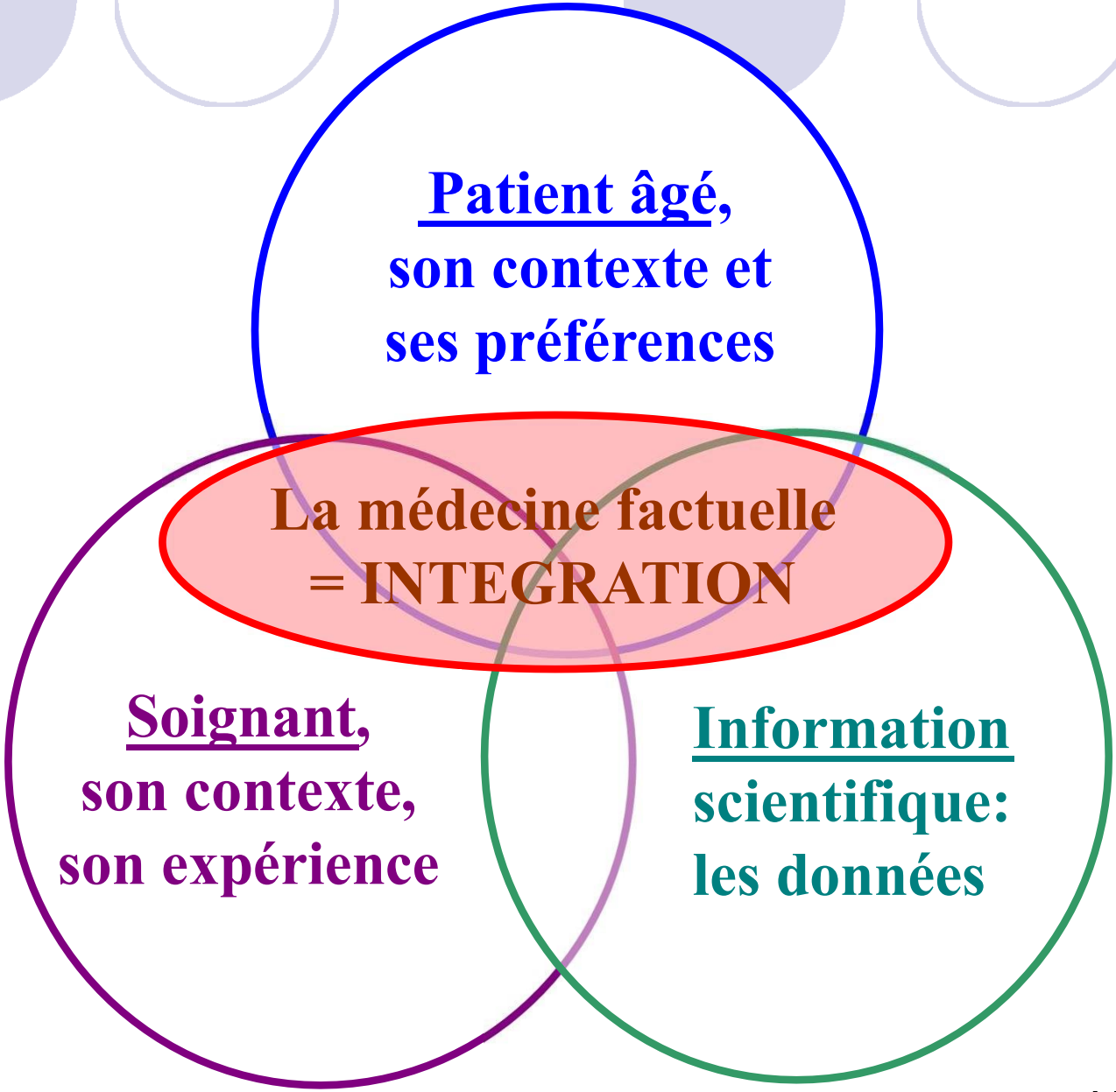
25ème Journées d'Automne de la SBGG

Clés de lecture critique d'un article scientifique en gériatrie

Pr Benoit Boland
Gériatrie, CUSLuc
UCL-Woluwe

médecine factuelle = (gage de) qualité



Haynes, 1996

Les articles scientifiques sont publiés dans des revues médicales scientifiques

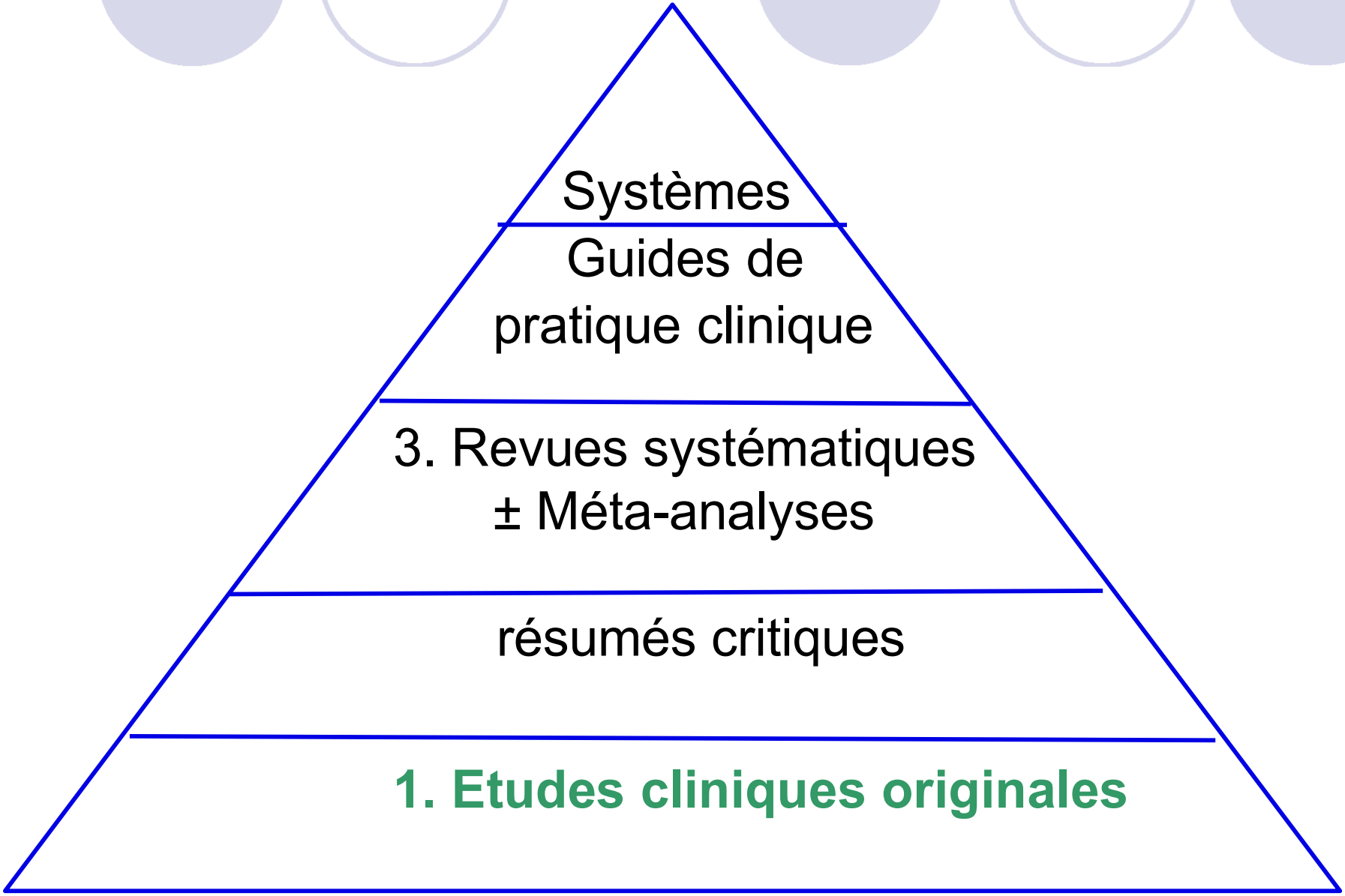
Revues médicales scientifiques,
sources d'information valide

