [Specialties, Surgical] explode all trees
1667
#5 (surgery or surgeries or surgical):ti,ab,kw
92930
#6 #4 or #5
93443
#7 MeSH descriptor: [Hospitals, High-Volume] this term only
4
#8 (volume or high-volume or caseload* or work-load or frequenc*):ti,ab,kw
69994
#9 (number near/3 surg*):ti,ab,kw
413
#10 ((surg* or physician*) near/1 experience):ti,ab,kw
457
#11 #7 or #8 or #9 or #10
70770
#12 #3 and #6 and #11 Publication Year from 2001 to 2014
1270
#13 MeSH descriptor: [Patient Care Team] explode all trees
1416
#14 ((patient* or health* or medical) near/2 team*):ti,ab,kw
1903
#15 ((collaborative or multidisciplinary or interdisciplinary or transdiscipinary or integrat*) near/2 (care or team* or working or practice)):ti,ab,kw
1690
#16 #13 or #14 or #15
3228
#17 #3 and #6 and #16 Publication Year from 2001 to 2014
29
#18 #17 not #12
25

Database: Centre for Reviews and Dissemination
Resultat: 35

1	MeSH DESCRIPTOR Neoplasms EXPLODE ALL TREES	10745
2	((neoplasm* or cancer or tumor* or tumour*))	12357
3	#1 OR #2	13292
4	MeSH DESCRIPTOR Specialties, Surgical EXPLODE ALL TREES	335
5	((surgery or surgeries or surgical))	15231
6	#4 OR #5	15317
7	MeSH DESCRIPTOR Hospitals, High-Volume EXPLODE ALL TREES	3
8	((volume or high-volume or caseload* or work-load or frequenc*))	5440
9	((number near3 surg*))	111
10	(((surg* or physician*) near1 experience))	62
11	#7 OR #8 OR #9 OR #10	5582
12	#3 AND #6 AND #11	357
13	(#12) IN DARE, HTA FROM 2001 TO 2014	204
14	MeSH DESCRIPTOR Patient Care Team EXPLODE ALL TREES	279
15	(((patient* or health* or medical) near2 team*))	383
16	(((collaborative or multidisciplinary or interdisciplinary or transdiscipinary or integrat*) near2 (care or team* or working or practice)))	524
17	#14 OR #15 OR #16	819
18	#3 AND #6 AND #17 IN DARE, HTA	35

Database: PubMed
Resultat: 8

Volume:
Search ((((((neoplasm*[Title/Abstract] OR cancer[Title/Abstract] OR tumor*[Title/Abstract] OR tumour*[Title/Abstract]))) AND ((surgery[Title/Abstract] OR surgeries[Title/Abstract] OR surgical[Title/Abstract]))) AND ((volume[Title/Abstract] OR high-volume[Title/Abstract] OR caseload[Title/Abstract] OR work-load[Title/Abstract]))))) AND pubstatusaheadofprint
Patient care team
Search ((((((neoplasm*[Title/Abstract] OR cancer[Title/Abstract] OR tumor*[Title/Abstract] OR tumour*[Title/Abstract]))) AND ((surgery[Title/Abstract] OR surgeries[Title/Abstract] OR surgical[Title/Abstract]))) AND ((patient care team[Title/Abstract] OR collaborative team[Title/Abstract] OR multidisciplinary team[Title/Abstract] OR interdisciplinary team[Title/Abstract] OR transdiscipinary team[Title/Abstract] OR integrated team[Title/Abstract])))) AND pubstatusaheadofprint

Vedlegg 2: abstrakter til inkluderte oversikter

Volum, kreft generelt/flere typer av kreftkirurgi

Amato L, Colais P, Davoli M, Ferroni E, Fusco D, Minozzi S, et al. [Volume and health outcomes: evidence from systematic reviews and from evaluation of Italian hospital data]. Epidemiol Prev 2013;37(2-3 Suppl 2):1-100.

Abstract: BACKGROUND: Improving quality and effectiveness of health care is one of the priorities of health policies. Hospital or physician volume represents a measurable variable with a relevant impact on effectiveness of health care. A recent Italian law, the "spending review", calls for the definition of "qualitative, structural, technological and quantitative standards of hospital care". There is a need for an accurate evaluation of the available scientific evidence in order to identify these standards, including the volume of care above or below which the public and private hospitals may be accredited (or not) to provide specific health care interventions. Since 2009, the National Outcomes Programme evaluates outcomes of care of the Italian hospitals; nowadays it represents an official tool to assess the National Health System (NHS). In addition to outcome indicators, the last edition of the Programme (2013) includes a set of volume indicators for the conditions with available evidence of an association between volume and outcome. The assessment of factors, such as volume, that may affect the outcomes of care is one of its objectives.

OBJECTIVES: To identify clinical conditions or interventions for which an association between volume and outcome has been investigated. To identify clinical conditions or interventions for which an association between volume and outcome has been proved. To analyse the distribution of Italian health providers by volume of activity. To measure the association between volume of care and outcomes of the health providers of the Italian NHS.

METHODS: Systematic review. An overview of systematic reviews and Health Technology Assessment (HTA) reports performed searching electronic databases (PubMed, EMBASE, Cochrane Library), websites of HTA Agencies, National Guideline Clearinghouse up to February 2012. Studies were evaluated for inclusion by two researchers independently; the quality assessment of included reviews was performed using the AMSTAR checklist. For each health condition and for each outcome considered, total number of studies, participants, high volume cut-off values (range, average and median) have been reported, where presented. Number of studies (and participants) with statistically significant positive association and metanalysis performed were also reported, if available. Analysis of the distribution of Italian hospitals by volume of activity and the association between volume of activity and outcomes. Outcomes National Programme 2011 The analyses were performed using the Hospital Information System and the National Tax Register

pertaining the year 2011. For each condition, the number of hospitals by volume of activity was calculated. Hospitals with a volume of activity lower than 3-5 cases/year for the condition under study were excluded from the analysis. For conditions with more than 1,500 cases per year and frequency of outcome > 3%, the association between volume of care and outcome was analysed. For these conditions, risk-adjusted outcomes were estimated according to the selection criteria and the statistical methodology of the National Outcome Programme.
RESULTS: The systematic reviews identified were 107, of which 47, evaluating 38 clinical areas, were included. Many outcomes were assessed according to the clinical condition/procedure considered. The main outcome common to all clinical condition/procedures was intrahospital/30-day mortality. Health topics were classified in the following groups according to this outcome: Positive association: a statistically significant positive association was demonstrated in the majority of studies/participants and/or a pooled measure (metanalysis) with positive results was reported. Lack of association: no association was demonstrated in the majority of studies/participants and/or no metanalysis with positive results was reported. No sufficient evidence of association: both results of single studies and metanalysis do not allow to draw firm conclusions on the association between volume and outcome. Evidence of a positive association between volumes and intrahospital/ 30-day mortality was demonstrated for 26 clinical areas: AIDS, abdominal aortic aneurysm (ruptured and unruptured), coronary angioplasty, myocardial infarction, knee arthroplasty, coronary artery bypass, cancer surgery (breast, lung, colon, colon rectum, kidney, liver, stomach, bladder, oesophagus, pancreas, prostate); cholecystectomy, brain aneurysm, carotid endarterectomy, hip fracture, lower extremity bypass surgery, subarachnoid haemorrhage, neonatal intensive care, paediatric heart surgery. For 2 clinical conditions (hip arthroplasty and rectal cancer surgery) no association has been reported. Due to a lack of evidence, it was not possible to draw firm conclusion for 10 clinical areas (appendectomy, colectomy, aortofemoral bypass, testicle cancer surgery, cardiac catheterization, trauma, hysterectomy, inguinal hernia, paediatric oncology). The relationship between volume of clinician and outcomes has been assessed only through the literature review; to date, it is not possible to analyse this association for Italian health providers hospitals, since information on the clinician/surgeon on the hospital discharge chart is missing. The literature found a positive association for: AIDS, coronary angioplasty, unruptured abdominal aortic aneurysm, hip arthroplasty, coronary artery bypass, cancer surgery (colon, stomach, bladder, breast, oesophagus), lower extremity bypass surgery. The analysis of the distribution of Italian hospitals per volume of activity concerned the 26 conditions for which the systematic review has shown a positive association between volume of activity and intrahospital/30-day mortality. For the following conditions it was possible to conduct the analysis of the association between volume and outcome of treatment using national data: unruptured abdominal aortic aneurysm, coronary angioplasty, knee arthroplasty, coronary artery bypass, cancer surgery (colon, pancreas, lung, prostate, stomach, bladder), laparoscopic cholecystectomy, endarterectomy, hip fracture and acute myocardial infarction. For them, the association between volume and outcome of care has been observed. The shape of the relationship is variable among different conditions, with heterogeneous "slope" of the curves. DISCUSSION For many conditions, the systematic review of the literature has shown a strong evidence of association between higher volumes and better outcomes. Due to the difficulty to test such an association in randomized controlled studies, the studies included in the reviews were mainly observational studies: however, the quality of the available evidence can be considered good both for

the consistency of the results between the studies and for the strength of the association. Where national data had sufficient statistical power, this association has been observed by the empirical analysis conducted on the health providers of the NHS in 2011. Analysing national data, potential confounders, including age and the presence of comorbidities in the admission under study and in the admissions of the two previous years, have been considered.

Bilimoria KY, Phillips JD, Rock CE, Hayman A, Prystowsky JB, Bentrem DJ. Effect of surgeon training, specialization, and experience on outcomes for cancer surgery: A systematic review of the literature. Ann Surg Oncol 2009;16(7):1799-1808.
Abstract: Background: Outcomes after cancer resections have been shown to be better for high-volume surgeons compared with low-volume surgeons; however, reasons for this relationship have been difficult to identify. The objective of this study was to assess studies examining the effect of surgeon training and experience on outcomes in surgical oncology. Methods: A systematic review of the literature was performed to assess articles examining the impact of surgeon training, certification, and experience on outcomes. Studies were included if they examined cancer resections and performed multivariable analyses adjusting for relevant confounding variables. Results: An extensive literature search identified 29 studies: 27 examined surgeon training/specialization, 1 assessed surgeon certification, and 4 evaluated surgeon experience. Of the 27 studies examining training/specialization, 25 found that specialized surgeons had better outcomes than nonspecialized surgeons. One study found that American Board of Surgery (ABS)-certified surgeons had better outcomes than noncertified surgeons. Of the two studies examining time since ABS certification, both found that increasing time was associated with better outcomes. Of the four studies that examined experience, three studies found that increasing surgeon experience was associated with improved outcomes. Conclusions: Although numerous studies have examined the impact of surgeon factors on outcomes, only a few cancers have been examined, and outcome measures are inconsistent. Most studies do not appear robust enough to support major policy decisions. There is a need for better data sources and consistent analyses which assess the impact of surgeon factors on a broad range of cancers and help to uncover the underlying reasons for the volume-outcome association.

Davoli M, Amato L, Minozzi S, Bargagli AM, Vecchi S, Perucci CA. Volume and health outcomes: an overview of systematic reviews. [Italian]. Epidemiologia e prevenzione 2005;29(3-4 Suppl):3-63.
Abstract: BACKGROUND: Improving quality and effectiveness of health care is one of the priorities of health policies. Hospital or physician volume of activity may be a measurable variable with a relevant impact on effectiveness of health care. There are several studies and systematic reviews evaluating the association between volume and outcome of health care. The aim of this review is to identify: areas, clinical conditions or interventions (prevention, diagnostic, therapeutic, surgical or clinical) for which an association between volume and outcome has been investigated; those for which an association between volume and outcome has been proved METHODS: Overview of systematic reviews and Health Technology Assessment reports; search of MEDLINE, EMBASE, The Cochrane Library, Web sites of Health Technology Assessment, other HTA Agencies, National guideline Clearinghouse, National Health Care quality tools (1995-february 2005). For each studied area results are described separately for each review due to the heterogeneity of outcomes, volume thresholds and results reported. No metanalysis has been conducted. Completeness of reporting of the systematic reviews has been

evaluated using the QUOROM statement. For each review we evaluated the number of studies included and the proportion of studies with statistically significant results (p < 0,05). As far as in-hospital mortality is concerned, the different areas have been classified in the following groups: Strong evidence ofpositive association: areas with > or =10 studies included in the reviews, and high prevalence (> or =50%) of positive studies (p <0. 05) in the majority of reviews. Weak evidence of association: areas with 5 to 9 studies included in the reviews and high prevalence (> or =50%) of positive studies (p <0.05) in the majority of reviews. Weak evidence of lack of association: areas with 5 to 9 studies included in the reviews and high prevalence (>50%) of not statistically significant studies (p >0.05) in the majority of reviews. No sufficient evidence of association: areas with less than 5 studies included in the reviews. No evidence of association: areas with > or =10 studies included in the reviews, and high prevalence (>50%) of not statistically significant studies (p >0.05) in the majority of reviews. The same literature search was then applied to identify primary studies published in each considered area following the most recent systematic review published. RESULTS AND DISCUSSION: We identified 21 systematic reviews and included 11 of them analysing 46 different areas. The majority of studies evaluate the effect of specific surgical procedures; the main outcomes considered are hospital mortality and 5 year survival for cancers. Considering in-hospital mortalilty as outcome, in 11 areas there is strong evidence ofassociation between volume of activity and outcome: abdominalaortic aneurysm (unruptured), percutaneous transluminal coronary angioplasty knee arthroplasty coronary artery bypass, surgery for oesophageal and pancreatic cancer, surgery for prostate cancer, colecistectomy, carotid endarterectomy, myocardial infarction, neonatal intensive care. It is never possible however to identify a unique volume threshold. For some of these areas, particularly coronary angioplasty and coronary artery bypass, there are many new studies published following the last systematic review; some specific aspects are being investigated such as the role of temporal changes in the association, the effect of different risk adjustment procedures and the separate role of physician or hospital volume. In some cases, for example knee arthroplasty in-hospital mortality could be an inadequate outcome on which judging the strength of association, in fact, the few studies evaluating other outcomes such as complications provide inconsistent results. For a range of areas the evidence of association is weak: AIDS, appendicectomy, cardiac catheterization, surgery for breast, lung, stomach cancer, hernia repair, hip fracture, hysterectomy and injuries. As far as AIDS is concerned, the few num er of studies found is probably due to the lack of studies published after the introduction of effective therapies. All the included studies show an evidence of association between volume and in-hospital mortality. In no case we found weak evidence of lack of association while we identified three conditions for which the number of studies included in the reviews together with the prevalence of non significant studies do suggest lack of association; these are abdominal aortic aneurysm (ruptured), hip arthroplasty and surgery for colorectal cancer. In the case of hip arthroplasty as well, inhospital mortality could be an inadequate outcome, but only one old study found a positive association with risk of complications. Eventually there is a group of areas (n=22) for which there is not enough evidence to draw conclusions about the association between volume and outcome due to a small number of studies. In some cases, such as transplants, this could be due to the low rate of events; in this case all the few published studies show positive results. There are some limitations which should be taken into account in the interpretation of these results: despite the overall good completeness of reporting of the included reviews, the majority of

