Public Health Emergency Preparedness and Response: Non-Pharmaceutical Interventions to Reduce Transmission of Viral Respiratory Infections in Long-Term Care Communities

Summary Evidence Table

Abbreviations Used in This Document

- ADL: Activities of Daily Living, score ranges from 0 to 28, higher scores indicating greater functional impairment
- CI: confidence interval
- ED: emergency department
- LTC: long-term care
- N/A: not applicable
- NH: nursing home
- NPIs: non-pharmaceutical interventions
- NPIs evaluated (for definition, please go to the full <u>Task Force Finding and Rationale Statement</u>)
 - ATR: admission or transfer restriction
 - \circ $\,$ CC: cover cough
 - CD: cleaning and disinfecting
 - HH: proper hand hygiene
 - PD: physical distancing (isolation or cohorting)
 - $\circ \quad \text{PPE: personal protective equipment}$
 - \circ $\;$ SHS: staff stay home when sick
 - \circ Testing
 - Vent: ventilation
 - VR: visitor restrictions
- NR: not reported
- NS: not statistically significant
- Pct pts: percentage points
- QoL: quality of life
- RCT: randomized controlled trial
- U.S.: United States

Notes:

- Suitability of design includes three categories: greatest, moderate, or least suitable design. Read more
- Quality of Execution Studies are assessed to have good, fair, or limited quality of execution. Read more

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
Author year:	Location: Israel	Intervention period	Outcomes reported: hospitalization due to
Abu-Fraiha 2023		examined: 19 weeks	infection; mortality due to infection overall;
	Population density: mixed		mortality due to infection, \geq 75 years; proportion
Study design: before-	(urban, suburban, rural)	Evaluation period: intervention	of LTC communities with reduced sized outbreaks
after with concurrent		ongoing	
comparison group	Eligibility criteria: all LTC		Infection lab confirmed or self-report: N/A
	communities within Israel	Intervention details:	
Suitability of design:		Infectious agent: SARS-CoV-2	Results:
greatest	Sample size:		Hospitalization due to infection:
	# of communities: 1107	NPIs evaluated:	Absolute difference: -2.2 pct pts
Quality of execution:	# of residents: 100,046	Individual: NR	Relative difference: -16.0%
good	# of staff: 62,159	Community: testing (routine	
		testing; SHS and PD when tested	Mortality due to infection, overall:
	Community type: LTC	positive)	Absolute difference: -15 pct pts
	communities, all included	Environmental: NR	Relative difference: -33.1%
	Community characteristics:	Additional services provided:	Mortality due to infection, \geq 75 years of age:
	315 NHs; 792 not NHs	resource deployment (assistance	Absolute difference: -11.5 pct pts
		with personnel to replace staff in	Relative difference: -21.7%
	Population served: older adults,	isolation)	
	people with disabilities		Proportion of outbreaks designated as decreased
		Guidelines used for decision	sized outbreaks (less than 5 residents infected in
	Demographics for residents in	making: national	the 2 weeks following a staff member tested
	intervention group: NR		positive for SARS-CoV-2):
		Decision maker for implementing	Absolute difference: 62.4 pct pts
		NPIs: national	Relative difference: 305.3%
		Comparison group:	
		Israeli national data from pre-	
		and post-intervention	
Author year: Allan-Blitz	Location: Florida, U.S.	Intervention period	Outcomes reported: relationship between
2022		examined: 42 weeks	testing frequency and reduction in COVID cases
	Population density: mixed		among residents
Study design: single	(urban, suburban, rural)	Evaluation period: NR	
group before-after			Infection lab confirmed or self-report: lab-
	Eligibility criteria: employees	Intervention details:	confirmed
Suitability of design:	and residents of LTC communities	Infectious agent: SARS-CoV-2	
least	in Florida		Results:
		NPIs evaluated:	Narrative summary
Quality of execution:	Sample size:	Individual: NR	Based on the coefficients from the multivariable
fair	# of communities: 361	Community: testing (semi-	model, authors predicted that a 10% increase in
	# of residents: NR	monthly routine testing), VR	testing frequency would result in a 1% reduction