- Indexées (PubMed), ou non
- Impact factor, ou non
- Dirigées par un Editeur en chef
- Comité de pairs (évaluation de la qualité de la méthode + la validité et la fiabilité des résultats = peer-review)
- Acceptation d'une minorité des manuscrits soumis, et ce après modifications (mineures ou majeures)
- Principalement en langue anglaise
- Les meilleures :

  « The Big 5 »: Lancet, BMJ, NEJM, JAMA, Ann Int Med
  Gériatrie : Age&Ageing, JAGS, …

L'information médicale scientifique

niveaux : pyramide



Etudes cliniques originales
lecture critique en 4 étapes

1) Inspection du titre : **intérêt ?**

2) Palpation des méthodes : **fiabilité ?**

STOP ou ENCORE ?

3) Auscultation des résultats : **effets ? associations ?**

4) Percussion dans ma pratique : **mise en œuvre ?**

1) étape : «inspection» → ***intérêt ?***

Titre de l'article (informatif lorsqu'il précise)

- ✓ les sujets étudiés (***chez qui ?***) — P
- ✓ ce qui analysé/testé (***quoi ?)***
  - Diagnostic (test vs. étalon) — T / G
  - Etiologie (facteur d'exposition) — E
  - Pronostic (facteur d'exposition) — E
  - Traitement (intervention) — I / C
- ✓ le critère d'évaluation (***pour quoi ?***) — O

Journal (qualité ? fiabilité ?)

peer-review ! réputation ? ± impact factor ?

\+ Auteurs et leurs affiliations (départements, institutions)

sponsors ? ± publications ? (cfr Pubmed)

2) étape «palpation» → ***solidité ?***

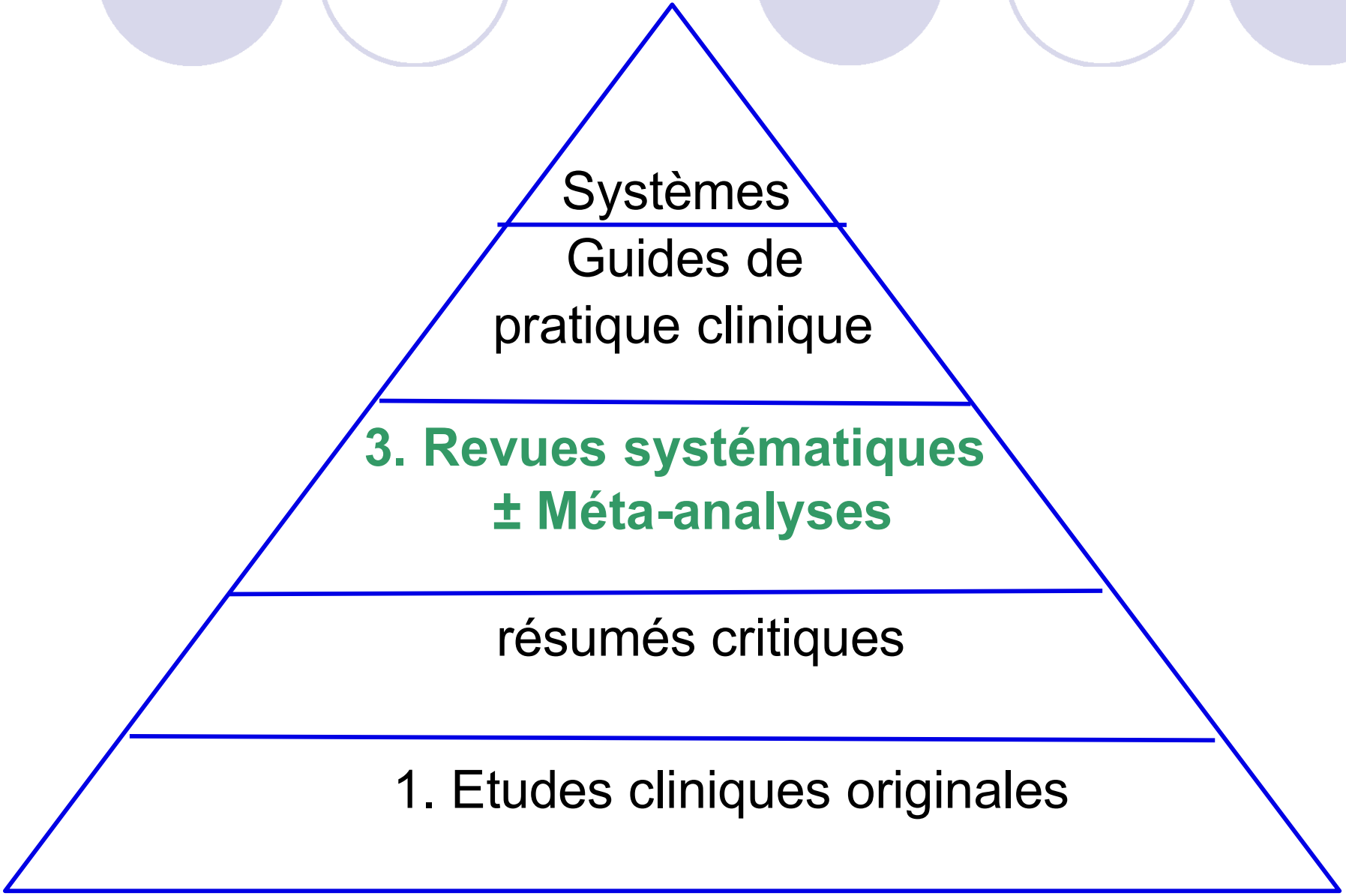
= Méthodes !