studies included in the reviews themselves are cross-sectional studies representing a very weak study design to evaluate causality of the investigated association. Moreover the methodology of risk adjustment applied is heterogenous among studies and it is difficult to know the extent to which this can affect the observed results. It is eventually necessary to consider the possible occurrence of publication bias which could lead to an overestimation of the positive effect of volume on health care outcomes attributable to the lack of publication of negative studies. CONCLUSIONS: In some areas the evidence seems strong enough to guide health care organizational choices, although it is not possible to identify well defined volume thresholds. In other areas, particularly for non surgical conditions, where there is not enough evidence, it seems necessary to conduct proper epidemiological studies. Also the evaluation of effectiveness of using volume as an instrument of health policy requires further research. Taking into account the rapid and continuing process of technology development, the definition of standard and prerequisite volumes of care should be specific of each temporal period and health care system. It is therefore a dynamic process requiring a continuous review of the available evidence. In the area of evidence based public health, the limited available evidence should not impair the choice of actions based on limited evidence, but rather it should lead to the application of then few available evidence on one side and to the planning of proper research in the areas of lack of evidence.

Killeen SD, O'Sullivan MJ, Coffey JC, Kirwan WO, Redmond HP. Provider volume and outcomes for oncological procedures. Br J Surg 2005;92(4):389-402.

Abstract: BACKGROUND: Oncological procedures may have better outcomes if performed by high-volume providers.

METHODS: A review of the English language literature incorporating searches of the Medline, Embase and Cochrane collaboration databases was performed. Studies were included if they involved a patient cohort from 1984 onwards, were community or population based, and assessed health outcome as a dependent variable and volume as an independent variable. The studies were also scored quantifiably to assess generalizability with respect to any observed volume-outcome relationship and analysed according to organ system; numbers needed to treat were estimated where possible.

RESULTS: Sixty-eight relevant studies were identified and a total of 41 were included, of which 13 were based on clinical data. All showed either an inverse relationship, of variable magnitude, between provider volume and mortality, or no volume-outcome effect. All but two clinical reports revealed a statistically significant positive relationship between volume and outcome; none demonstrated the opposite.

CONCLUSION: High-volume providers have a significantly better outcome for complex cancer surgery, specifically for pancreatectomy, oesphagectomy, gastrectomy and rectal resection.

Kloosterboer F, Jansen-Landheer ML, Wouters MWJM, Van De Velde CJH. Improving cancer care in the Netherlands: Insight in hospital variation in quality of care leads to national actions. Eur J Cancer 2013;49:S325.

Abstract: Background: Quality of cancer care has become an important topic on a national as well as on an international level. The Signalling Committee Cancer of the Dutch Cancer Society commissioned a study to evaluate the quality of cancer care in The Netherlands and recommended strategies for improvement. Material and Methods: A taskforce 'Quality of cancer care' comprising medical specialists from alle disciplines involved in the care for

cancer patients was formed. An extensive review of the literature on infrastructure, volume and specialization on the one hand and outcome on the other was performed. In addition, a meta-analysis of the volume-outcome relationship for pancreatic, bladder, lung, colorectal and breast cancer resections was performed. Furthermore, variation in quality of cancer care between regions, groups of hospitals and individual hospitals in our country was investigated on data from the Netherlands Cancer Registry. For oesophageal and stomach cancer patterns of care and outcomes were compared at an international level with the United Kingdom, Sweden and Denmark. Also an overview of organisations and initiatives contributing to quality improvement in The Netherlands was made. The findings of the taskforce were published in a national report in 2010. Results: In The Netherlands quality of care varies by hospital and region. These differences are not limited to surgical procedures and postoperative mortality, but are also demonstrated in other parts of the care process. Differences are only partly explained by differences in infrastructure, procedural volume and specialization between hospitals. Importantly, the publication of the report and recommendations in 2010 has contributed significantly to quality improvement measures such as the development of national multidisciplinary quality standards for a wide range of cancer treatments, including minimal standards for hospital volume. Furthermore, outcome registries have been set up for a number of cancer treatments including surgery for colon, breast, lung and upper-GI cancers. The insight provided by these outcome registries has resulted in significant outcome improvements. Similarly, the minimal standards for hospital volume urged hospitals to either stop certain treatments or specialize in order to meet the volume requirements. The resulting concentration of care improved overall treatment outcome. Conclusions: Giving insight into the actual quality of cancer care in the Netherlands has resulted in considerable awareness of the importance of quality improvement, underlined the need for action and endorsed the different stakeholders to team up and work on improving quality of cancer care in The Netherlands.

Pieper D, Mathes T, Neugebauer E, Eikermann M. State of evidence on the relationship between high-volume hospitals and outcomes in surgery: A systematic review of systematic reviews. J Am Coll Surg 2013;216(5):1015-1025.e1018.

Weitz J, Koch M, Friess H, Buchler MW. Impact of volume and specialization for cancer surgery. Dig Surg 2004;21(4):253-261.
Abstract: BACKGROUND/AIMS: The so-called volume/outcome relationship postulates that a higher caseload and specialization results in an improved outcome. The existence of such a relationship, however, is still debated in the literature. The objective of this review is to discuss the available data on this relationship in surgical oncology.
METHODS: A Medline analysis was performed using the following terms: volume, outcome, cancer, and surgery. The bibliography of each relevant article was screened for further studies.
RESULTS: For most malignancies a volume/outcome relationship was demonstrated in recent years. Components of this improved outcome are decreased perioperative morbidity and mortality, higher quality of life after surgery, improved economic outcome, and a better long-term prognosis for patients with cancer. The magnitude of this relationship, however, varies greatly among different malignancies. The exact reason for the volume/outcome relationship is still unknown.
CONCLUSION: Concentrating high-risk procedures in high-volume hospitals might prevent thousands of perioperative deaths per year. This concept

seems feasible for rare and high-risk diseases; however, it is unclear what threshold should be used for the definition of a high-volume provider. For common and low-risk diagnoses, it seems more realistic to educate the medical community in order to improve the outcome for the patients.

Wouters MWJM, Jansen-Landheer MLEA, Van De Velde CJH. The quality of cancer care initiative in the Netherlands. Eur J Surg Oncol 2010;36(SUPPL. 1):S3-S13.

Abstract: Background: In 2007 the Dutch Cancer Society formed a 'Quality of Cancer Care' taskforce comprising medical specialists, from all disciplines involved in the care for cancer patients. This taskforce was charged with the evaluation of quality of cancer care in the Netherlands and the development of strategies for improvement. Objective: The experts first focused on the relation between procedural volume and patient outcome and later aimed to identify other factors associated with high and low quality of the care provided in different regions and (types of) hospitals in the Netherlands. The question if cancer care in the Netherlands could be organized differently to assure high quality of care for all patients, was the main subject of investigation. Methods: An extensive review of the literature on infrastructure, volume and specialization on the one hand and outcome on the other was performed. In addition, a meta-analysis of the volume-outcome relationship for pancreatectomies, bladder, lung, colorectal and breast cancer resections was performed. Finally, variation in quality of cancer care between regions, groups of hospitals and individual hospitals in our country was investigated on data from the Netherlands Cancer Registry. Results: In the Netherlands quality of care varies by hospital and region. These differences are not limited to surgical procedures and postoperative mortality, but are also demonstrated in other parts of the care process. Differences are only partly explained by differences in infrastructure, procedural volume and specialization between hospitals. Essential information on differences in case mix between these hospitals are lacking from the Netherlands Cancer Registry. More detailed clinical data are needed to reveal the mechanisms behind the differences in quality of care between Dutch hospitals. Conclusion: On a population level, there is potential for improvement of outcome for cancer patients in the Netherlands by reducing variation in optimal treatment rates between hospitals. Not only treatment of tumours with a low incidence but also other complex or high risk cancer procedures should be provided in a specialized setting, with the right infrastructure, sufficient volume and adequate expertise. In addition, outcomes should be monitored continuously and fed back to individual caregivers.

Volum, CNS

Wong JM, Panchmatia JR, Ziewacz JE, Bader AM, Dunn IF, Laws ER, et al. Patterns in neurosurgical adverse events: intracranial neoplasm surgery. Neurosurg Focus 2012;33(5):E16.

Abstract: OBJECT: Neurosurgery is a high-risk specialty currently undertaking the pursuit of systematic approaches to measuring and improving outcomes. As part of a project to devise evidence-based safety interventions for specialty surgery, the authors sought to review current evidence in cranial tumor resection concerning the frequency of adverse events in practice, their patterns, and current methods of reducing the occurrence of these events. This review represents part of a series of papers written to consolidate information about these events and preventive measures as part of an ongoing effort to ascertain the utility of devising system-wide policies and safety tools

to improve neurosurgical practice.
METHODS: The authors performed a PubMed search using search terms "intracranial neoplasm," "cerebral tumor," "cerebral meningioma," "glioma," and "complications" or "adverse events." Only papers that specifically discussed the relevant complication rates were included. Papers were chosen to maximize the range of rates of occurrence for the reported adverse events.
RESULTS: Review of the tumor neurosurgery literature showed that documented overall complication rates ranged from 9% to 40%, with overall mortality rates of 1.5%-16%. There was a wide range of types of adverse events overall. Deep venous thromboembolism (DVT) was the most common adverse event, with a reported incidence of 3%-26%. The presence of new or worsened neurological deficit was the second most common adverse event found in this review, with reported rates ranging from 0% for the series of meningioma cases with the lowest reported rate to 20% as the highest reported rate for treatment of eloquent glioma. Benign tumor recurrence was found to be a commonly reported adverse event following surgery for intracranial neoplasms. Rates varied depending on tumor type, tumor location, patient demographics, surgical technique, the surgeon's level of experience, degree of specialization, and changes in technology, but these effects remain unmeasured. The incidence on our review ranged from 2% for convexity meningiomas to 36% for basal meningiomas. Other relatively common complications were dural closure-related complications (1%-24%), postoperative peritumoral edema (2%-10%), early postoperative seizure (1%-12%), medical complications (6%-7%), wound infection (0%-4%), surgery-related hematoma (1%-2%), and wrong-site surgery. Strategies to minimize risk of these events were evaluated. Prophylactic techniques for DVT have been widely demonstrated and confirmed, but adherence remains unstudied. The use of image guidance, intraoperative functional mapping, and real-time intraoperative MRI guidance can allow surgeons to maximize resection while preserving neurological function. Whether the extent of resection significantly correlates with improved overall outcomes remains controversial.
DISCUSSION: A significant proportion of adverse events in intracranial neoplasm surgery may be avoidable by use of practices to encourage use of standardized protocols for DVT, seizure, and infection prophylaxis; intraoperative navigation among other steps; improved teamwork and communication; and concentrated volume and specialization. Systematic efforts to bundle such strategies may significantly improve patient outcomes.

Volum, brystkreft

Gooiker GA, Van Gijn W, Post PN, Van De Velde CJH, Tollenaar RAEM, Wouters MWJM. A systematic review and meta-analysis of the volume-outcome relationship in the surgical treatment of breast cancer. Are breast cancer patients better of with a high volume provider? Eur J Surg Oncol 2010;36(SUPPL. 1):S27-S35.
Abstract: Aims: To conduct a systematic review of the literature on the volume-outcome relationship for the surgical treatment of breast cancer with consideration of the methodological quality of the available evidence and to perform a meta-analysis on the studies of considered good quality. Methods: A systematic search was done to identify all articles examining the effects of hospital or surgeon volume on clinical outcome of the surgical treatment of

breast cancer. Reviews, opinion articles and surveys were excluded. All articles were critically appraised on methodological quality and risk of bias. After strict inclusion, meta-analysis assuming a random effects model was done to estimate the effect of higher hospital or surgeon volume on patient outcome. Results: We found 12 studies of good methodological quality which could be included for meta-analysis. The results showed a significant association between high volume providers and an improved survival. The association is the most robust for surgeon volume (HR 0.80 (0.71-0.90) and RR 0.85 (0.80-0.90). In addition there is an effect of hospital volume on the in-hospital mortality, although the mortality was very low (0.1-0.2%). Results of meta-analysis were heterogeneous. Sensitivity analysis showed a larger effect size for studies also adjusting for comorbidity for both studies on hospital and surgeon volume. The data were not suggestive for publication bias. Conclusions: The results show that survival after breast cancer surgery is significantly associated with high volume providers.