Characteristics Environmental: NR In the weekly LTC community case rate among residents. Communities, all included Communities, all included Additional services provided: NR Assuming generalizability of the results, the reduction would result in 126 fewer cases per year, among LTC community residents across the U.S. Population served: older adults Demographics for residents in intervention group: NR Decision maker for implementing NPIs: state Assuming generalizability of the results, the reduction would result in 126 fewer cases per year, among LTC community residents across the U.S. Author year: Location: the Netherlands Decision maker for implementing nelevant cancer education material from another healthcare community Outcomes reported: mental health Angevaare 2022 Study design: intervention group: consists of residents with one assessment prior to and one during intervention for up assessment prior to and one during intervention. Those in the comparison group had to have 2 assessment prior to intervention adresity: NR Intervention details: Individual: NR Community: PD, VR Environmental: NR Oconflict with or repeated criticism of other care recipients: occurrences of conflict with or repeated criticism of other care recipients: in past 3 days. Quality of execution: fair # of residents:: # of communities: 42 Additional services provided: NR Community: PD, VR Environmental: NR Conflict with or recepted criticism of other care recipients: occurrences of conflict with or repeated criticism of other care recipients: in past 3 days.	Study	Setting and Population	Intervention Characteristics	Results
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# of residents: provided: virtual visits, group repeated criticism of staff in past 3 days # of residents: activities, and window visits with • Delirium: Delirium Clinical Assessment Protocol Intervention: 298		# of communities: 42	Additional services	 Conflict with staff: occurrences of conflict or
# of residents: activities, and window visits with Intervention: 208 • Delirium: Delirium Clinical Assessment Protocol			provided: virtual visits, group	repeated criticism of staff in past 3 days
Intervention: 208 [family members were allowed in [(CAD) accomment triggered if at least 1 of the		# of residents:	activities, and window visits with	• Delirium: Delirium Clinical Assessment Protocol
I multivention. 290 I family members were allowed in [(CAP), assessment mygered if at least 1 of the		Intervention: 298	family members were allowed in	(CAP), assessment triggered if at least 1 of the
Control: 625 some communities following occurred in past 3 days (acute		Control: 625	some communities	following occurred in past 3 days (acute
changes in mental status, different from usual				changes in mental status, different from usual
# of staff: NR Guidelines used for decision functioning, easily distracted, episodes of		# of staff: NR	Guidelines used for decision	functioning, easily distracted, episodes of
making: national disorganized speech, mental function varies			making: national	disorganized speech, mental function varies
Community type: LTC over the course of a day)		Community type: LTC		over the course of a day)
communities, all included Decision maker for implementing • Depression: Depression Rating Scale (DRS).		communities, all included	Decision maker for implementing	• Depression: Depression Rating Scale (DRS).
NPIs: national assessor-rated depressive symptoms. 0 (no			NPIs: national	assessor-rated depressive symptoms. 0 (no
Community characteristics: all symptoms) to 14 (high symptoms)		Community characteristics: all		symptoms) to 14 (high symptom)
Dutch LTC communities provide		Dutch LTC communities provide		-,, coe, co = . (g., e,p.co)

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics 24-hour care, are publicly funded, and include residential care homes and NHs Population served: older adults Demographics for residents in intervention group: Age: 30% 60-79 years; 19% 80-84 years; 28% 85-89 years; 23% ≥90 years	Comparison group : residents with 2 mental health assessment prior to VR, not part of the intervention group due to lack of assessment during VR	 Depression, self-rated: 3 self-reported mood items, scores ranging from 0 to 6, with 6 signifies all 3 mood symptoms were present during the past 3 day (loss of interest, sadness, anxiety) Loneliness: residents indicated they were lonely in the past 3 days Withdrawal: occurrence of withdrawal from activities of interest, self-reported Infection lab confirmed or self-report: N/A
	Sex: 69% remaie; 31% male		 Results: Narrative summary Aggressive behavior: no change; OR: 0.98, 95% CI: 0.80 to 1.20. The oldest residents (90 years or older) had significant increase in aggressive behavior during intervention Cognition: no change; OR: 0.03, 95% CI: -0.05 to 0.12 Conflict with other care recipients: residents in comparison group had higher occurrences of conflict when compared with residents during intervention; OR 1.31, 95% CI 1.02 to 1.68 Conflict with staff: no change; OR: 1.09, 95% CI: 0.85 to 1.40 Delirium: no change; OR: 1.09, 95% CI: 0.81 to 1.46 Depression: no change; DRS score increased 0.03, 95% CI: -0.24 to 0.30; author reported not clinically meaningful Depression, self-rated: increased during early stages of intervention, but author reported not significantly different towards the end of intervention; score increased by 0.33, 95% CI: 0.77 to 1.15 Withdrawal: no change; OR: 0.94, 95% CI: 0.77 to 1.25. For residents with no or mild cognitive impairment, withdrawal significantly decreased during intervention; for residents