Regarder **l'Abstract** (condensé de l'article, en ± 250 mots, habituellement). Conventions, abréviations, … Structuré et factuel

Background / Objective	(contexte et objectif)	
Contexte, cadre. Question posée		
Methods	**(comment a été faite l'étude)**	
Plan (design),		
Sujets, Données, Endpoint		cfr. Critères, selon type (D, E, P, >T)
Analyses		
Results	(ce qui a été vu)	
Observations principales		
Conclusion	(message principal des auteurs)	

L'information médicale scientifique

niveaux : pyramide



Revue Systématique

- Définition : démarche scientifique qui permet de réaliser
  - sur un sujet précis (état de santé ou intervention),
  - une synthèse des études primaires (original studies) pertinentes
  - selon une procédure explicite et reproductible

- Critères clé
  - exhaustivité
  - constance (répétabilité)
  - cohérence (plausibilité)
  - validité

Revue Systématique
= travail fort structuré

- Question précisément formulée
- Recherche d'articles large et complète
- Sélection d'articles sur base de critères pré-définis
- Evaluation de la qualité méthodologique des articles
- Extraction objective de ses données des articles

  (et si synthèse quantitiative des données = méta-analyse)
- Publication structurée

Revue Systématique : 9 (+3) critères de qualité → ***solidité ?***

1. Question clinique : précise ? (cf PICO ou PEO)
2. Effet / Association : pertinence ?
3. Stratégie de recherche des études : adéquate ? (data bases, key words)
4. Pertinence critères in/ex-clusion des études ? (à lire)
5. Evaluation de la qualité des études ? (échelle validée ?)
6. Si études interventionnelles (RCT), toutes en double-aveugle ?
7. Tableau du résultat de chaque étude ? (cf Tables)
8. Intervalle de confiance par étude ? (cf Forest plot)
9. Analyse des biais de publication ? (cf funnel plot)

   = 9 critères pour une Systematic Review

10. Description méthode statistique ?
11. homogénéité des études ? (cf tests I^2 et)
12. pondération selon score de qualité ? (weighting)

    = 3 critères si Méta-Analyse

(mon) choix de 4 articles :

Mohile SG, Mohamed MR, Xu H, Culakova E et al. **Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+)**: a cluster-randomised study. *Lancet*. 2021 Nov 20;398:1894-1904. (T)

Deeken F, Sánchez A, Rapp MA et al. **Outcomes of a delirium prevention program in older persons after elective surgery**: a stepped-wedge cluster randomized clinical trial. *JAMA Surg*. 2022 Feb 1;157(2):e216370 (T)

Ghezzi ES, Ross TJ, Davis D et al. Meta-analysis of **prevalence and risk factors for cognitive decline and improvement after TAVI**. *Am J Cardiol*. 2020 July 15 ;127:105-112. (E)

van Erck D, Dolman CD, Limpens J, et al. **Preprocedural muscle strength and physical performance and the association with functional decline or mortality in frail older patients after TAVI**: a systematic review and meta-analysis. *Age Ageing*. 2022 Sep 2;51(9):afac211 (P)

Un 1er article original sur d'intervention (thérapeutique)

Mohile SG, Mohamed MR, Xu H, Culakova E et al.
Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+): a cluster-randomised study.
Lancet. 2021 Nov 20;398:1894-1904.

Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+): a cluster-randomised study

Supriya G Mohile, Mostafa R Mohamed, Huiwen Xu, Eva Culakova, Kah Poh Loh, Allison Magnuson, Marie A Flannery, Spencer Obrecht, Nikesha Gilmore, Erika Ramsdale, Richard F Dunne, Tanya Wildes, Sandy Plumb, Amita Patil, Megan Wells, Lisa Lowenstein, Michelle Janelsins, Karen Mustian, Judith O Hopkins, Jeffrey Berenberg, Navin Anthony, William Dale

Summary

article Thérapeutique: critères méthodo → ***solidité ?***

1] Randomisation ? groupes similaires ? ± stratification pronostique ?

± double-aveugle ? (objectivité de la mesure des outcomes)

2] P I/C O ?

Patients : « semblables aux nôtres » ?

setting ? critères d'exclusion ? profil clinique (Table 1)

Intervention : faisable ? acceptée (adhérence) ?

vs. Contrôle : nature ? (placebo ? state of the art ? …)

Outcomes : cliniques ? importants (mortalité, morbidité, QoLife, …)

3] Analyses ?

ITT or/and OTA ?

significations statistique et clinique ?

Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+): a cluster-randomised study. **critère de qualité méthodo.1**

Background. Older adults with advanced cancer are at a high risk for treatment toxic effects. Geriatric assessment evaluates ageing-related domains and guides management. We examined whether a geriatric assessment intervention can reduce serious toxic effects in older patients with advanced cancer who are receiving high risk treatment (eg, chemotherapy).

Methods. In this **cluster-randomised trial**, we enrolled patients aged 70 years and older with incurable solid tumors or lymphoma and at least one impaired geriatric assessment domain who were starting a new treatment regimen. 40 community oncology practice clusters across the USA were randomly assigned (1:1) to the intervention (oncologists receiving tailored geriatric assessment summary + management recommendations) or usual care (no geriatric assessment summary or management recommendations were provided to oncologists) by means of a computer-generated randomisation table. The primary outcome was the proportion of patients who had any grade 3–5 toxic effect (based on National Cancer Institute Common Terminology Criteria for Adverse Events version 4) over 3 months. Practice staff prospectively captured toxic effects. **Masked** oncology clinicians reviewed medical records to verify.

Findings. Between July 29, 2014, and March 13, 2019, we enrolled 718 patients. Patients had a mean age of 77·2 years (SD 5·4) and 311 (43%) of 718 participants were female. The mean number of geriatric assessment domain impairments was 4·5 (SD 1·6) and was not significantly different between the study groups. More patients in intervention group compared with the usual care group were Black versus other races (40 [11%] of 349 patients *vs* 12 [3%] of 369 patients; p<0·0001) and had previous chemotherapy (104 [30%] of 349 patients *vs* 81 [22%] of 369 patients; p=0·016). A lower proportion of patients in the intervention group had grade 3–5 toxic effects (177 [51%] of 349 patients) compared with the usual care group (263 [71%] of 369 patients; relative risk [RR] 0·74 (95% CI 0·64–0·86; p=0·0001). Patients in the intervention group had fewer falls over 3 months (35 [12%] of 298 patients *vs* 68 [21%] of 329 patients; adjusted RR 0·58, 95% CI 0·40–0·84; p=0·0035) and had more medications discontinued (mean adjusted difference 0·14, 95% CI 0·03–0·25; p=0·015).

Interpretation. A geriatric assessment intervention for older patients with advanced cancer reduced serious toxic effects from cancer treatment. Geriatric assessment with management should be integrated into the clinical care of older patients with advanced cancer and ageing-related conditions.

Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+). Lancet 2021. **critère de qualité méthodo.2 : cf P I/C O**

Background. Older adults with advanced cancer are at a high risk for treatment toxic effects. Geriatric assessment evaluates ageing-related domains and guides management. We examined whether a geriatric assessment intervention can reduce serious toxic effects in older patients with advanced cancer who are receiving high risk treatment (eg, chemotherapy).

Methods. In this cluster-randomised trial, we enrolled **Patients ≥ 70 years** with **incurable tumors** (solid or lymphoma) and **≥ 1 impaired G domain** * and a **new treatment**.

40 community oncology practice clusters across the USA were randomly assigned (1:1) to the **Intervention (oncologists receiving** tailored geriatric assessment summary + management recommendations) or usual **Care (no** geriatric assessment summary or management recommendations were provided to oncologists) by means of a computer-generated randomisation table.

Primary **Outcome** was the **proportion of patients with any grade 3–5 toxic effect** (based on National Cancer Institute Common Terminology Criteria for Adverse Events version 4) over 3 months. Practice staff prospectively captured toxic effects. Masked oncology clinicians reviewed medical records to verify.