Volum, kreft i øvre og midtre gastrointestinaltraktus

Bollschweiler E, Metzger R, Vallbohmer D, Holscher AH. Minimum case loads in visceral surgery - What is crucial: The surgical center or the single surgeon?. [German]. Chirurgische Gastroenterologie Interdisziplinar 2008;24(4):274-279.
Abstract: Background: The introduction of a minimum hospital case load in esophageal and pancreatic cancer surgery aimed to decrease postoperative complication rates and improve the long-term prognosis. However, less attention has been paid to the case volume of a single surgeon. Therefore, the aim of this study was to evaluate the influence of individual case volumes in esophageal and pancreatic cancer surgery on postoperative mortality and long-term survival. Methods: To identify scientific articles for this systematic review, a MEDLINE search was performed for studies published between 2004 and 2008. The following keywords were used: esophageal cancer, pancreatic cancer and high volume. Based on the articles identified by this search process, postoperative mortality and long-term survival depending on the single surgeon's case volume was determined. Results: In total, 20 suitable studies were identified, 14 for esophageal cancer and 6 for pancreatic cancer. A significant correlation was found between the case load and postoperative mortality. For esophageal cancer, 10 operations per year were usually classified as 'low volume'. However, a significant reduction of postoperative mortality was just reached when the number of operations was = 20. Based on the case load numbers of a single surgeon, a difference between high and low volume hospitals was determined in 46% for esophageal and in 53% of pancreatic cancer surgery. Conclusion: We need well educated and trained surgeons that perform surgical therapies in a multidisciplinary team.

Boughrassa F, Framarin A. Surgical treatment of esophageal cancer: effect of operative volume on clinical outcomes. Health Technology Assessment Database 2011 (4).

Brusselaers N, Mattsson F, Lagergren J. Hospital and surgeon volume in relation to long-term survival after oesophagectomy: Systematic review and meta-analysis. Gut 2014;63(9):1393-1400.
Abstract: Background: Centralisation of healthcare, especially for advanced

cancer surgery, has been a matter of debate. Clear short-term mortality benefits have been described for oesophageal cancer surgery conducted at highvolume hospitals and by high-volume surgeons. Objective: To clarify the association between hospital volume, surgeon volume and hospital type in relation to long-term survival after oesophagectomy for cancer, by a meta-analysis. Design: The systematic literature search included PubMed, Web of Science, Cochrane library, EMBASE and Science Citation Index, for the period 1990-2013. Eligible articles were those which reported survival (time to death) as HRs after oesophagectomy for cancer by hospital volume, surgeon volume or hospital type. Fully adjusted HRs for the longest follow-up were the main outcomes. Results were pooled by a meta-analysis, and reported as HRs and 95% CIs. Results: Sixteen studies from seven countries met the inclusion criteria. These studies reported hospital volume (N=13), surgeon volume (N=4) or hospital type (N=4). A survival benefit was found for high-volume hospitals (HR=0.82, 95% CI 0.75 to 0.90), and possibly also, for high-volume surgeons (HR=0.87, 95% CI 0.74 to 1.02) compared with their low-volume counterparts. No association with survival remained for hospital volume after adjustment for surgeon volume (HR=1.01, 95% CI 0.97 to 1.06; N=2), while a survival benefit was found in favour of high-volume surgeons after adjustment for hospital volume (HR=0.91, 95% CI 0.85 to 0.98; N=2). Conclusions This meta-analysis demonstrated better long-term survival (even after excluding early deaths) after oesophagectomy with high-volume surgery, and surgeon volume might be more important than hospital volume. These findings support centralisation with fewer surgeons working at large centres.

Dikken JL, Stiekema J, Van De Velde CJH, Verheij M, Cats A, Wouters MWJM, et al. Quality of care indicators for the surgical treatment of gastric cancer: A systematic review. Ann Surg Oncol 2013;20(2):381-398.
Abstract: Background: Quality assurance is increasingly acknowledged as a crucial factor for the (surgical) treatment of gastric cancer. The purpose of the current study was to define a minimum set of evidence-based quality of care indicators for the surgical treatment of locally advanced gastric cancer. Methods: A systematic review of the literature published between January 1990 and May 2011 was performed, using search terms on gastric cancer, treatment, and quality of care. Studies were selected based on predefined selection criteria. Potential quality of care indicators were assessed based on their level of evidence and were grouped into structure, process, and outcome indicators. Results: A total of 173 articles were included in the current study. For structural measures, evidence was found for the inverse relationship between hospital volume and postoperative mortality as well as overall survival. Regarding process measures, the most common indicators concerned surgical technique, perioperative care, and multimodality treatment. The only outcome indicator with supporting evidence was a microscopically radical resection. Conclusions: Although specific literature on quality of care indicators for the surgical treatment of locally advanced gastric cancer is limited, several quality of care indicators could be identified. These indicators can be used in clinical audits and other quality assurance programs.

Gori D, Tedesco D, Goggi R, Lombardi R, Lombardi MP. [Relationship between surgical volumes and 30-day mortality in patients with oesophagus and stomach cancer: a review of the literature and metanalysis]. Epidemiol Prev 2014;38(3-4):167-175.
Abstract: OBJECTIVES: to analyse the relationship between annual hospital

volumes of surgery for oesophageal and gastric cancer and 30-day mortality. DESIGN: a systematic review of the literature has been carried out on these topics by searching Medline for the years 1998-2012 and using two ad hoc search strings. For oesophageal cancer, the most recent and best quality systematic review was updated by including further studies, and then a metanalysis was carried out. For gastric cancer, two different metanalyses on low and high volumes were performed.
RESULTS: regarding oesophageal carcinoma, the study confirmed the association between 30-day mortality and the number of annual hospital interventions for this pathology. As for stomach cancer, the two metanalyses confirmed the role of high-volume surgery in reducing the outcome considered.
CONCLUSIONS: this study confirms the association between short-term outcomes and the number of annual hospital interventions for oesophageal and gastric cancer. The results obtained may be important for health care policy makers and administrators/managers in order to improve quality of care for patients with oesophageal or stomach cancer.

Gruen RL, Pitt V, Green S, Parkhill A, Campbell D, Jolley D. The effect of provider case volume on cancer mortality: Systematic review and meta-analysis. CA Cancer Journal for Clinicians 2009;59(3):192-211.
Abstract: The authors systematically reviewed the association between provider case volume and mortality in 101 publications involving greater than 1 million patients with esophageal, gastric, hepatic, pancreatic, colon, or rectal cancer, of whom more than 70,000 died. The majority of studies addressed the relation between hospital surgical case volume and short-term perioperative mortality. Few studies addressed surgeon case volume or evaluated long-term survival outcomes. Common methodologic limitations were failure to control for potential confounders, post hoc categorization of provider volume, and unit of analysis errors. A significant volume effect was evident for the majority of gastrointestinal cancers; with each doubling of hospital case volume, the odds of perioperative death decreased by 0.1 to 0.23. The authors calculated that between 10 and 50 patients per year, depending on cancer type, needed to be moved from a "low-volume" hospital to a "high-volume" hospital to prevent 1 additional volume-associated perioperative death. Despite this, approximately one-third of all analyses did not find a significant volume effect on mortality. The heterogeneity of results from individual studies calls into question the validity of case volume as a proxy for care quality, and leads the authors to conclude that more direct quality measures and the validity of their use to inform policy should also be explored.

Halm EA, Lee C, Chassin MR. Is volume related to outcome in health care? A systematic review and methodologic critique of the literature. Ann Intern Med 2002;137(6):511-520.
Abstract: Purpose: To systematically review the methodologic rigor of the research on volume and outcomes and to summarize the magnitude and significance of the association between them. Data Sources: The authors searched MEDLINE from January 1980 to December 2000 for English-language, population-based studies examining the independent relationship between hospital or physician volume and clinical outcomes. Bibliographies were reviewed to identify other articles of interest, and experts were contacted about missing or unpublished studies. Study Selection: Of 272 studies reviewed, 135 met inclusion criteria and covered 27 procedures and clinical conditions. Data Extraction: Two investigators independently reviewed each article, using a standard form to abstract information on key study characteristics and results. Data Synthesis: The methodologic rigor of the primary studies varied. Few studies used clinical data for risk adjustment or examined effects of

hospital and physician volume simultaneously. Overall, 71% of all studies of hospital volume and 69% of studies of physician volume reported statistically significant associations between higher volume and better outcomes. The strongest associations were found for AIDS treatment and for surgery on pancreatic cancer, esophageal cancer, abdominal aortic aneurysms, and pediatric cardiac problems (a median of 3.3 to 13 excess deaths per 100 cases were attributed to low volume). Although statistically significant, the volume-outcome relationship for coronary artery bypass surgery, coronary angioplasty, carotid endarterectomy, other cancer surgery, and orthopedic procedures was of much smaller magnitude. Hospital volume-outcome studies that performed risk adjustment by using clinical data were less likely to report significant associations than were studies that adjusted for risk by using administrative data. Conclusions: High volume is associated with better outcomes across a wide range of procedures and conditions, but the magnitude of the association varies greatly. The clinical and policy significance of these findings is complicated by the methodologic shortcomings of many studies. Differences in case mix and processes of care between high- and low-volume providers may explain part of the observed relationship between volume and outcome.

La Torre M, Nigri G, Ferrari L, Cosenza G, Ravaioli M, Ramacciato G. Hospital volume, margin status, and long-term survival after pancreaticoduodenectomy for pancreatic adenocarcinoma. Am Surg 2012;78(2):225-229.
Abstract: An association between hospital surgical volume and short- and long-term outcomes after pancreatic surgery has been demonstrated. Identification of specific factors contributing to this relationship is difficult. In this study, the authors evaluated if margin status can be identified as a measure of surgical quality, affecting overall survival, as a function of hospital pancreaticoduodenectomy volume. A systematic review of the literature was performed. Two models for analysis were created, dividing the 18 studies identified into quartiles and two quantiles based on the average annual hospital pancreatectomy volume. Regression modeling and analysis of variance were used to find an association between hospital volume, margin status, and survival. Increasing hospital volume was associated with a significantly increased negative margin status rate: 55 per cent for low-volume, 72 per cent for medium-volume, 74.3 per cent for high-volume, and 75.7 per cent for very high-volume centers (P = 0.008). The negative margin status rates were 64 per cent and 75.1 per cent for volume centers with less and more than 12 pancreaticoduodenectomies/ year, respectively (P = 0.04). Low-volume centers negatively affected both margin positive resection and 5-year survival rates, compared with high-volume centers. Margin status rate after pancreaticoduodenectomy could, therefore, be considered a measure of quality for selection of hospitals dedicated to pancreatic surgery.

Mahar AL, McLeod RS, Kiss A, Paszat L, Coburn NG. A systematic review of the effect of institution and surgeon factors on surgical outcomes for gastric cancer. J Am Coll Surg 2012;214(5):860-868
Markar SR, Karthikesalingam A, Thrumurthy S, Low DE. Volume-outcome relationship in surgery for esophageal malignancy: systematic review and meta-analysis 2000-2011. Journal of gastrointestinal surgery : official journal of the Society for Surgery of the Alimentary Tract 2012;16(5):1055-1063.
Abstract: The aim of this study is to provide a contemporary quantitative analysis of the existing literature examining the relationship between surgical caseload and outcome following esophageal resection. Medline, Embase,

trial registries, conference proceedings and reference lists were searched for trials comparing clinical outcome following esophagectomy from high- and low-volume hospitals since 2000. Primary outcomes were in-hospital and 30-day mortality. Secondary outcomes were length of hospital stay and post-operative complications. Nine appropriate publications comprising 27,843 esophagectomy operations were included, 12,130 and 15,713 operations were performed in low- and high-volume surgical units, respectively. Esophagectomy at low-volume hospitals was associated with a significant increase in incidence of in-hospital (8.48% vs. 2.82%; pooled odds ratio (POR) = 0.29; P < 0.0001) and 30-day mortality (2.09% vs. 0.73%; POR = 0.31; P < 0.0001). There was insufficient data for conclusive statistical analysis of length of hospital stay or post-operative complications. This meta-analysis does suggest a benefit in the centralization of esophageal cancer surgery to high-volume institutions with respect to mortality. The outcomes of this study are of interest to patients, healthcare providers and payers, particularly regarding service reconfiguration and more specifically centralization of services. Future studies that look at long-term survival will help improve understanding of any late consequences such as survival and quality of life following esophageal surgery at low- and high-volume hospitals.

Metzger R, Bollschweiler E, Vallbohmer D, Maish M, DeMeester TR, Holscher AH. High volume centers for esophagectomy: what is the number needed to achieve low postoperative mortality? Dis Esophagus 2004;17(4):310-314.

Abstract: Aimed at reducing surgical deaths, several initiatives have attempted to establish volume-based referral strategies in high risk surgery. The detailed analysis of the literature of the last 10 years, comprising 13 papers on esophageal cancer, shows a clear reduction in postoperative mortality with increasing case volumes per year. Single papers have analyzed the main reasons for this phenomenon and showed that postoperative complication rates are lower in high-volume hospitals and management of complications is more successful. Further, long-term prognosis is also correlated to case-volume. In conclusion, the analysis shows that only with the experience of more than 20 esophagectomies per year can a significant reduction of the mortality, down to 4.9%, be achieved. Based on this survey, surgery of esophageal cancer is a task for high-volume hospitals because of decreased postoperative mortality and improved long-term prognosis compared with low volume hospitals. [References: 22]

Meyer HJ. The influence of case load and the extent of resection on the quality of treatment outcome in gastric cancer. Eur J Surg Oncol 2005;31(6):595-604.

Abstract: AIMS: The background was to analyse the influence of hospital- and surgeon volume and of the extent of resective procedures on the quality of early and late treatment results in gastric cancer.
METHODS: The literature was reviewed by searching the databases of Medline, Cancerlit, Pubmed and the Cochran register.
RESULTS: The levels of evidence showed wide variations. The influence of hospital volume was more important for the outcome than the case load of the individual surgeon. The extent of surgical resection should be adapted to histology--or stage. The value of systematic lymph node dissection is still under discussion.
CONCLUSIONS: We have found that the best treatment results were seen in high volume hospitals with experienced surgeons, even taking into account extended surgical procedures. Further studies are needed to define the optimal number of operations necessary to be carried out each year.

Richardson AJ, Pang TC, Johnston E, Hollands MJ, Lam VW, Pleass HC. The volume effect in liver surgery a systematic review and meta-analysis. J Gastrointest Surg 2013;17(11):1984-1996.
Abstract: BACKGROUND: There is an inverse relationship between hospital and surgeon volume and mortality in many types of complex surgery. The aim of this paper is to investigate the volume effect on outcomes of liver surgery.
METHODS: A systematic review and meta-analysis was performed. A literature search was conducted using Medline and EMBASE from 1995 to 2012. A random effects model was used.
RESULTS: Seventeen studies were selected for detailed analysis. Definition of a high-volume institution varied from 2 to more than 33 procedures per year. The pooled odds ratio of mortality rate in low- vs high-volume centres was 2.0 [95 % confidence interval (CI), 1.6-2.4; P < 0.001]. Some studies divided centres into more than two groups and compared the highest and lowest volume groups. The pooled odds ratio of mortality rate for this comparison type was 3.2 (95 % CI, 1.7-5.8; P < 0.001). Funnel plots suggest possible publication bias. There was inadequate data to compare morbidity. Only two of seven studies demonstrated a shorter length of stay in the high-volume centres. There was no convincing volume effect on long-term survival.
CONCLUSIONS: This study suggests a strong relationship between volume and perioperative mortality. No difference in morbidity, length of stay or survival was demonstrated.

Stiekema J, Dikken JL, Van De Velde CJH, Verheij M, Cats A, Wouters MWJM, et al. Quality of care indicators for the surgical treatment of gastric cancer. Eur J Surg Oncol 2012;38 (9):764.
Abstract: Background: Quality assurance is increasingly acknowledged as a crucial factor in the (surgical) treatment of gastric cancer. The aim of the current study was to define a minimum set of evidence-based quality of care indicators for the surgical treatment of gastric cancer. Methods: A systematic review of the literature published between January 1990 and May 2011 was performed, using search terms on gastric cancer, treatment, and quality of care. Studies were selected based on predefined selection criteria. Potential quality of care indicators were assessed based on their level of evidence, and were grouped into structure, process, and outcome indicators. Results:Atotal of 173 articleswere included in the current study. For structural measures, evidence was found for the inverse relationship between hospital volume and postoperative mortality as well as overall survival. Regarding process measures, the most common indicators concerned surgical technique, perioperative care and multimodality treatment. The only outcome indicator with supporting evidence was a microscopically radical resection. Conclusions: Although specific literature on quality of care indicators for the surgical treatment of gastric cancer is limited, several quality of care indicators could be identified. A minimum set of 'evidence-based' quality of care indicators for gastric cancer surgery was created. These indicators can be used in clinical audits and other quality assurance programs.

Tol JAMG, Van Gulik TM, Busch ORC, Gouma DJ. Centralization of highly complex low-volume procedures in upper gastrointestinal surgery. A summary of systematic reviews and meta-analyses. Dig Surg 2012;29(5):374-383.
Abstract: Centralization of complex upper gastrointestinal (GI) surgery and the effect on postoperative outcomes, especially mortality, has been reported extensively in the literature. In this review the highest level of evidence on

the volume outcome relationship is discussed together with other important aspects that can influence postoperative outcomes. Do high-volume centers and surgeons result in better outcomes after surgery for the different upper GI surgical procedures such as esophageal, gastric, liver and pancreatic tumors? Twelve systematic reviews including four meta-analyses described the effect of hospital and/or surgeon volume on mortality. The majority of reviews (>90%) showed a lower mortality in high-volume hospitals. This correlation was also reported when analyzing the different GI procedures separately for esophageal, gastric, hepatic and pancreatic tumors. The volume discussion has limitations and therefore the relationship between hospital structure and process of care in hospitals and the outcome of surgery has also been acknowledged. Besides surgeon expertise and skills, high-intensity intensive care units, 24/7 availability of interventional radiology, effective prevention and managing of complications and adequate patient selection will influence postoperative outcomes. These forms of hospital structures and process of care might even play a more important role in surgical outcomes.

Van Heek NT, Kuhlmann KF, Scholten RJ, de Castro SM, Busch OR, van Gulik TM, et al. Hospital volume and mortality after pancreatic resection: a systematic review and an evaluation of intervention in the Netherlands. Ann Surg 2005;242(6):781-788, discussion 788-790.

Abstract: OBJECTIVES: To evaluate the best available evidence on volume-outcome effect of pancreatic surgery by a systematic review of the existing data and to determine the impact of the ongoing plea for centralization in The Netherlands.
SUMMARY BACKGROUND DATA: Centralization of pancreatic resection (PR) is still under debate. The reported impact of hospital volume on the mortality rate after PR varies. Since 1994, there has been a continuous plea for centralization of PR in The Netherlands, based on repetitive analysis of the volume-outcome effect.
METHODS: A systematic search for studies comparing hospital mortality rates after PR between high- and low-volume hospitals was used. Studies were reviewed independently for design features, inclusion and exclusion criteria, cutoff values for high and low volume, and outcome. Primary outcome measure was hospital or 30-day mortality. Data were obtained from the Dutch nationwide registry on the outcome of PR from 1994 to 2004. Hospitals were divided into 4 volume categories based on the number of PRs performed per year. Interventions and their effect on mortality rates and centralization were analyzed.
RESULTS: Twelve observational studies with a total of 19,688 patients were included. The studies were too heterogeneous to allow a meta-analysis; therefore, a qualitative analysis was performed. The relative risk of dying in a high-volume hospital compared with a low-volume hospital was between 0.07 and 0.76, and was inversely proportional to the volume cutoff values arbitrarily defined. In 5 evaluations within a decade, hospital mortality rates were between 13.8% and 16.5% in hospitals with less than 5 PRs per year, whereas hospital mortality rates were between 0% and 3.5% in hospitals with more than 24 PRs per year. Despite the repetitive plea for centralization, no effect was seen. During 2001, 2002, and 2003, 454 of 792 (57.3%) patients underwent surgery in hospitals with a volume of less than 10 PRs per year, compared with 280 of 428 (65.4%) patients between 1994 and 1996.
CONCLUSIONS: The data on hospital volume and mortality after PR are too heterogeneous to perform a meta-analysis, but a systematic review shows

convincing evidence of an inverse relation between hospital volume and mortality and enforces the plea for centralization. The 10-year lasting plea for centralization among the surgical community did not result in a reduction of the mortality rate after PR or change in the referral pattern in The Netherlands.

Wouters MWJM, Gooiker GA, Van Sandick JW, Tollenaar RAEM. The volume-outcome relation in the surgical treatment of esophageal cancer: A systematic review and meta-analysis. Cancer 2012;118(7):1754-1763.

Abstract: This study was undertaken to conduct a systematic review and meta-analysis of the literature on the relation between procedural volume and outcome of esophagectomies. A systematic search was carried out to identify articles investigating effects of hospital or surgeon volume on short-term and long-term outcomes published between 1995 and 2010. Articles were scrutinized for methodological quality, and after inclusion of only high-quality studies, a meta-analysis assuming a random effects model was done to estimate the effect of higher volume on patient outcome. Heterogeneity in study results was evaluated with an I²-test and risk of publication bias with an Egger regression intercept. Forty-three studies were found. Sixteen studies met the strict inclusion criteria for the meta-analysis on hospital volume and postoperative mortality and 4 studies on hospital volume and survival. The pooled estimated effect size was significant for high-volume providers in the analysis of postoperative mortality (odds ratio [OR], 2.30; 95% confidence interval [CI], 1.89-2.80) and in the survival analysis (OR, 1.17; 95% CI, 1.05-1.30). The meta-analysis of surgical volume and outcome showed no significant results. Studies in which the results were adjusted not only for patient characteristics but also for tumor characteristics and urgency of the operation showed a stronger correlation between hospital volume and mortality. Also, studies performed on data from the United States showed higher effect sizes. The evidence for hospital volume as an important determinant of outcome in esophageal cancer surgery is strong. Concentration of procedures in high-volume hospitals with a dedicated setting for the treatment of esophageal cancer might lead to an overall improvement in patient outcome.

Volum, Kreft i nedre gastointestinaltraktus

Archampong D, Borowski D, Wille-Jørgensen P, Iversen Lene H. Workload and surgeon´s specialty for outcome after colorectal cancer surgery. Cochrane Database of Systematic Reviews 2012 (3):CD005391.

Abstract: Background: A large body of research has focused on investigating the effects of healthcare provider volume and specialization on patient outcomes including outcomes of colorectal cancer surgery. However there is conflicting evidence about the role of such healthcare provider characteristics in the management of colorectal cancer.Objectives: To examine the available literature for the effects of hospital volume, surgeon caseload and specialization on the outcomes of colorectal, colon and rectal cancer surgery.Search methods: We searched Cochrane Central Register of Controlled Trials (CENTRAL), and LILACS using free text search words (as well as MESH-terms). We also searched Medline (January 1990-September 2011), Embase (January 1990-September 2011) and registers of clinical trials, ab-

stracts of scientific meetings, reference lists of included studies and contacted experts in the field.Selection criteria: Non-randomised and observational studies that compared outcomes for colorectal cancer, colon cancer and rectal cancer surgery (overall 5-year survival, five year disease specific survival, operative mortality, 5-year local recurrence rate, anastomotic leak rate, permanent stoma rate and abdominoperineal excision of the rectum rate) between high volume/specialist hospitals and surgeons and low volume/specialist hospitals and surgeons.Data collection and analysis: Two review authors independently abstracted data and assessed risk of bias in included studies. Results were pooled using the random effects model in unadjusted and case-mix adjusted meta-analyses.Main results: Overall five year survival was significantly improved for patients with colorectal cancer treated in high-volume hospitals (HR=0.90, 95% CI 0.85 to 0.96), by high-volume surgeons (HR=0.88, 95% CI 0.83 to 0.93) and colorectal specialists (HR=0.81, 95% CI 0.71 to 0.94). Operative mortality was significantly better for high-volume surgeons (OR=0.77, 95% CI 0.66 to 0.91) and specialists (OR=0.74, 95% CI 0.60 to 0.91), but there was no significant association with higher hospital caseload (OR=0.93, 95% CI 0.84 to 1.04) when only case-mix adjusted studies were included. There were differences in the effects of caseload depending on the level of case-mix adjustment and also whether the studies originated in the US or in other countries. For rectal cancer, there was a significant association between high-volume hospitals and improved 5-year survival (HR=0.85, 95% CI 0.77 to 0.93), but not with operative mortality (OR=0.97, 95% CI 0.70 to 1.33); surgeon caseload had no significant association with either 5-year survival (HR=0.99, 95% CI 0.86 to 1.14) or operative mortality (OR=0.86, 95% CI 0.62 to 1.19) when case-mix adjusted studies were reviewed. Higher hospital volume was associated with significantly lower rates of permanent stomas (OR=0.64, 95% CI 0.45 to 0.90) and APER (OR=0.55, 95% CI 0.42 to 0.72). High-volume surgeons and specialists also achieved lower rates of permanent stoma formation (0.75, 95% CI 0.64 to 0.88) and (0.70, 95% CI 0.53 to 0.94, respectively).Authors' conclusions: The results confirm clearly the presence of a volume-outcome relationship in colorectal cancer surgery, based on hospital and surgeon caseload, and specialisation. The volume-outcome relationship appears somewhat stronger for the individual surgeon than for the hospital; particularly for overall 5-year survival and operative mortality, there were differences between US and non-US data, suggesting provider variability at hospital level between different countries, making it imperative that every country or healthcare system must establish audit systems to guide changes in the service provision based on local data, and facilitate centralisation of services as required. Overall quality of the evidence was low as all included studies were observational by design. In addition there were discrepancies in the definitions of caseload and colorectal specialist. However ethical challenges associated with the conception of randomised controlled trials addressing the volume outcome rela ionship makes this the best available evidence.

Archampong D, Borowski DW, Dickinson HO. Impact of surgeon volume on outcomes of rectal cancer surgery: A systematic review and meta-analysis. Surgeon 2010;8(6):341-352.

Abstract: Aim: To clarify the relationship between surgeon caseload and patient outcomes for patients undergoing rectal cancer surgery in order to inform debate about organisation of services. Methods: We searched Medline and Embase for articles published up to March 2010, and included studies examining surgeon caseload and outcomes in rectal cancer patients treated after 1990. Outcomes considered were 30-day mortality, overall survival, anastomotic leak, local recurrence, permanent stoma and abdominoperineal

excision rates. We assessed the risk of bias in included studies and performed random effects meta-analyses based on both unadjusted and casemix adjusted data. Results: Eleven included studies enrolled 18,301 rectal cancer patients undergoing resective surgery. Unadjusted meta-analysis showed a statistically significant benefit in favour of high volume surgeons for 30-day postoperative mortality (OR = 0.57, 95% CI: 0.43-0.77; based on three studies, 4809 patients) and overall survival (HR = 0.76, 95% CI 0.63-0.90; based on two studies, 1376 patients), although the former relationship was attenuated and non-significant when based on two studies (9685 patients) that adjusted for casemix (OR = 0.79, 95% CI: 0.59-1.06). Pooling of three studies (2202 patients) showed no significant relationship between surgeon volume and anastomotic leak rate. Permanent stoma formation was less likely for high volume surgeons (adjusted OR = 0.75, 95% CI: 0.64 to 0.88; based on two studies, 9685 patients) and APER rates were lower for high volume surgeons (unadjusted OR = 0.58, 95% CI: 0.45 to 0.76); based on six studies, 3921 participants. Conclusions: This review gives evidence that higher surgeon volume is associated with better overall survival, lower permanent stoma and APER rates. 2010 Royal College of Surgeons of Edinburgh (Scottish charity number SC005317) and Royal College of Surgeons in Ireland.

Iversen LH, Harling H, Laurberg S, Wille-Jorgensen P. Influence of caseload and surgical speciality on outcome following surgery for colorectal cancer: A review of evidence. Part 2: Long-term outcome. Colorectal Dis 2007;9(1):38-46.