* 8 domains : physical performance, functional status, comorbidity, cognition, nutrition, social support, polypharmacy, psychological status;

Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+): a cluster-randomised study. Lancet. 2021. → **results**

Background. Older adults with advanced cancer are at a high risk for treatment toxic effects. Geriatric assessment evaluates ageing-related domains and guides management. We examined whether a geriatric assessment intervention can reduce serious toxic effects in older patients with advanced cancer who are receiving high risk treatment (eg, chemotherapy).

Methods. In this cluster-randomised trial, we enrolled patients aged 70 years and older with incurable solid tumors or lymphoma and at least one impaired geriatric assessment domain who were starting a new treatment regimen. 40 community oncology practice clusters across the USA were randomly assigned (1:1) to the intervention (oncologists received a tailored geriatric assessment summary and management recommendations) or usual care (no geriatric assessment summary or management recommendations were provided to oncologists) by means of a computer-generated randomisation table. The primary outcome was the proportion of patients who had any grade 3–5 toxic effect (based on National Cancer Institute Common Terminology Criteria for Adverse Events version 4) over 3 months. Practice staff prospectively captured toxic effects. Masked oncology clinicians reviewed medical records to verify.

Findings. Between July 29, 2014, and March 13, 2019, we enrolled **718 patients**. Patients had a mean age of **77·2 years** (SD 5·4) and 311 (43%) of 718 participants were female **(Table 1).** The mean number of geriatric assessment domain impairments was 4·5 (SD 1·6) and was not significantly different between the study group. More patients in intervention group compared with the usual care group were Black versus other races (40 [11%] of 349 patients *vs* 12 [3%] of 369 patients; p<0·0001) and had previous chemotherapy (104 [30%] of 349 patients *vs* 81 [22%] of 369 patients; p=0·016)

A lower proportion of patients in the intervention group had **toxic effects** (**RR 0·74**; 95% CI 0·64–0·86; p=0·0001; 51% vs. 71%) **(Fig. 2)**, and **falls** (**RR 0·58**, 95% CI 0·40–0·84; p=0·0035; 12% vs. 21%) over 3 months. Patients in intervention group had **more medications discontinued** (mean adjusted **difference 0·14**, 95% CI 0·03–0·25; p=0·015).

Interpretation. A geriatric assessment intervention for older patients with advanced cancer reduced serious toxic effects from cancer treatment. Geriatric assessment with management should be integrated into the clinical care of older patients with advanced cancer and ageing-related conditions.

Evaluation of geriatric assessment and management on the toxic effects of cancer treatment (GAP70+): a cluster-randomised study. Lancet. 2021

Qlq commentaires personnels

33 citations en 1 an

Setting/country : USA

Taille réduite (n=718) malgré 5 ans de recrutement dans 40 centres

Grade 3-5 toxic effect à 3 mois : adjusted RR = 0,74 (p < 0,0001)

+ regarder les % : 51 vs. 71% → NNT = ?

NB : RCT similaire : GAIN, JAMA Oncology 2021, n=605, 71 ans

Grade 3-5 toxic effect : incidence 3(à6) mois : 50,5% vs. 60,6% (p = 0.02)

→ NNT = ?

Table 2 : types de chimio (et pas types d'effets toxiques)

F/up à 3 mois seulement (court pour l'outcome mortalité)

un 2è article sur une intervention thérapeutique

Deeken F, Sánchez A, Rapp MA et al.
(Stuttgart, Germany)

Outcomes of a delirium prevention program in older persons after elective surgery: a stepped-wedge cluster randomized clinical trial

JAMA Surg. 2022 Feb 1;157(2):e216370

→ **critères de qualité méthodo d'un article thérapeqqqutique**

Outcomes of a delirium prevention program in older persons after elective surgery: a **stepped-wedge cluster randomized clinical trial**.

Importance: Delirium significantly worsens elective surgery outcomes and costs. Delirium risk is highest in elderly populations, whose surgical health care resource consumption (50%) exceeds their demographic proportion (15% to 18%) in high-resource countries. Effective non-pharmacologic delirium prevention could safely improve care in these vulnerable patients, but data from procedure-specific studies are insufficiently compelling to drive changes in practice. Delirium prevention approaches applicable to different surgical settings remain unexplored. This study examined whether a multifaceted prevention intervention is effective in reducing postoperative delirium incidence and prevalence after various major surgical procedures.

Design, participants, setting**:** This stepped-wedge cluster randomized trial recruited 1470 **patients ≥ 70 years undergoing elective surgery** (orthopedic, general, or cardiac) from 11.2017 to 04.2019 from 5 German tertiary medical centers

Interventions: First, **structured delirium education** was provided to clinical caregivers at each site (**Table 1: AKTIVER**). Then, the study delirium prevention team assessed patient delirium risk factors and symptoms daily. **Prevention was tailored to individual patient needs** and could include: cognitive, motor, and sensory stimulation; meal companionship; accompaniment during diagnostic procedures; stress relaxation; and sleep promotion.

Outcomes: **Postoperative delirium** incidence and duration.

Results: Of 1470 included patients, 763 (51.9%) were male, and the median (IQR) age was 77 (74-81) years. Overall, the intervention reduced postoperative delirium incidence (odds ratio, 0.87; 95% CI, 0.77-0.98; P = .02) and percentage of days with delirium (intervention, 5.3%; control, 6.9%; P = .03). The effect was significant in patients undergoing orthopedic or abdominal surgery (odds ratio, 0.59; 95% CI, 0.35-0.99; P = .047) but not cardiac surgery (odds ratio, 1.18; 95% CI, 0.70-1.99; P = .54).

Conclusions and relevance**:** This multifaceted multidisciplinary prevention intervention reduced postoperative delirium occurrence and days with delirium in older patients undergoing different elective surgical procedures but not cardiac procedures. These results suggest implementing this delirium prevention program will improve care and outcomes in older patients undergoing elective general and orthopedic procedures.

Outcomes of a delirium prevention program in older persons after elective surgery:

critères de qualité ok → quels résultats ?

Importance: Delirium significantly worsens elective surgery outcomes and costs. Delirium risk is highest in elderly populations, whose surgical health care resource consumption (50%) exceeds their demographic proportion (15% to 18%) in high-resource countries. Effective nonpharmacologic delirium prevention could safely improve care in these vulnerable patients, but data from procedure-specific studies are insufficiently compelling to drive changes in practice. Delirium prevention approaches applicable to different surgical settings remain unexplored.

Objective: To examine whether a multifaceted prevention intervention is effective in reducing postoperative delirium incidence and prevalence after various major surgical procedures.

Design, setting, and participants: This stepped-wedge cluster randomized trial recruited 1470 patients ≥ 70 years undergoing elective orthopedic, general, or cardiac surgery from November 2017 to April 2019 from 5 German tertiary medical centers. Data were analyzed from December 2019 to July 2021.

Interventions: First, structured delirium education was provided to clinical caregivers at each site. Then, the study delirium prevention team assessed patient delirium risk factors and symptoms daily. Prevention was tailored to individual patient needs and could include: cognitive, motor, and sensory stimulation; meal companionship; accompaniment during diagnostic procedures; stress relaxation; and sleep promotion.