Abstract: Objective: We reviewed recent literature to assess the impact of hospital caseload, surgeon's caseload and education on long-term outcome following colorectal cancer surgery. Method: We searched the MEDLINE and Cochrane Library databases for relevant literature starting from 1992. We selected hospital caseload, surgeon's caseload and surgeon's education, type of hospital, and surgeon's experience as variables of interest. Measures of outcome were recurrence-free survival and overall survival, and for rectal cancer frequency of permanent stoma. We reviewed the 34 studies according to tumour location: colonic cancer, rectal cancer, or colorectal cancer. We described the studies individually and performed a meta-analysis whenever it was considered appropriate. Results: For colonic cancer, overall survival improved with increasing hospital caseload, odds ratio (OR) 1.22 [95% confidence interval (CI) 1.16-1.28], and surgeon's education. For rectal cancer, overall survival improved with increasing hospital caseload, OR 1.38 (95% CI 1.19-1.60), and, possibly by surgeon'education and experience. Cancer-free survival was strongly influenced by surgeon's education. The colostomy rate was less in high caseload hospitals, OR 0.76 (95% CI 0.68-0.85). For colorectal cancer, overall survival improved with surgeon's education. Conclusion: The data have provided evidence that long-term survival following colorectal cancer surgery in general improved significantly with increasing hospital caseload and surgeon's education.

Iversen LH, Harling H, Laurberg S, Wille-Jorgensen P. Influence of caseload and surgical speciality on outcome following surgery for colorectal cancer: A review of evidence. Part 1: Short-term outcome. Colorectal Dis 2007;9(1):28-37.

Abstract: Objective: An association between caseload and outcome has been reported for complex surgical procedures. We systematically reviewed recent literature to determine whether caseload and surgical speciality are associated with short-term outcome following colorectal cancer surgery. Method: We searched the MEDLINE and Cochrane Library databases for relevant publications starting in 1992. We selected hospital caseload and type, and

surgeon's caseload, education and experience as variables of interest. Measures of outcome were postoperative morbidity, in-hospital and 30-day mortality, and for rectal cancer anastomotic leak. We stratified the 35 reviewed studies by tumor location: colonic cancer, rectal cancer, or colorectal cancer and described the studies individually. A meta-analysis was performed only when it was considered appropriate. Result: For colonic cancer, postoperative morbidity was associated with surgeon's caseload and education. Postoperative mortality was strongly associated with hospital caseload (OR 0.64, 95% CI 0.55-0.73), and surgeon's caseload (OR 0.50, 95% CI 0.39-0.64). It was also influenced by surgeon's education and experience. For rectal cancer, we found no evidence of an association between the selected variables and short-term outcome, including frequency of anastomotic leak. For colorectal cancer, there was evidence for an association between postoperative morbidity and hospital caseload. Conclusion: Our review offers evidence for a positive association between high hospital caseload, surgeon's caseload, sub-speciality and experience and improved short-term outcome in colonic cancer surgery. We failed to find evidence of a relationship for rectal cancer surgery, possibly owing to methodological artifacts. No study reported an inverse relation.

Kelly M, Bhangu A, Singh P, Fitzgerald JEF, Tekkis P. The effect of trainee involvement in colorectal surgery: A systematic review and meta-analysis. International Journal of Surgery 2013;11 (8):631.

Abstract: Aim: The aim of this meta-analysis was to compare short term and oncological outcomes following colorectal resection performed by trainees compared to consultant surgeons. Methods: Systematic literature searches identified studies published studies until December 2012. Studies considering colorectal resection for benign or malignant indications were included, and the primary endpoint was rate of anastomotic leak. Secondary endpoints were rate of wound infection, 30-day mortality, R0 resection, local recurrence and cancer survival. Odds ratios (OR) and hazard ratio (HR) were calculated for outcomes using meta-analytical techniques. Results: The final analysis included ten comparative studies of 11423 colorectal resections, of which 7309 (64.0%) were performed by consultants, 3075 (26.9%) by supervised trainees and 751 (6.57%) by unsupervised trainees. The overall rate of anastomotic leak was 2.58%. Supervised trainees had a significantly lower leak rate compared with consultants (3.20% versus 1.10%; OR 2.72, p=0.05). Meta-analysis of survival following cancer resection (to a maximum of 5 years) revealed no significant difference between trainees and consultants for overall survival (HR 1.01, p=0.930) but a slightly improved cancer specific survival with trainees (HR 0.87, p<0.001). Conclusions: Supervised trainees may perform colorectal resection with superior short term outcomes and equivalent oncological outcome to consultants.

Nugent E, Neary P. Rectal cancer surgery: volume-outcome analysis. Int J Colorectal Dis 2010;25(12):1389-1396.

Abstract: PURPOSE: There is strong evidence supporting the importance of the volume-outcome relationship with respect to lung and pancreatic cancers. This relationship for rectal cancer surgery however remains unclear. We review the currently available literature to assess the evidence base for volume outcome in relation to rectal cancer surgery.
METHODS: We analysed the Medline "PubMed" online database using the keyword search parameters of "rectal cancer", "hospital volume or caseload", "surgeon volume or caseload", "outcomes", "mortality", "approach", "local recurrence" and "morbidity" for the time period 1997-2009. Five hundred

twenty-six generic articles were identified. Articles that were not specific for, or separately identified, rectal cancer surgery in their individual analysis were excluded. Eighteen articles remained for review. We assessed short-term morbidity and long-term outcomes such as sphincter preservation, mortality and local recurrence rates.
RESULTS: Considerable variance was noted in the definition of high volume and low volume. Postoperative length of stay was lower and sphincter-preserving surgery was more commonly performed in high-volume hospitals and by high-volume surgeons. Surgeon specialisation was an important factor influencing sphincter preservation, survival and local recurrence rates. Volume was found to have no negative relationship with mortality and a positive one with local recurrence. Interestingly, there was no association found between hospital or surgeon caseload and postoperative morbidity.
CONCLUSION: There is a paucity of evidence in the literature regarding the volume-outcome relationship with regard to rectal cancer surgery. High-volume institutions yielded shorter lengths of stay. However, the key finding was that high-volume surgeons that specialised in colorectal surgery yielded objectively improved outcomes for patients with rectal cancer.

Salz T, Sandler RS. The Effect of Hospital and Surgeon Volume on Outcomes for Rectal Cancer Surgery. Clin Gastroenterol Hepatol 2008;6(11):1185-1193.
Abstract: Despite many studies of rectal cancer outcomes, no clear relationship between hospital or surgeon volume and patient outcomes has emerged for rectal cancer. We aimed to characterize the effect of hospital and surgical volume on surgery type and surgical outcomes in rectal cancer through a systematic review of the literature. We conducted a systematic review of studies evaluating the association between hospital or surgeon volume and rectal cancer outcomes. We searched PubMed for relevant articles and reviewed 23 articles. We describe each study and report outcomes in terms of the effect of hospital or surgeon volume on the type of surgery performed, surgical complications, postoperative mortality, survival, and recurrence. Hospitals and surgeons with higher caseloads appear to perform more sphincter-preserving surgeries and have lower postoperative mortality rates. Hospital and surgeon volume appear to have no effect or a small beneficial effect on the rate of leaks, complication rates, local recurrence, overall survival, and cancer-specific survival. For rectal cancer, the effects of hospital volume may be stronger for more short-term outcomes. Beyond the immediate recovery period, the effect of hospital and surgeon volume may be minimal. As more technically challenging surgeries, such as total mesorectal resection, become more widespread it will be important to evaluate the impact of hospital and surgeon volume on outcomes.

Van Gijn W, Gooiker GA, Wouters MWJM, Post PN, Tollenaar RAEM, Van De Velde CJH. Volume and outcome in colorectal cancer surgery. Eur J Surg Oncol 2010;36(SUPPL. 1):S55-S63.
Abstract: Aims: There is a growing consensus to concentrate high-risk surgical procedures to high volume surgeons in high volume hospitals. However, there is fierce debate about centralizing more common malignancies such as colorectal cancer. The objective of this review is to conduct a meta-analysis using the best evidence available on the volume-outcome relationship for colorectal cancer treatment. Methods: A systematic search was performed to identify all relevant articles studying the relation between hospital and/or surgeon volume and clinical outcomes for colorectal cancer. Using strict inclusion criteria, 23 articles were selected concerning colon cancer, rectal cancer or both diseases together as 'colorectal cancer'. Pooled estimated effect

sizes were calculated using the casemix adjusted outcomes of the highest volume group opposed to the lowest volume group. Results: High volume hospitals have a significantly lower postoperative mortality in half of the pooled results. Non significant results show a trend in favour of high volume hospitals. All results showed a significantly better long term survival in high volume hospitals. High volume surgeons have a lower postoperative mortality, although evidence is sparse. All analyses showed a significantly better long term survival in favour of high volume surgeons. Conclusions: The results show a clear and consistent relation between high volume providers and improved long term survival. This applies to both high volume hospitals and high volume surgeons. Most results show a relation between high volume providers and a reduced postoperative mortality, but evidence is less convincing. In the ideal world, extensive population based audit registrations with casemix adjusted feedback should make rigid minimal volume standards obsolete. Until then, using volume criteria for hospitals and surgeons treating colorectal cancer can improve mortality and especially long term survival.

Volum, Urologisk kreft

Barocas DA, Mitchell R, Chang SS, Cookson MS. Impact of surgeon and hospital volume on outcomes of radical prostatectomy. Urologic Oncology: Seminars and Original Investigations 2010;28(3):243-250.

Abstract: An emerging body of literature has established a relationship between case volume and outcomes after radical prostatectomy (RP). Such findings come in the context of an already well-established association between both surgeon and hospital case volume in the field of cardiovascular surgery and for several high-risk cancer operations. The purpose of this review is to identify and summarize the seminal studies to date that investigate the impact of RP volume on patient outcomes. We performed a literature search of the English language studies available through PubMed that pertain to this topic. Thirteen original studies and a meta-analysis were found, which focus on the impact of hospital RP volume on surgical outcomes (including length of stay, perioperative complication rate, perioperative mortality, readmission rate, and several long term measures of treatment effect). Eight studies were identified that interrogated the relationship between individual surgeon case volume and outcomes. Across multiple outcome metrics, there is a pervasive association between higher hospital RP case volume and improved outcomes. Increasing individual surgeon volume may also portend better outcomes, not only perioperatively, but even with respect to long-term cancer control and urinary function. While most data arise from retrospective cohort studies, these studies, for the most part, are of sound design, show an impressive magnitude of effect, and demonstrate an impact on outcome that is proportional to surgical volume. Further research should focus on finding a means by which to translate these observations into improvements in the quality of prostate cancer care. To address differences in outcome between low volume and high volume surgeons, some have proposed and implemented subspecialization within practice groups, while others have looked toward subspecialty certification for urologic oncologists. With regard to differences in hospital volume, regionalization of care has been proposed as a solution, but is fraught with pitfalls. It may be more pragmatic and, ultimately more beneficial to patients, however, to identify processes of care that are already in place at high volume hospitals and implement them at lower volume centers. Similarly, we advocate careful studies to identify successful

surgical techniques of high volume surgeons and efforts to disseminate these techniques.

Joudi FN, Konety BR. The volume/outcome relationship in urologic cancer surgery. Support Cancer Ther 2004;2(1):42-46.
Abstract: There is growing evidence in the literature of the association between higher hospital and surgeon volume and better outcomes from high-risk surgical procedures. A Medline search of the literature from 1966 to 2004 was performed using the keywords "outcome," "urology," "neoplasms," "volume," "hospital volume," "surgeon volume," "prostatectomy," "cystectomy," "nephrectomy," "prostate cancer," "bladder cancer," "kidney cancer," and "testis cancer." The relevant articles were reviewed and discussed in reference to each urologic cancer. Several studies have shown that higher hospital volume is associated with better outcomes for all urologic cancer surgeries. An association between postoperative mortality/morbidity and hospital and surgeon volumes was established. Individual surgeon volume is also a predictor of the quality and completeness of certain procedures such as radical prostatectomy. Long-term survival from cancer such as testicular cancer can be impacted by provider and institution volume. The evidence that highvolume hospitals have better outcomes from various types of urologic cancer surgery is increasing. The ultimate implication of these studies is that centralizing health care may yield better outcomes from urologic cancer surgeries. This is controversial and will have major health policy implications. Another approach would be to determine key factors that are the drivers behind better outcomes at high-volume centers and attempt to transfer those characteristics to lower-volume centers, thereby improving outcomes globally across all volume levels.

Joudi FN, Konety BR. The impact of provider volume on outcomes from urological cancer therapy. J Urol 2005;174(2):432-438.
Abstract: PURPOSE: Growing evidence suggests an association between higher hospital and surgeon volumes, and better outcomes after high risk surgical procedures. We reviewed the literature on volume and outcomes, specifically in urological cancer therapy.
MATERIALS AND METHODS: We searched the literature from 1966 to 2004 using MEDLINE with the keywords outcomes, urology, neoplasms, volume, hospital volume, surgeon volume, prostatectomy, cystectomy, nephrectomy, prostate cancer, bladder cancer, kidney cancer and testis cancer. Relevant articles were reviewed and results were compared for each urological cancer.
RESULTS: Several studies demonstrated that higher hospital volume is associated with better outcomes for all urological cancer surgeries. We found that long-term morbidity associated with radical prostatectomy is significantly associated with individual surgeon volume. There were variations in outcome even among high volume surgeons, suggesting that surgical technique can independently impact outcome. Hospitals with a high volume of cystectomies and nephrectomies had decreased overall mortality rates compared with low volume hospitals. Patients undergoing retroperitoneal lymph node dissection for metastatic germ cell tumor had statistically significantly improved survival when treated at larger oncology centers.
CONCLUSIONS: Evidence that high volume hospitals have better outcomes is increasing for urological cancer surgeries. Whether volume affects quality or better clinicians and services attract more patients can be debated. Centralizing health care will have major health policy implications, ie high volume hospitals may be overwhelmed and low volume hospitals may be at a disadvantage. An alternative would be to attempt to improve outcomes at

low volume hospitals by identifying drivers of high quality care at high volume hospitals and transferring some of these characteristics

Nuttall M, Van Der Meulen J, Phillips N, Sharpin C, Gillatt D, McIntosh G, et al. A systematic review and critique of the literature relating hospital or surgeon volume to health outcomes for 3 urological cancer procedures. J Urol 2004;172(6 I):2145-2152.
Abstract: Purpose: We performed a systematic review and critique of the literature of the relationship between hospital or surgeon volume and health outcomes in patients undergoing radical surgery for cancer of the bladder, kidney or prostate. Materials and Methods: Four electronic databases were searched to identify studies that describe the relationship between hospital or surgeon volume and health outcomes. Results: All included studies were performed in North America. A total of 12 studies were found that related hospital volume to outcomes. For radical prostatectomy and cystectomy all 8 included studies showed improvement in at least 1 outcome measure with increasing volume and never deterioration. For nephrectomy the 4 included studies produced conflicting results. Four studies were found that related surgeon volume to outcomes. All radical prostatectomy and cystectomy studies showed that some outcomes were better with higher surgeon volume and never deterioration. We did not find any studies of the effect of surgeon volume on outcomes after nephrectomy. The 3 studies of the combined effect of hospital and surgeon volume on outcomes after radical prostatectomy or cystectomy suggest that high volume hospitals have better outcomes, in part because of the effect of surgeon volume and vice versa. Conclusions: Outcomes after radical prostatectomy and cystectomy are on average likely to be better if these procedures are performed by and at high volume providers. For radical nephrectomy the evidence is unclear. The impact of volume based policies (increasing volume to improve outcomes) depends on the extent to which "practice makes perfect" explains the observed results. Further studies should explicitly address selective referral and confounding as alternative explanations. Longitudinal studies should be performed to evaluate the impact of volume based policies.

Trinh QD, Bjartell A, Freedland SJ, Hollenbeck BK, Hu JC, Shariat SF, et al. A systematic review of the volume-outcome relationship for radical prostatectomy. Eur Urol 2013;64(5):786-798.
Abstract: Context Due to the complexity and challenging nature of radical prostatectomy (RP), it is likely that both short- and long-term outcomes strongly depend on the cumulative number of cases performed by the surgeon as well as by the hospital. Objective To review systematically the association between hospital and surgeon volume and perioperative, oncologic, and functional outcomes after RP. Evidence acquisition A systematic review of the literature was performed, searching PubMed, Embase, and Scopus databases for original and review articles between January 1, 1995, and December 31, 2011. Inclusion and exclusion criteria comprised RP, hospital and/or surgeon volume reported as a predictor variable, a measurable end point, and a description of multiple hospitals or surgeons. Evidence synthesis Overall 45 publications fulfilled the inclusion criteria, where most data originated from retrospective institutional or population-based cohorts. Studies generally focused on hospital or surgeon volume separately. Although most of these analyses corroborated the impact of increasing volume with better outcomes, some failed to find any significant effect. Studies also differed with respect to the proposed volume cut-off for improved outcomes, as well as the statistical means of evaluating the volume-outcome relationship. Five studies simultaneously compared hospital and surgeon volume, where results sug-

gest that the importance of either hospital or surgeon volume largely depends on the end point of interest. Conclusions Undeniable evidence suggests that increasing volume improves outcomes. Although it would seem reasonable to refer RP patients to high-volume centers, such regionalization may not be entirely practical. As such, the implications of such a shift in practice have yet to be fully determined and warrant further exploration.

Wilt TJ, Shamliyan TA, Taylor BC, MacDonald R, Kane RL. Association between hospital and surgeon radical prostatectomy volume and patient outcomes: a systematic review. J Urol 2008;180(3):820-828; discussion 828-829.
Abstract: PURPOSE: We examined the association between hospital and surgeon volume, and patient outcomes after radical prostatectomy.
MATERIALS AND METHODS: Databases were searched from 1980 to November 2007 to identify controlled studies published in English. Information on study design, hospital and surgeon annual radical prostatectomy volume, hospital status and patient outcome rates were abstracted using a standardized protocol. Data were pooled with random effects models.
RESULTS: A total of 17 original investigations reported patient outcomes in categories of hospital and/or surgeon annual number of radical prostatectomies, and met inclusion criteria. Hospitals with volumes above the mean (43 radical prostatectomies per year) had lower surgery related mortality (rate of difference 0.62, 95% CI 0.47-0.81) and morbidity (rate difference -9.7%, 95% CI -15.8, -3.6). Teaching hospitals had an 18% (95% CI -26, -9) lower rate of surgery related complications. Surgeon volume was not significantly associated with surgery related mortality or positive surgical margins. However, the rate of late urinary complications was 2.4% lower (95% CI -5, -0.1) and the rate of long-term incontinence was 1.2% lower (95% CI -2.5, -0.1) for each 10 additional radical prostatectomies performed by the surgeon annually. Length of stay was lower, corresponding to surgeon volume.
CONCLUSIONS: Higher provider volumes are associated with better outcomes after radical prostatectomy. Greater understanding of factors leading to this volume-outcome relationship, and the potential benefits and harms of increased regionalization is needed.

Volum, gynekologisk kreft

du Bois A, Rochon J, Pfisterer J, Hoskins WJ. Variations in institutional infrastructure, physician specialization and experience, and outcome in ovarian cancer: A systematic review. Gynecol Oncol 2009;112(2):422-436.
Abstract: Objective: Ovarian cancer outcome varies among different institutions, regions, and countries. This systematic review summarizes the available data evaluating the impact of different physician and hospital characteristics on outcome in ovarian cancer patients. Methods: A MEDLINE database search for pertinent publications was conducted and reference lists of each relevant article were screened. Experts in the field were contacted. Selected studies assessed the relationship between physician and/or hospital specialty or volume and at least one of the outcomes of interest. The primary outcome was survival. Additional parameters included surgical outcome (debulking), completeness of staging, and quality of chemotherapy. The authors independently reviewed each article and applied the inclusion/exclusion criteria. The quality of each study was assessed by focusing on strategies to control for important prognostic factors. Results: Forty-four articles met inclusion criteria. Discipline and sub-specialization of the primary treating

physician were identified as the most important variable associated with superior outcome. Evidence showing a beneficial impact of institutional factors was weaker, but followed the same trend. Hospital volume was hardly related to any outcome parameter. Conclusions: The limited evidence available showed considerable heterogeneity and has to be interpreted cautiously. Better utilization of knowledge about institutional factors and well-established board certifications may improve outcome in ovarian cancer. Patients and primary-care physicians should select gynecologic oncologists for primary treatment in countries with established sub-specialty training. Policymakers, insurance companies, and lay organizations should support development of respective programs.

Vernooij F, Heintz P, Witteveen E, van der Graaf Y. The outcomes of ovarian cancer treatment are better when provided by gynecologic oncologists and in specialized hospitals: a systematic review. Gynecol Oncol 2007;105:801-812.

Abstract: To determine the efficacy of specialised care for patients with ovarian cancer.

PubMed was searched from January 1991 to November 2006; search terms were reported. In addition, Cochrane Database of Systematic Reviews (CDSR), DARE, NHS-EED, HTA database, Cochrane Central Register of Controlled Trials, Current Controlled Trials and ClinicalTrials.gov were searched using a single search term (ovarian cancer).

Studies were required to have a population-based study cohort and to separately report the results of general gynecologists, gynecological oncologists and general surgeons in order to meet minimum quality criteria. The authors did not state how the validity assessment was performed.

Relative risks were calculated for cohort data and odds ratios were calculated for case-control studies with 95% confidence intervals (CIs). The authors stated neither how data were extracted nor how many reviewers performed the data extraction.

Nineteen studies were included in the review. Eleven studies considered the effect of treatment by gynaecologic oncologists (n=13,045). Fourteen studies looked at the effect of treatment in a specialised hospital (n=23,134). Most of the studies were carried out in the USA or the UK. Staging: Gynecologic oncologists performed more lymph node dissections in patients with FIGO I and II disease (60% to 78% versus 26% to 36%; three studies). The percentage of adequate cancer staging was significantly greater in gynecologic oncologists (43% to 47%) than general gynecologists (15% to 22%) (two studies). Specialist hospitals reported more staging procedures than non-specialist hospitals (two studies). Debulking: A significant difference in favour of gynecologic oncologists compared to general gynecologists was found for optimal debulking to less than 2cm residual disease (relative risk 1.4, 95% CI: 1.2 to 1.5; five studies) and debulking to no residual degree in patients with stage III disease (relative risk 2.3, 95% CI: 1.5 to 3.5; two studies). No evidence of statistical heterogeneity was found. Patients operated on in specialist hospitals had a better chance of receiving optimal debulking than patients operated on in non-specialised hospitals (odds ratios ranged from 2.9 to 6.0; four studies).Surgery and chemotherapy: Patients treated in a specialised hospital were more likely to receive chemotherapy (odds ratio 1.82, 95% CI: 1.08 to 3.07) compared to patients in a non-specialised hospital (four studies). Patients treated by a gynecologic oncologist were more likely to receive chemotherapy compared to patients treated by a general gynecologist (relative risk 1.14, 95% CI: 1.07 to 1.22; five studies). Two studies looked at the difference in chemotherapy rates and survival rates between different providers and found no significant differences; hazard ratios for specialised providers

ranged from 0.75 to 0.77 and for general providers ranged from 0.77 to 0.79. Postoperative complications: No statistically significant differences were found in post-operative complication rates between different providers. Survival: Three studies found that treatment by a gynecologic oncologist resulted in longer survival in patients with advanced disease compared with general gynecologists. However, this was not generalisable to the whole patient population: the difference was only significant in one study in women 70 years or older with advanced disease. Other results were less consistent across studies. Treatment in a specialist hospital, compared to a non-specialist hospital, resulted in better survival in five of seven studies. Effect of specialised gynecologist versus the effect of specialised hospital: 18 out of 19 studies reported better outcomes from specialised settings (gynecologist oncologist or specialised hospital, or both). One study found a significant association between hospital volume and overall survival (hazard ratio 0.03), which increased further when surgeon volume was included in the analysis (hazard ratio 0.15). Two studies found that the effect of surgeon specialty could not be explained by surgical volume of the hospital or type of hospital. Three studies found that use of chemotherapy affected the relationship between hospital type and survival.
The outcome of ovarian cancer was better when treatment was provided in specialised settings (gynecologic oncologists or in specialised hospitals) than that provided in non-specialised settings.
The review question was supported by clear inclusion criteria and several sources were searched for relevant papers. It was not clear whether this search was restricted by language, which raised the possibility of language bias. The authors acknowledged the possibility of publication bias. Methods used to select papers, extract data and assess the quality of the studies were not reported, thus the likelihood of reviewer error and bias at these stages could not be assessed. The quality of the included studies was only minimally evaluated. Where studies were pooled, appropriate standard meta-analytic methods were used and statistical heterogeneity was assessed. The authors highlighted a number of limitations, including residual confounding, lack of details relating to the exact characteristics of the hospitals and differences between the included studies. Given the limitations and the lack of reported methodology in the review process, although the results appeared promising the authors conclusion appears to be overstated.
Practice: The authors stated that patients suspected of having advanced ovarian cancer should be treated in specialised gynecological oncological units by a multidisciplinary team.Research.

Volum, pediatrisk kreft

Knops RRG, van Dalen EC, Mulder RL, Leclercq E, Knijnenburg SL, Kaspers GJL, et al. The volume effect in paediatric oncology: A systematic review. Ann Oncol 2013;24(7):1749-1753.

Abstract: Background: For several adult cancer types, there is evidence that treatment in high volume hospitals, high case volume providers, or in specialised hospitals leads to a better outcome. The aim of this study is to give an overview of the existing evidence regarding the volume effect in paediatric oncology related to the quality of care or survival. Materials and methods: An extensive search was carried out for studies on the effect of provider case volume on the quality of care or survival in childhood cancer. Information about study characteristics, comparisons, results, and quality assessment were abstracted. Results: In total, 14 studies were included in this systematic review.

Studies with a low risk of bias provide evidence that treatment of children with brain tumours, acute lymphoblastic leukaemia, osteosarcoma, Ewing's sarcoma, or children receiving treatment with allogenic bone marrow transplantation in higher volume hospitals, specialised hospitals, or by high case volume providers, is related with a better outcome. Conclusions: This systematic review provides support for the statement that higher volume hospitals, higher case volume providers, and specialised hospitals are related to the better outcome in paediatric oncology. No studies reported a negative effect of a higher volume.

Tverrfaglige team

Coory M, Gkolia P, Yang IA, Bowman RV, Fong KM. Systematic review of multidisciplinary teams in the management of lung cancer. Lung Cancer 2008;60(1):14-21.
Abstract: Background: In several countries, clinical practice guidelines for lung cancer recommend that multidisciplinary (MD) teams should be used to plan the management of all lung cancer patients. We conducted a systematic review to evaluate and critically appraise the effectiveness of multidisciplinary teams for lung cancer. Materials and methods: Medline searches were carried out for the period 1984 to July 2007. We included any study that mentioned team working among specialists with diagnostic and curative therapeutic intent, where members of the team met at a specified time, either in person or by video or teleconferencing, to discuss the diagnosis and management of patients with suspected lung cancer. All study designs were included. We were particularly interested in whether multidisciplinary working improved survival but also considered other outcomes such as practice patterns and waiting times. Results: Sixteen studies met the criteria for inclusion. Statistical pooling was not possible due to clinical heterogeneity. Only two of the primary studies reported an improvement in survival. Both were before-and-after designs, providing weak evidence of a causal association. Evidence of the effect of MD teams was stronger for changing patient management than for affecting survival. Six of the studies reported an increase in the percentage of patients undergoing surgical resection or an increase in the percentage of patients undergoing chemotherapy or radiotherapy with curative intent. Conclusion: This systematic review shows limited evidence linking MD teams with improved lung cancer survival. This does not mean that MD teams do not improve survival, merely that currently available evidence of this is limited. It seems intuitively obvious that MD teams should improve outcomes for lung cancer patients, but there are difficulties in conducting randomised trials to show this. The best way forward would be prospective evaluation of the effectiveness of MD teams as they are implemented, paying particular attention to collecting data on potential confounders.