Main outcomes and measures: Postoperative delirium incidence and duration.

Results: Of **1470 patients**, 763 (52%) were male, median age **77 [74-81] years** (Table 2). Overall, the intervention reduced **postoperative delirium incidence (adjusted OR 0.87**; 95% CI, 0.77-0.98; P = .02) and percentage of days with delirium (intervention, 5.3%; control, 6.9%; P = .03).

The effect was significant in patients undergoing orthopedic or abdominal surgery (odds ratio, 0.59; 95% CI, 0.35-0.99; P = .047) **but not cardiac surgery** (odds ratio, 1.18; 95% CI, 0.70-1.99; P = .54).

Conclusions and relevance: This multifaceted multidisciplinary prevention intervention reduced postoperative delirium occurrence and days with delirium in older patients undergoing different elective surgical procedures but not cardiac procedures. These results suggest implementing this delirium prevention program will improve care and outcomes in older patients undergoing elective general and orthopedic procedures.

JAMA Surg. 2022;157(2):e216370. doi:10.1001/jamasurg.2021.6370
Published online December 15, 2021.

Research

JAMA Surgery | Original Investigation

Outcomes of a Delirium Prevention Program in Older Persons After Elective Surgery

A Stepped-Wedge Cluster Randomized Clinical Trial

Table 1 : AKTIVER (programme de prévention du delirium)
Figure 1 : Flowchart (4.113 → 1.470 patients)
Table 2 : Baseline pt's characteristics
Table 3 : Delirium occurrence
Table 4 : Variables associées à la survenue du delirium

Article Thérapeutique. Outcomes of a delirium prevention program in older persons after elective surgery: a stepped-wedge cluster randomized clinical trial

<u>Qlq commentaires personnels</u>

0 citation à ce jour (en 1 an)

Setting/country : Allemagne,
5 centres hospitaliers avec gde expertise et motivation

Intervention intense (ward staff education, delirium expert nurse + team)

Outcome : delirium post-op intra-hospitalier : adjusted OR 0,87 (p=0,02)
Et en valeurs absolues, 19 % vs. 23 %, donc NNT =

Delirium (analyse multivariée avec les variables SS)		*ORatio*	*p-value*
	Intervention :	*0,87 [0,77 - 0,98]*	*0,02*
	male :	*1,93 [1,46 - 2,55]*	*< 0,001*
	CFS score:	*1,52 [1,36 - 1,69]*	*< 0,001*
	Surgery, CV	*2,16 [1,01 - 4,61]*	*0,046*

Un article sur les causes des modifications cognitives après TAVI : méta-analyse

Ghezzi ES, Ross TJ, Davis D et al. **Meta-analysis of prevalence and risk factors for cognitive decline and improvement after TAVI.**
Am J Cardiol. 2020 July 15 ;127:105-112

Etudes étiologiques

1] Cohorte (E → M)

Facteurs d'Exposition (E) : déterminés sans biais ?

Présence de la Maladie (M) : déterminée sans biais ?

2] Association E - M : Force (0,5>OR>2,0) ? Significations statistique et clinique ?

si RR ou OR ≠ 1 avec p < 0.05, association cliniquement important ?

si RR ou OR ≠ 1 avec p > 0,05, association importante exclue ? (cf puissance)

3] Arguments de causalité …

séquence temporelle ? (E présent avant M)

association forte ? (RR ou OR : > 2 ou < 0,5)

réponse dose – réponse ?

association logique ?

.

Meta-analysis of prevalence and risk factors for cognitive decline and improvement after transcatheter aortic valve implantation. *Am J Cardiol*. 2020

1. Précision de la question clinique: OK: facteurs associés aux Δ cog (↓ ou ↑) 2. Pertinence de l'association: ± OK: to facilitate a personalized cognitive care
3. Stratégie de recherche des études: OK: search terms, data bases, PRISMA
4. Critères inclusion des études: OK: peer-reveiwed articles (in English) on TAVI, with pre- and post-TACI cognitive measure. Exclusion if only group-level Δ cog
5. Evaluation de la qualité des études: OK: validated checklist (cf Supp Table 1)
6. Si études interventionnelles (RCT), toutes en double-aveugle ?
7. Tableau du résultat de chaque étude: OK: cf Table 1 (↓) et Table 2 (↑)
8. Intervalle de confiance par étude : OK : cf suppl Table 2
9. *Biais de publication analysé: pas OK ? : pas renseigné dans cet article*

= 9 critères pour une Systematic Review

10. Description méthode statistique : ± OK: brève (cf fin Methods)
11. homogénéité résultats : OK : analysée (cf Table 3 : tests I^2 avec df)
12. *pondération selon score de qualité : pas OK ?? : pas mentionnée*

= 3 critères si Méta-Analyse

Article Etiologique original: critères méthodo → ***solidité ?***

1] Cohorte (E → M) : **oui (15 cohortes: 15 pour ↑ cog, 5 pour ↓ cog)**

Facteurs d'Exposition (E) : déterminés sans biais : ?

Présence de la Maladie (M) : déterminée sans biais : « avec rigueur »

2] Association E - M : Force (0,5>OR>2,0) ? Significations statistique et clinique ?

si RR ou OR ≠ 1 avec p < 0.05, association cliniquement important ?

si RR ou OR ≠ 1 avec p > 0,05, association importante exclue ? (cf puissance)

3] Arguments de causalité …

séquence temporelle ? (E présent avant M)

association forte ? (RR ou OR : > 2 ou < 0,5)

réponse dose – réponse ?

association logique ?

…

Meta-analysis of prevalence and risk factors for cognitive decline and improvement after transcatheter aortic valve implantation. *Am J Cardiol*. 2020 July 15;127:105-112.

Abstract

Changes to cognition, both decline and improvement, are commonly reported after transcatheter aortic valve implantation (TAVI). However, previous systematic reviews and meta-analyses have missed these subgroups by assessing whole-group-averages for cognitive outcomes. We sought to pool estimates to identify the prevalence of cognitive decline and improvement after TAVI, as well as associated factors for these outcomes.
A systematic review identified **15 articles (= cohorts)** appropriate for meta-analysis. When robust cognitive change definitions* were employed,
the pooled prevalence of incident cognitive impairment up to 1-, 1 to 6-, and ≥ 6-months post-TAVI was 7%, 14%, and 12%, respectively. For cognitive improvement, the prevalence from 1 to 6 months and ≥6 months after TAVI was estimated to be 19% and 11%, respectively.

Two factors were associated with these cognitive outcomes: (1) using a cerebral embolic protection device was associated with decreased prevalence of cognitive decline up to 1-week post-TAVI; (2) baseline cognitive impairment had a large association with post-TAVI cognitive improvement.

In conclusion, cognitive decline and cognitive improvement are experienced by approximately 7% to 19% of patients after TAVI, respectively. Those with the lowest cognitive performance pre-TAVI appear to have the most to gain in terms of cognitive improvement post-TAVI. Identifying further predictive factors for cognitive decline and improvement post-TAVI will facilitate a personalized-medicine approach for cognitive care and prognosis

* **robust cognitive change definitions** as those which attempted to account for normal score variation in some way, either through a standard deviation cutoff, a reliable change index, or a score change (from baseline to post-TAVI) on a single cognitive test capturing general functioning (e.g., MoCA or MMSE) of ≥3 points

Meta-analysis of prevalence and risk factors for cognitive decline and improvement after transcatheter aortic valve implantation. *Am J Cardiol*. 2020 Jul 15;127:105-112.

Changes to cognition, both decline and improvement, are commonly reported after transcatheter aortic valve implantation (TAVI). However, previous systematic reviews and meta-analyses have missed these subgroups by assessing whole-group-averages for cognitive outcomes. We sought to pool estimates to identify the prevalence of cognitive decline and improvement after TAVI, as well as associated factors for these outcomes.

A systematic review identified 15 articles, appropriate for meta-analysis. When robust cognitive change definitions were employed, the pooled prevalence of incident cognitive decline up to 1 month, 1 to 6 months, and ≥ 6 months after TAVI was 7%, **14%, and 12%,** respectively. **(Figure 1)**

For cognitive improvement, the prevalence from 1 to 6 months and ≥6 months after TAVI was estimated to be **19% and 11%,** respectively.

Two factors were associated with these cognitive outcomes **(Figure 3)**: (1) using a cerebral embolic protection device was associated with decreased prevalence of cognitive decline up to 1-week post-TAVI; (2) baseline cognitive impairment had a large association with post-TAVI cognitive improvement.

1 FP pour le déclin cog. (cerebral protection device : OR 0.47 ; p=0,022)

1 FF pour l'amélioration cog. (baseline Cog.Impairment : OR 14.5 ; p<0,001)

In conclusion, cognitive decline and cognitive improvement are experienced by approximately 7% to 19% of patients after TAVI, respectively. Those with the lowest cognitive performance pre-TAVI appear to have the most to gain in terms of cognitive improvement post-TAVI. Identifying further predictive factors for cognitive decline and improvement post-TAVI will facilitate a personalized-medicine approach for cognitive care and prognosis.

(Am J Cardiol 2020;127:105–112)

Meta-Analysis of Prevalence and Risk Factors for Cognitive Decline and Improvement After Transcatheter Aortic Valve Implantation

Table 1 : Summary of the 15 studies on cognitive decline
Table 2 : Summary of the 5 studies on cognitive improvement
Fig 1. Prevalence of cog decline (A) and improvement (B) overtime
Table 3 : Meta-analysis of variables for development of cog ↓ and cog ↑

Meta-analysis of prevalence and risk factors for cognitive decline and improvement after transcatheter aortic valve implantation. *Am J Cardiol*. 2020

Qlq commentaires personnels

7 citations à ce jour (en 2 ans)

"Robust" cognitive change definitions

Deux sous-groups, de taille ± semblables

	1 – 6 months	*≥ 6 months*
Decline	*14% (5 - 28%)*	*12% (6 - 17%)*
Improvement	*19% (11 - 30%)*	*11% (7 -15%)*

Pas/peu de facteurs associés identifies …

Decline	*aucun (sauf protective devise)*
Improvement	*low baseline cognitive status*

Un article sur des outcomes (FDecline, mortality après TAVI : SReview et Meta-Analyse

= article pronostique (/ étiologique)

van Erck D, Dolman CD, Limpens J, et al.

Preprocedural muscle strength and physical performance and the association with functional decline or mortality in frail older patients after TAVI: a systematic review and meta-analysis.

Age Ageing. 2022 Sep 2;51(9):afac211

Preprocedural muscle strength and physical performance and the association with functional decline or mortality in frail older patients after TAVI: a systematic review and meta-analysis. *Age Ageing*. 2022 Sep 2;51(9):afac211

Background: A significant number of older patients planned for transcatheter aortic valve implantation (TAVI) experience a decline in physical functioning and death, despite a successful procedure. The study aim was to systematically review the literature on the association of preprocedural muscle strength and physical performance with functional decline or long-term mortality after TAVI.

Methods: We followed the PRISMA guidelines and pre-registered this review at PROSPERO (CRD42020208032). A systematic search was conducted in MEDLINE and EMBASE from inception to 10 December 2021. Studies reporting on the association of preprocedural muscle strength or physical performance with functional decline or long-term (>6 months) mortality after the TAVI procedure were included. For outcomes reported by three or more studies, a meta-analysis was performed

Results: In total, two studies reporting on functional decline and 29 studies reporting on mortality were included. The association with functional decline was inconclusive. For mortality, meta-analysis showed that low handgrip strength (hazard ratio (HR) 1.80 [95% confidence interval (CI): 1.22-2.63]), lower distance on the 6-minute walk test (HR 1.15 [95% CI: 1.09-1.21] per 50 m decrease), low performance on the timed up and go test (>20 s) (HR 2.77 [95% CI: 1.79-4.30]) and slow gait speed (<0.83 m/s) (HR 2.24 [95% CI: 1.32-3.81]) were associated with higher long-term mortality.

Conclusions: Low muscle strength and physical performance are associated with higher mortality after TAVI, while the association with functional decline stays inconclusive. Future research should focus on interventions to increase muscle strength and physical performance in older cardiac patients

Article Pronostique original: critères méthodo → ***solidité ?***

Cohorte (pro- ou rétro-spective) avec f/up suffisant (≥ 80 %) ?

1] Patients à un stade initial semblable ?

oui, PAgés lors d'un TAVI

2] Expositions : ajustement pour des facteurs confondants ?

cf les 30 études incluses

3] Outcome : définition précise, objective (blinded)

02 studies on FDecline, based on ADL (soft endpoint)

29 studies on mortality : par définition (hard endpoint)

Preprocedural muscle strength and physical performance and the association with functional decline or mortality in frail older patients after TAVI. *Age Ageing*. 2022

1. Précision de la question clinique: OK: association performance et mortalité ?
2. Pertinence de l'association: OK: if present, need of intervention studies
3. Stratégie de recherche des études: OK: PRISMA, PROSPERO
4. Critères inclusion des études: OK: articles reporting association between pre-TAVI muscle performance and post-TAVI functional decline or 6-month mortality
5. Evaluation de la qualité des cohortes: OK: Newcastle Ottawa scale (NOS)
6. Si études interventionnelles (RCT), toutes en double-aveugle ?
7. Tableau du résultat de chaque étude: OK: cf Appendices
8. Intervalle de confiance par étude : OK : cf supplementary material
9. *Biais de publication analysé: pas OK ? : pas renseigné dans cet article*

= 9 critères pour une Systematic Review

10. Description statistiques: OK: pooled estimate if ≥ 3 studies with same muscle test
11. Homogénéité résultats : OK : analysée (cf Figures 2 et 3 : tests I^2 avec df)
12. Pondération selon score de qualité : OK (cf Figures 2 et 3)

= 3 critères si Méta-Analyse

Preprocedural muscle strength and physical performance and the association with functional decline or mortality in frail older patients after TAVI: a systematic review and meta-analysis. *Age Ageing*. 2022 Sep 2;51(9):afac211

Background: A significant number of older patients planned for transcatheter aortic valve implantation (TAVI) experience a decline in physical functioning and death, despite a successful procedure. The study aim was to systematically review the literature on the association of preprocedural muscle strength and physical performance with functional decline or long-term mortality after TAVI.