Lamb BW, Brown KF, Nagpal K, Vincent C, Green JSA, Sevdalis N. Quality of care management decisions by multidisciplinary cancer teams: A systematic review. Ann Surg Oncol 2011;18(8):2116-2125.
Abstract: Background: Factors that affect the quality of clinical decisions of multidisciplinary cancer teams (MDTs) are not well understood. We reviewed and synthesised the evidence on clinical, social and technological factors that affect the quality of MDT clinical decision-making. Methods: Electronic databases were searched in May 2009. Eligible studies reported original data, quantitative or qualitative. Data were extracted and tabulated by two blinded reviewers, and study quality formally evaluated. Results: Thirty-

seven studies were included. Study quality was low to medium. Studies assessed quality of care decisions via the effect of MDTs on care management. MDTs changed cancer management by individual physicians in 2-52% of cases. Failure to reach a decision at MDT discussion was found in 27-52% of cases. Decisions could not be implemented in 1-16% of cases. Team decisions are made by physicians, using clinical information. Nursing personnel do not have an active role, and patient preferences are not discussed. Time pressure, excessive caseload, low attendance, poor teamworking and lack of leadership lead to lack of information and deterioration of decision-making. Telemedicine is increasingly used in developed countries, with no detriment to quality of MDT decisions. Conclusions: Team/social factors affect management decisions by cancer MDTs. Inclusion of time to prepare for MDTs into team-members' job plans, making team and leadership skills training available to team-members, and systematic input from nursing personnel would address some of the current shortcomings. These improvements ought to be considered at national policy level, with the ultimate aim of improving cancer care.

Houssami N, Sainsbury R. Breast cancer: Multidisciplinary care and clinical outcomes. Eur J Cancer 2006;42(15):2480-2491.
Abstract: A multidisciplinary approach to the management of breast cancer is the standard of care in developed health systems. We performed a systematic review to assess the extent and quality of evidence on whether multidisciplinary care (MDC), or related aspects of care contribute to clinical outcomes in breast cancer, and in particular whether these influence survival. Only two primary studies have looked at MDC and neither of these studies considered long-term outcomes. The studies of MDC (case series) provide weak evidence that MDC may alter treatment patterns. Several population-based cohort studies showed that related aspects of team work, specialist (surgeon) and hospital workload and specialisation, are associated with improved survival. This group of studies used better quality design with more clearly defined outcome measures, and most of the studies have allowed for possible confounding variables. Evidence of a survival benefit was most consistent for specialist (surgeon) effect. However, the reasons behind the improved survival reported in these studies are unclear, and it is unlikely that this is entirely attributable to treatment patterns. We conclude that although intrinsically multidisciplinary care should be associated with better survival, there remains a paucity of evidence to support this. Studies of the long-term clinical effects of MDC in breast cancer should be a priority for future evaluation.

McLaughlin N, Carrau RL, Kelly DF, Prevedello DM, Kassam AB. Teamwork in skull base surgery: An avenue for improvement in patient care. Surg Neurol Int 2013;4:36.
Abstract: BACKGROUND: During the past several decades, numerous centers have acquired significant expertise in the treatment of skull base pathologies. Favorable outcomes are not only due to meticulous surgical planning and execution, but they are also related to the collaborative efforts of multiple disciplines. We review the impact of teamwork on patient care, elaborate on the key processes for successful teamwork, and discuss its challenges.
METHODS: Pubmed and Medline databases were searched for publications from 1970 to 2012 using the following keywords: "teamwork", "multidisciplinary", "interdisciplinary", "surgery", "skull base", "neurosurgery", "tumor", and "outcome".
RESULTS: Current literature testifies to the complexity of establishing and maintaining teamwork. To date, few reports on the impact of teamwork in the management of skull base pathologies have been published. This lack of

literature is somewhat surprising given that most patients with skull base pathology receive care from multiple specialists. Common factors for success include a cohesive and well-integrated team structure with well-defined procedural organization. Although a multidisciplinary work force has clear advantages for improving today's quality of care and propelling research efforts for tomorrow's cure, teamwork is not intuitive and requires training, guidance, and executive support.
CONCLUSIONS: Teamwork is recommended to improve quality over the full cycle of care and consequently patient outcomes. Increased recognition of the value of an integrated team approach for skull base pathologies will hopefully encourage centers, physicians, allied health caregivers, and scientists devoted to treating these patients and advancing the field of knowledge to invest the time, effort, and resources to optimize and organize their collective expertise.

Shah S, Arora S, Athanasiou T, Atkin G, Glynne-Jones R, Mathur P, et al. Systematic review and meta-analysis of the effectiveness of colorectal cancer tumor boards. Surgical Endoscopy and Other Interventional Techniques 2013;27:S263.
Abstract: Introduction: Over the last few decades, decision-making in colorectal cancer management has evolved from individual surgeons and oncologists, to Multi-Disciplinary treatment planning. There is almost universal approval for this strategy, despite the fact that to date, there is little evidence for its effectiveness in improving outcomes. The aims of this review and meta-analysis were to identify the available literature on Colorectal Cancer Multidisciplinary teams. Specific questions concerned identifying studies that investigated tumor board processes and implementation of decisions, as well as the impact of tumor boards on decisions and clinical outcomes. Methods and Procedures: Systematic literature searches of Embase, Medline, PsycINFO and Cochrane Library were undertaken. Search terms included "colorectal", "cancer", "multidisciplinary" and relevant MESH derivatives. Reference lists and the grey literature were also searched. Only empirical articles were included by two independent reviewers, with any discordant decisions arbitrated by a third reviewer. After title screening, abstract and full text review (according to PRISMA guidelines), 26 articles were finally included in the review. Data abstracted from the included papers included population size, patient characteristics, healthcare professional characteristics, setting of the tumor board, study design, and study findings. The studies were divided into three groups-studies that presented data on tumor board running and implementation, the impact of tumor boards on pre-treatment decisions, and the impact of tumor boards on patient outcomes. Meta-analysis of three separate sub-groups was undertaken-use of MRI/TRUS for staging in rectal cancer, positive margins and 3 year overall survival rates. Random effects meta-analysis was used to aggregate the data, and the odds ratio (OR) was the summary statistic used. Results: A total of 3116 articles were retrieved. Application of the inclusion criteria excluded 3092 articles. 6 further articles were identified from hand-searching, and of these 2 fitted the inclusion criteria. A final list of 26 included articles from 8 countries was completed, published in peer reviewed journals between 2003 and 2012 inclusive. Reported data suggested that not all hospitals had weekly tumor boards, and attendance of core members was often low. However clinicians found working within tumor boards useful, and it positively affected pre-treatment decisions such as use of appropriate imaging and adherence to guidelines. Furthermore there was some improvement in clinical outcomes dependent upon the tumor board meeting. Meta-analysis demonstrated a significant association between the introduction of tumor boards and improved use of

MRI / TRUS for local staging in rectal cancer (four studies, 965 patients, OR 7.62, 95% CI 2.07 to 28.02), the decrease of positive resection margins (three studies, 823 patients, OR 0.33, 95% CI 0.17 to 0.67) and improved overall survival at 3 years (three studies, 1375 patients, OR 1.81, 95% CI 1.13 to 2.91). Conclusions: Colorectal cancer tumor boards are becoming increasingly popular with evidence to suggest they have improved colorectal cancer care and survival. Early involvement of the multi-disciplinary team and discussion of patients at tumor board meetings maybe an optimal strategy for delivering cancer care fit for the 21st Century.

Vernooij F, Heintz P, Witteveen E, van der Graaf Y. The outcomes of ovarian cancer treatment are better when provided by gynecologic oncologists and in specialized hospitals: a systematic review. Gynecol Oncol 2007;105:801-812.

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found in post-operative complication rates between different providers. Survival: Three studies found that treatment by a gynecologic oncologist resulted in longer survival in patients with advanced disease compared with general gynecologists. However, this was not generalisable to the whole patient population: the difference was only significant in one study in women 70 years or older with advanced disease. Other results were less consistent across studies. Treatment in a specialist hospital, compared to a non-specialist hospital, resulted in better survival in five of seven studies. Effect of specialised gynecologist versus the effect of specialised hospital: 18 out of 19 studies reported better outcomes from specialised settings (gynecologist oncologist or specialised hospital, or both). One study found a significant association between hospital volume and overall survival (hazard ratio 0.03), which increased further when surgeon volume was included in the analysis (hazard ratio 0.15). Two studies found that the effect of surgeon specialty could not be explained by surgical volume of the hospital or type of hospital. Three studies found that use of chemotherapy affected the relationship between hospital type and survival.
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Practice: The authors stated that patients suspected of having advanced ovarian cancer should be treated in specialised gynecological oncological units by a multidisciplinary team.Research.

Veddlegg 3: Andre publikasjoner som kan være relevante

***Cancer strategy* in Catalonia, Spain s.18-27**
http://www20.gencat.cat/docs/cancer/MERY/DOCUMENTS/Extraordinary%20CTO-Cancer%20strategy%20in%20Catalonia,%20Spain%202010.pdf

The Leapfrog Group of Patient Safety Evidence-Based Hospital Referral - Fact-sheet 2012
http://www.leapfroggroup.org/media/file/FactSheet_EBHR.pdf

Quality improvement research
J Grimshaw, L M McAuley, L A Bero, R Grilli, A D Oxman, C Ramsay, L Vale, M Zwarenstein. Systematic reviews of the effectiveness of quality improvement strategies and programmes. Qual Saf Health Care 2003;12:298–303
http://qualitysafety.bmj.com/content/12/4/298.full.pdf+html

Centralisation of selected surgical procedures: implications for Australia: a systematic review. 2007
Abstract: The objective of this systematic review is to assess the efficacy of centralisation for the following surgical procedures in the Australian setting; abdominal aortic aneurysms, knee arthroplasty, liver resection, oesophagectomy, and prostatectomy.
http://www.surgeons.org/for-health-professionals/audits-and-surgical-research/asernip-s/systematic-reviews-and-technology-overviews/report-57/

Abdel-Misih SR, Schmidt CR, Bloomston PM. Update and review of the multidisciplinary management of stage IV colorectal cancer with liver metastases. World J Surg Oncol 2009;7:72.
Abstract:
Background: The management of stage IV colorectal cancer with liver metastases has historically involved a multidisciplinary approach. In the last several decades, there have been great strides made in the therapeutic options available to treat these patients with advancements in medical, surgical, locoregional and adjunctive therapies available to patients with colorectal liver metastases(CLM). As a result, there

have been improvements in patient care and survival. Naturally, the management of CLM has become increasingly complex in coordinating the various aspects of care in order to optimize patient outcomes.
Review: A review of historical and up to date literature was undertaken utilizing Medline/PubMed to examine relevant topics of interest in patients with CLM including criterion for resectability, technical/surgical considerations, chemotherapy, adjunctive and locoregional therapies. This review explores the various disciplines and modalities to provide current perspectives on the various options of care for patients with CLM.
Conclusion: Improvements in modern day chemotherapy as allowed clinicians to pursue a more aggressive surgical approach in the management of stage IV colorectal cancer with CLM. Additionally, locoregional and adjunctive therapies has expanded the armamentarium of treatment options available. As a result, the management of patients with CLM requires a comprehensive, multidisciplinary approach utilizing various modalities and a more aggressive approach may now be pursued in patients with stage IV colorectal cancer with CLM to achieve optimal outcomes.
http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2763868/pdf/1477-7819-7-72.pdf

Borras JM, Albreht T, Audisio R, Briers E, Casali P, Esperou H, et al. Policy statement on multidisciplinary cancer care. Eur J Cancer 2014;50(3):475-480.
Abstract: Background Cancer care is undergoing an important paradigm shift from a disease-focused management to a patient-centred approach, in which increasingly more attention is paid to psychosocial aspects, quality of life, patients' rights and empowerment and survivorship. In this context, multidisciplinary teams emerge as a practical necessity for optimal coordination among health professionals and clear communication with patients. The European Partnership for Action Against Cancer (EPAAC), an initiative launched by the European Commission in 2009, addressed the multidisciplinary care from a policy perspective in order to define the core elements that all tumour-based multidisciplinary teams (MDTs) should include. To that effect, a working group conference was held in January 2013 within the EPAAC Work Package 7 (on Healthcare) framework. Methods The consensus group consisted of high-level representatives from the following European scientific societies, patient associations and stakeholders: European CanCer Organisation (ECCO), European SocieTy for Radiology & Oncology (ESTRO), European Society for Medical Oncology (ESMO), European Society of Surgical Oncology (ESSO), International Society of Geriatric Oncology (SIOG), European Association for Palliative Care (EAPC), European Oncology Nursing Society (EONS), International Psycho-Oncology Society (IPOS),European Cancer Patient Coalition (ECPC), EuropaColon, Europa Donna - The European Breast Cancer Coalition, Association of European Cancer Leagues (ECL), Organisation of European Cancer Institutes (OECI), EUSOMA - European Society of Breast Cancer Specialists, European Hospital and Healthcare Federation

(HOPE) and EPAAC Work Packages 5 (Health promotion and prevention), 7, 8 (Research), 9 (Information systems) and 10 (Cancer plans). A background document with a list of 26 core issues drawn from a systematic review of the literature was used to guide the discussion. Five areas related to MDTs were covered: care objectives, organisation, clinical assessment, patients' rights and empowerment and policy support. Preliminary drafts of the document were widely circulated for consultation and amendments by the working group before final approval. Results The working group unanimously formulated a Policy Statement on Multidisciplinary Cancer Care to define the core elements that should be implemented by all tumour-based MDTs. This document identifies MDTs as the core component in cancer care organisation and sets down the key elements to guide changes across all European health systems. Conclusion MDTs are an essential instrument of effective cancer care policy, and their continued development crucial to providing patients the care they need and deserve. While implementation must remain in local hands, European health systems can still benefit from having a basis for an effective multidisciplinary model of cooperation. This policy statement is intended to serve as a reference for policymakers and healthcare providers who wish to improve the services currently provided to the cancer patients whose lives and well-being depend on their action.