Methods: We followed the PRISMA guidelines and pre-registered this review at PROSPERO (CRD42020208032). A systematic search was conducted in MEDLINE and EMBASE from inception to 10 December 2021. Studies reporting on the association of preprocedural muscle strength or physical performance with functional decline or long-term (>6 months) mortality after the TAVI procedure were included. For outcomes reported by three or more studies, a meta-analysis was performed

Results: In total, two studies reporting on functional decline and 29 studies reporting on mortality were included. The association with functional decline was inconclusive.

For mortality, meta-analysis showed that low handgrip strength (HR 1.80 [95% confidence interval (CI): 1.22-2.63]), lower distance on the 6-minute walk test (HR 1.15 [95% CI: 1.09-1.21] per 50 m decrease), low performance on the timed up and go test (>20 s) (HR 2.77 [95% CI: 1.79-4.30]) and slow gait speed (<0.83 m/s) (HR 2.24 [95% CI: 1.32-3.81]) were associated with higher long-term mortality.

Conclusions: Low muscle strength and physical performance are associated with higher mortality after TAVI, while the association with functional decline stays inconclusive. Future research should focus on interventions to increase muscle strength and physical performance in older cardiac patients

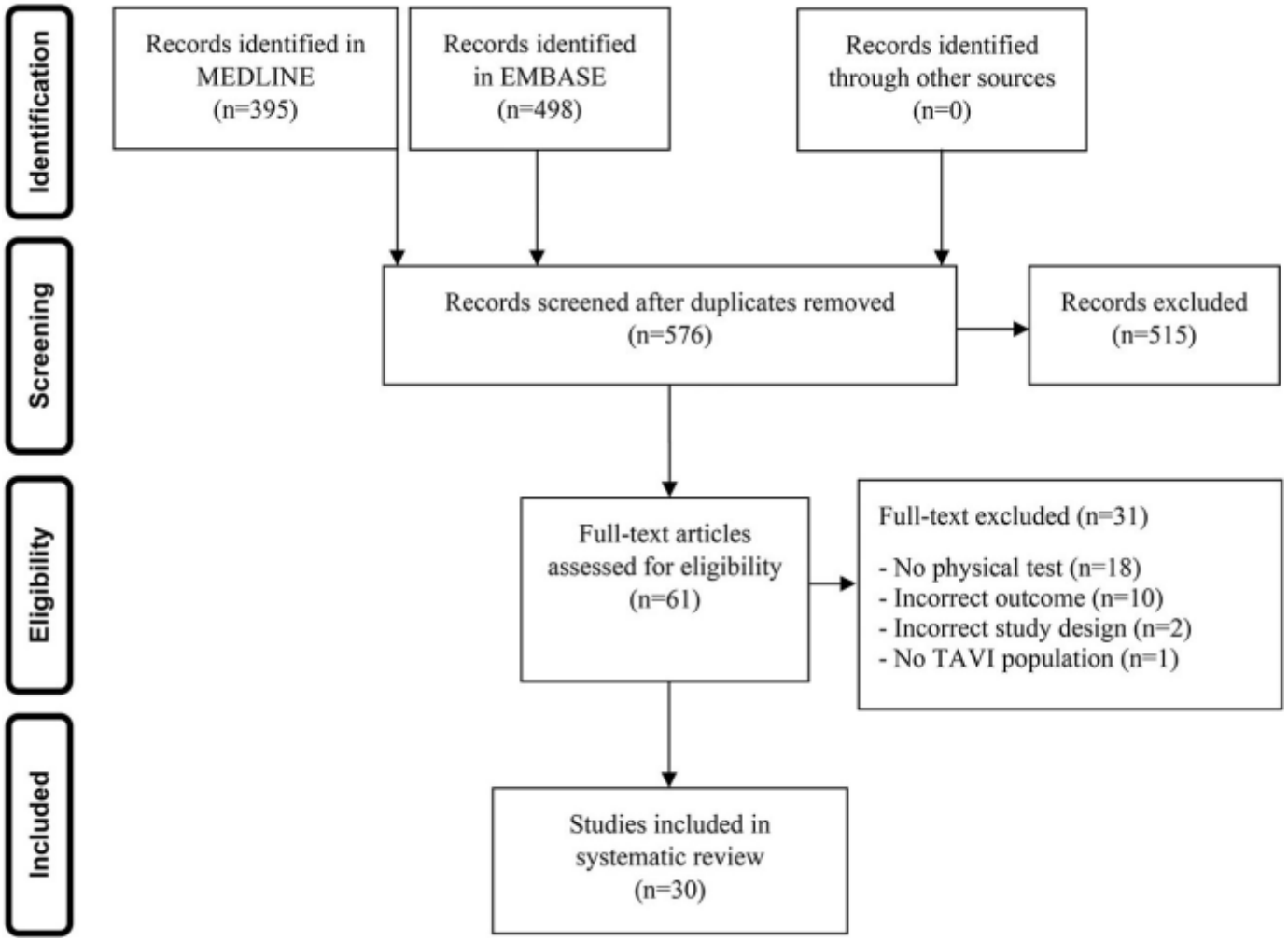
Age and Ageing 2022; **51**: 1–8
https://doi.org/10.1093/ageing/afac211

Preprocedural muscle strength and physical performance and the association with functional decline or mortality in frail older patients after transcatheter aortic valve implementation: a systematic review and meta-analysis

Figure 1. Flow diagram (576 recrods → 30 studies included)
Figure 2. Muscle strength and mortality (forest plot)
Figure 3. Physical performance and mortality (forest plot)