Foster JD, Hanna GB, Francis NK. Systematic review of surgeon credentialing and quality assurance of laparoscopic surgery for colorectal cancer in multi-centre trials. Surgical Endoscopy and Other Interventional Techniques 2014;28:S8.

Abstract: Background: Credentialing of surgeons and quality assurance of surgical technique are important considerations for multicentre clinical trials in surgery, especially when investigating new and evolving surgical procedures such as laparoscopic surgery. There is a need to demonstrate that technical proficiency of the surgeon is not acting as a confounding factor. We evaluate the methods that have been utilised for quality assurance of technical performance in multicentre trials investigating laparoscopic colorectal surgery. Methods: A Systematic review was undertaken using Ovid MEDLINE and EMBASE databases for the period 1991-December 2012. Inclusion criteria were large multicentre randomized controlled trials (= 3 sites and>50 patients) comparing laparoscopic surgery for the treatment of colorectal cancer with other approaches: including open, hand-assisted, and robotic methods. All publications relating to identified trials were retrieved, together with trial protocols where available online. Methods used for surgeon credentialing and quality assurance were extracted for review. Results: Searches identified 2637 unique citations. 49 articles reporting on 13 multi-centre trials met the inclusion criteria: 8 trials investigating laparoscopic colonic (+/- rectosigmoid) cancer surgery, 2 investigating colon and rectal TME surgery, and 3 investigating rectal TME surgery alone. Only 1 trial did not report methods employed for surgeon credentialing in published articles/ protocol. Methods used for credentialing were number of laparoscopic

cases performed by a surgeon (12 trials), and submission of unedited video of laparoscopic technique (6 trials). Minimum numbers of cases required varied from 5-200 cases. None describes the use of objective tools to standardize the assessment of submitted videos. The degree to which a standardized surgical technique is described in the protocol varies amongst trials. 3 of the trials provided live or video presentations demonstrating preferred resection technique. Conclusions: Methods employed for quality assurance of surgeons' competency prior to participating in multicentre randomized controlled trials in laparoscopic colorectal surgery are heterogeneous and somewhat arbitrary. There is a need to develop standardized and validated methods for surgical quality assurance to reduced bias in multicentre surgical trials.

McGory ML, Shekelle PG, Ko CY. Development of quality indicators for patients undergoing colorectal cancer surgery. J Natl Cancer Inst 2006;98(22):1623-1633.

Abstract: Background: Colorectal cancer is the second most common cancer type among new cancer diagnoses in the United States. Attention to the quality of surgical care for colorectal cancer is of particular importance given the increasing numbers of colorectal cancer resections performed in the aging population. A National Cancer Institute-sponsored consensus panel produced guidelines for colorectal cancer surgery in 2000. We have updated and extended that work by using a formal process to identify and rate quality indicators as valid for care during the preoperative, intraoperative, and postoperative periods. Methods: Using a modification of the RAND/UCLA Appropriateness Methodology, we carried out structured interviews with leaders in the field of colorectal cancer surgery and systematic reviews of the literature to identify candidate quality indicators addressing perioperative care for patients undergoing surgery for colorectal cancer. A panel of 14 colorectal surgeons, general surgeons, and surgical oncologists then evaluated and formally rated the indicators using the modified Delphi method to identify valid indicators. Results: A total of 142 candidate indicators were identified in six broad domains: privileging (which addresses surgical credentials), preoperative evaluation, patient-provider discussions, medication use, intraoperative care, and postoperative management. The expert panel rated 92 indicators as valid. These indicators address all domains of perioperative care for patients undergoing surgery for colorectal cancer. Conclusions: The RAND/UCLA Appropriateness Methodology can be used to identify and rate indicators of high-quality perioperative care for patients undergoing surgery for colorectal cancer. The indicators can be used as quality performance measures and for quality-improvement programs.

Sjekklisten

(Skriv den ut og gå nøye gjennom før du sender godkjent manus til infoteamet.)

Sjekkliste		**Status**
Merk riktig rapporttype med <u>understreking</u>: - Systematisk oversikt - Metodevurdering (HTA) - Helseøkonomisk oversikt - Helseøkonomisk evaluering - Hurtigoversikt (notat) - Kvalitetsmåling (notat/rapport) - Hasteoppdrag (notat) - Annet: _____ (hva)		
Valgte du den nyeste malen fra Kilden da du begynte å skrive på publikasjonen?		
Har du med alle følgende elementer i kolofonen (side 1):		
Tittel		
Forfatter	har du sjekket stavemåte for alle? Har du fylt inn arbeidsstedet for de eksterne?	
ISBN	dette får du fra arkivet	
Prosjektnummer		
Publikasjonstype	Systematisk litteratursøk med sortering	
Sidetall		
Oppdragsgiver		
Siteringsteksten		
Takketeksten	fyll inn alle som har bidratt	
Måned/år for avsluttet søk: Legges inn nederst i høyrespalte Hovedfunn/Key messages-sidene		
Har du kjørt stavekontroll på teksten din?		
Har du språkvasket hele manuset? (Info leser normalt bare gjennom hovedfunn, sammendrag og overskrifter.)		
Har du skrevet "Hovedfunn"?		
Har du oversatt "Hovedfunn" + tittel til engelsk?		

Har du oppdatert innholdsfortegnelsen?		
Har du oppdatert og kvalitetssjekket referanselisten? (Kontakt bibliotekar Ingvild Kirkehei hvis du trenger hjelp til dette.)		
Har du gått inn på File/Proper-ties (Fil/egen-skaper) og fylt inn alle felt? **(I Office 2007: Klikk Microsoft Office-knappen, klikk Forbered/ Prepare, deretter Egenskaper/Properties)**	*Title*	
	Subject	
	Authors	
	Nøkkelord: **Kunnskapssenteret, kunnskapssenter, litteratursøk** I tillegg til slike generelle nøkkelord bør du legge til temarelaterte nøkkelord. Stadig flere kommer til våre publikasjoner fra en søkemotor. Nøkkelordene er med å sikre at de som trenger publikasjonen,men ikke husker tittel eller ikke vet om den, likevel finner den!	

Oftest stilte spørsmål og tips

Start alltid med den nyeste versjon av malen

På Kilden, under Maler>Wordmaler, finnes alltid de nyeste versjonene av publikasjonsmalene. Begynn nye rapporter med en ny mal herfra, det er sannsynlig at den er oppdatert siden den siste rapporten du skrev. Det vil spare deg og kollegaene dine som blir involvert i sluttarbeidet for mange irritasjoner og og tidsspille.

Litt bakgrunnskunnskap om Word:

1) Bruk stilpaletten til å endre på utforming av font for at innholdsfortegnelsen og bunn-teksten skal fungere. Den åpner seg i høyre marg når du i hovedmenyen klikker Format>Stiler og formatering i Word 2003 (fra Hjem>Stiler i Word 2007).
2) Seksjonsinndelingen mellom kapitlene må ivaretas for at bunnteksten skal fungere. Du kan se seksjonsinndelingene ved å bytte i menyen til "Normal" under "View"/"Vis") (i Word 2007 "Draft"/"Kladd"), eller ved å klikke på avsnittssymbolet Vis/skjul ¶" som viser alle skjulte tegn. Det finner du i verktøymenyen i toppen i Word 2003. Hvis symbolet ikke ligger der, klikk Vis>Verktøylinjer og velg Standard. I Word 2007 er ikonet under Hjem> Avsnitt.
3) Er du usikker på hva disse tingene er, bla i rapportmanualen (PDF-fil) som ligger på Kilden.

Limer inn et bilde, men det synes ikke (dette skal være løst i den nye malen?)

1) Merk hele linjen hvor bildet står eller skal limes
2) Velg stilen "Normal billedplassering"
3) Da skal bildet sprette ned på plass. Hvis du lurer på hvorfor dette problemet oppstår, kan du lese om det i manualen for rapportmalen.

Problemer med å formatere tabeller

Når du bruker Word 2007 (eller nyere) i kombinasjon med denne oppdaterte rapportmalen finnes det et innebygget bibliotek av bl.a. de mest brukte tabeller som du kan sette inn og endre. Sett inn> Tabell> Hurtigtabeller *eller* Sett inn> Hurtigdeler *eller* Sett inn Hurtigdeler> Byggeblokkassistenten og velg tabellen du vil ha (Insert> Tables, eller Insert >Quick Parts eller Insert >Quick Parts>Building Blocks organizer og velg tabellen du vil ha). Bruk litt tid til å lære dette – det vil lønne seg!

Det finnes også en egen fil med tabelleksempler på Kilden. Ta gjerne utgangspunkt i en av disse fremfor å lage en ny tabell selv.

For å gi eksisterende tabeller en ny formatering i Word 2007, gjør følgende:

1) La markøren stå i tabellen (merking ikke nødvendig)
2) Velg stil fra Tabellverktøy>Utforming>Tabellstiler. Standard layout for Kunnskapssenteret skal ligge i gruppen Egendefinerte.

Innholdsfortegnelsen er feil eller viser ”Error! No table of contents entries found”.
Prøv først i Word 2003:

1) Sett markøren et sted i innholdsfortegnelsen
2) Høyreklikk med mus, velg ”Oppdater felt”

Prøv først i Word 2007:

1) Sett markøren et sted i innholdsfortegnelsen, og du får en ramme rundt innhildsfortegnelsen
2) Øverst på rammen til vestre er meny for oppdatering

Hvis det fortsatt viser feilmelding, kan det være fordi du ikke har brukt stilene i stil palletten riktig. Sjekk at overskriftene i dokumentet ditt er merket med stil Overskrift 1 (Heading 1), Overskrift 2 (Heading 2), osv.

Hvis du har brukt disse overskriftstilene og fortsatt har problem med innholdsfortegnelsen, er det letteste å sette inn en ny innholdsfortegnelse. I Office 2007: Velg ”Referanse” tab øverst på siden. Velg ”Innholdsfortegnelse”. Ikke velg de første formaterte eksemplene, gå lengre ned på listen der det står ”Sett inn innholdsfortegnelse” i tekst. Da kommer det opp et vindu, nederst mot høyre i den klikker du på ”Alternativer” (eller ”Options” på engelske Office). Da får du opp en liste over alle stilene i stilpaletten med tekst boks ved siden av. Fjern alle tallene i alle tekstboksene på denne listen, med unntak av ”Overskrift 1” og ”Overskrift 2” (eller ”Heading 1”, hvor du skriver henholdsvis ”1” og ”2”. Klikk ok og da bør du ha ny innholdsfortegnelse.

Innholdsfortegnelsen inneholder tekst som ikke er overskrifter
Da er den teksten merket med en Overskrift eller Heading stil, istedenfor riktig stil (som ”Normal”). Finn stedet i dokumentet hvor den teksten ligger, marker den og velg riktig stil, og oppdater innholdsfortegnelsen på nytt.

Bunnteksten er feil eller viser ”Error! Style not defined.”
Hvis bunnteksten viser feil kapittelreferanse, kan det hende at kapitteloverskriften ikke er definert med riktig stil eller at dokumentet har mistet noen av seksjonsinndelingene (det er kombinasjonen av disse to tingene som gir korrekte bunntekster):

1) Dobbeltsjekk at kapitteloverskrifter er formatert ved bruk av stilen ”Heading 1” eller ”Overskrift 1”. Hvis ikke det hjalp, prøv følgende:
2) Gå inn på ”Vis>Normal” (”Vis>Kladd” i Word 2007) (”View>Draft” på engelsk Word).
3) Se om seksjonsinndelingslinjene ligger i manuset på slutten av forrige kapittel (lang horisontal stiplet strek som heter ”Seksjonsinndeling” eller ”Section break”)
4) Hvis ikke, må du sette dem inn manuelt:
   Insert >Break > Section break (Sett inn>Skift>Neste side) (I Word 2007 Insert>Page Break)

Hvis ikke det hjalp, kan du prøve å kopiere en bunntekst som virker, og lime den inn der hvor den ikke virker.

Referanser

Hvis du bruker Reference Manager:

Bruk referansestil "SHdir". Du finner den på Kilden eller ved å klikke deg fram til denne mappen på fellesområdet:
Y:\K-felles\ADMIN\Bibliotekfaglige ressurser\For ansatte i K\Reference Manager\Outputstyle\Outputstyle til bruk i Kunnskapssenterets rapporter.

Stilen er en revidert utgave av Vancouver-stilen.

Hvis du bruker EndNote

Bruk referansestilen "Kunnskapssenteret norsk". Dette er også en revidert utgave av Vancouver-stilen. Du finner den på Kilden eller på denne mappen på fellesområdet:
Y:\K-felles\ADMIN\Bibliotekfaglige ressurser\For ansatte i K\EndNote\Styles

Svar på mange Reference Manager og EndNote spørsmål finnes på Kilden:

- Kontaktpersoner
- Kvalitetsikring av referanselisten
- Hva er Reference Manager og EndNote
- Kurs og opplæring
- Brukerveiledninger og ofte stilte spørsmål
- Hvilken referansestil skal jeg bruke og hvordan skal litteraturlisten se ut?

http://www.kunnskapssenteret.no/intranett/Bibliotektjenester/Reference+Manager+og+EndNote

Husk å kvalitetssjekke referansene før publisering.

Har du flere spørsmål om formatering eller layout?

Manualen for rapportmaler ligger i samme mappe som malene:
"rapportmal_manual_[dato].pdf"