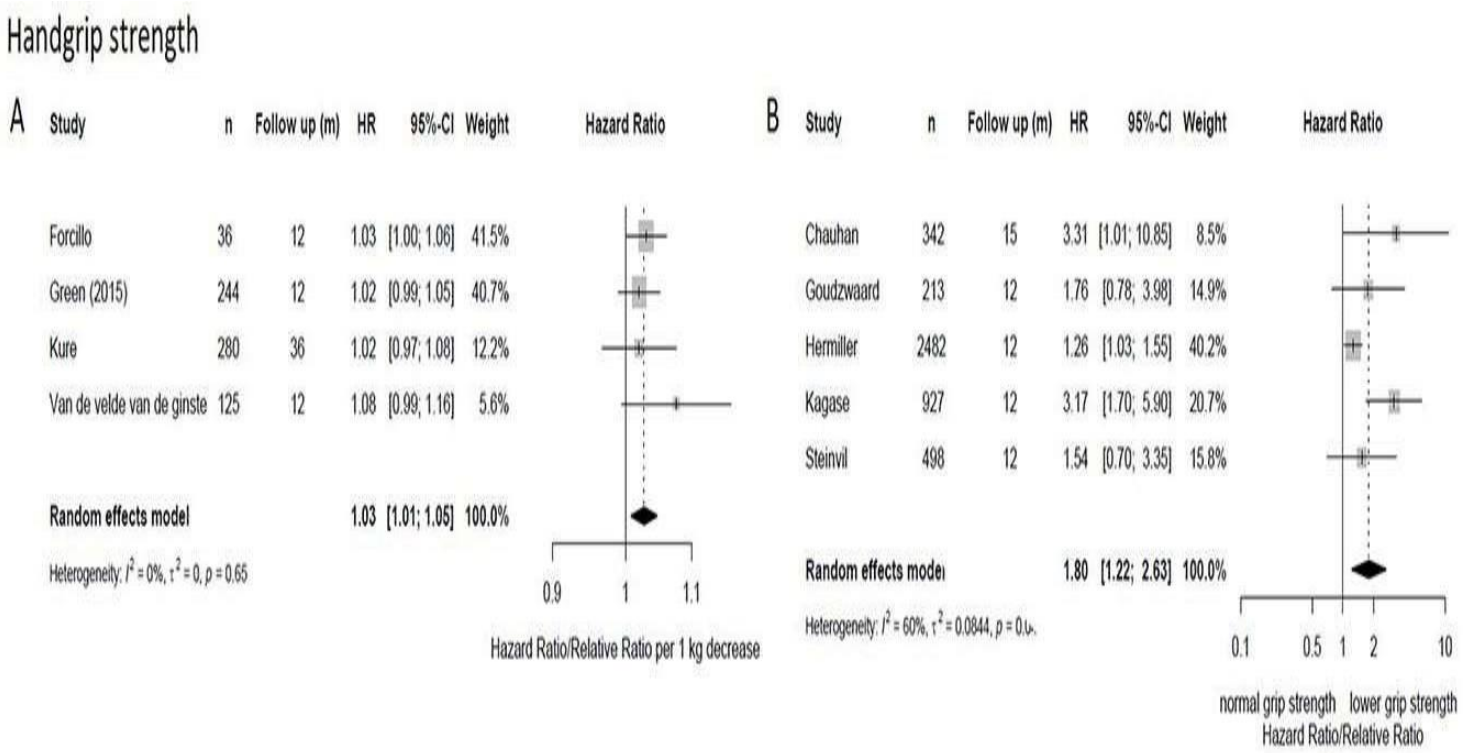
= > cf 3 diapos

Figure 1 Flow diagram.



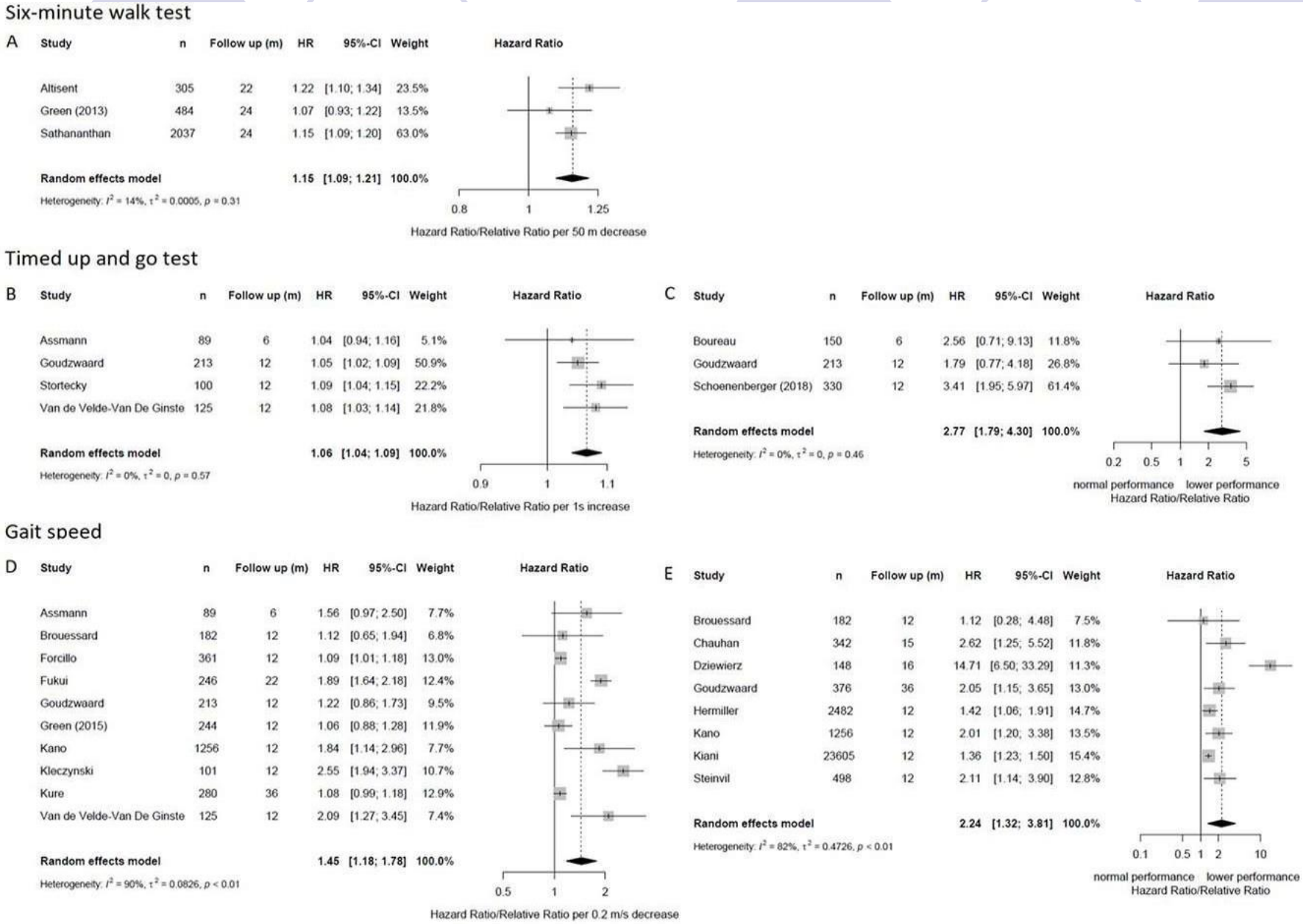
Age Ageing, Volume 51, Issue 9, September 2022, afac211, https://doi.org/10.1093/ageing/afac211

Figure 2 Forest plots for muscle strength and the association with mortality. Left: Continuous; right: dichotomous



Age Ageing, Volume 51, Issue 9, September 2022, afac211, https://doi.org/10.1093/ageing/afac211

Figure 3 Forest plots for physical performance and the association with mortality



Age Ageing, Volume 51, Issue 9, September 2022, afac211, https://doi.org/10.1093/ageing/afac211

Preprocedural muscle strength and physical performance and the association with functional decline or mortality in frail older patients after TAVI: a systematic review and meta-analysis. *Age Ageing*. 2022 Sep 2;51(9):

Qlq commentaires personnels

(0 citation à ce jour car publication toute récente)

Peu de données fonctionnelles après TAVI (2 studies)

Nombreuses études avec suivi du statut vital (29 studies, mais
taux global de mortalité non-rapporté (?)
tests physiques différents
Association forte (HRatio ≥ 2,0) entre mortalité accrue et :
Hand grip (5 studies) : HR 1,80 [1,2 – 2,6]
TUG (3 studies) : HR 2,77 [1,8 – 4,3]
Gait speed (8 studies): HR 2,24 [1,3 – 3,8]
Ces analyses ne sont pas multivariées (?)

Cf aussi autres mesures de la fragilité : CFScale