Study	Setting and Population	Intervention Characteristics	Results
			with cognitive impairment there was a small increase in withdrawal
Author year: Backhaus	Location: the Netherlands	Intervention period	Outcomes reported: Mental health: questionnaire results on residents'
2021	Population density: mixed		mood and cognitive decline
Study design: single	(urban, suburban, rural)	Evaluation period: immediately	QoL: questionnaire results on residents' activity
group before-after		after intervention ended	and contact seeking behavior
	Eligibility criteria: NH involved		
least	assessing impact of visitor	Infectious agent: SARS-CoV-2	Infection lab confirmed or self-report: N/A
Quality of execution:	restrictions and reopening	NPIs evaluated:	Results: Narrative summary
fair	Sample size:	Individual: none	Compared with the situation during visitor
	# of communities: 76	Community: VR (relaxing of VR)	restriction, reopening LTC communities resulted
	# of residents: NR	Environmental: none	in the following:
	# of staff: NR		Mental health:
	Community type: NHc or skilled	Additional services provided: NR	Residents had more positive mood in 45% of
	nursing facilities only	Guidelines used for decision	Residents showing more cognitive decline in
		making: national	20% of NHs, same level of cognitive
	Community characteristics: NR		functioning in 55% of NHs, less cognitive
	-	Decision maker for implementing	decline in 11% of NHs
	Population served: older adults	NPIs: LTC community	
	Domographics for residents in	Companian mount companing	QoL: residents were more active and more
	intervention group: NR	to when VR were in place	NHs
	intervention group. MX	to when vic were in place	
Author year: Bakaey 2020	Location: Massachusetts, U.S.	Intervention period examined: 4 weeks	Outcomes reported: incidence among residents: new cases identified each week
	Population density: NR		
Study design: single		Evaluation period: intervention	Infection lab confirmed or self-report: lab-
group before-after	Eligibility criteria: residents at	ongoing	confirmed
Suitability of	a multicampus organization of LTC	Intervention details	Poculto:
design: least	communities	Infectious agent: SARS-CoV-2	Narrative summary
			Before universal testing, the number of new
Quality of	Sample size:	NPIs evaluated:	cases tripled weekly. After universal testing had
execution: fair	# of communities: NR	Individual: N/A	been implemented, new cases declined to 14%
	# of residents: 723	Community: testing (routine	
	# UI SLAIT. NK	Environmental: N/A	

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
	Community type: LTC communities, all included	Additional services provided: NR	
	,	Guidelines used for decision	
	Community characteristics: NR	making: national and state	
		5	
	Population served: older adults	Decision maker for implementing NPIs: LTC community	
	Demographics for residents in	Comparison group: pre-	
	intervention group:	intervention	
	Age, mean: 89 years		
Author year:	Location: United Kingdom	Intervention period	Outcomes reported: incidence among staff
Balestrini 2021		examined: 20 weeks	
	Population density: mixed		Infection lab confirmed or self-report: lab-
Study design: before-	(urban, suburban)	Evaluation period: immediately	confirmed
after with concurrent		after intervention ended	
comparison group	Eligibility criteria: residents and		Results:
g	staff at several LTC communities	Intervention details:	Intervention, change: 1.1%
Suitability of	dedicated to care of people with	Infectious agent: SARS-CoV-2	Control, change: 2.8%
design: greatest	epilepsy in and around London		
		NPIs evaluated:	Absolute difference: -1.7 pct pts
Quality of execution:	Sample size:	Individual: N/A	Relative difference: -61.1%, p<0.05
fair	# of communities	Community: testing (weekly	
	Intervention: 1	routine testing of residents; PD	
	Control: 1	when tested positive)	
		Environmental: N/A	
	# of residents:		
	Intervention: 98	Additional services provided: NR	
	Control: 146		
		Guidelines used for decision	
	# of staff:	making: national and regional	
	Intervention: 275		
	Control: 601	Decision maker for implementing	
		NPIs: LTC community	
	Community type: residential LTC		
	communities only	Comparison group: a	
		comparable LTC community for	
	Community characteristics: NR	people with epilepsy in London	
		without testing procedures in	
	Population served: people with	place	
	disabilities		

Study	Setting and Population Characteristics	Intervention Characteristics	Results
	Demographics for residents in intervention group: Age, median: 49 Sex: 32.6% female; 67.3% male Race/Ethnicity: Black, Asian, and other groups of minorities, 5%		
Author year: Belmin 2020 Study design: retrospective cohort Suitability of design: moderate Quality of execution: fair	Location: France Population density: NR Eligibility criteria: French NHs in which some of the staff voluntarily confined themselves to the community along with residents for 7 days or longer Sample size: # of communities: 17 # of residents: 1,250 # of staff: 794 Community type: NHs or skilled nursing facilities Community characteristics: Ownership: 35.3% public; 23.5% private; 41.2% non-profit Size of community: 35.3% ≤60 residents; 23.5% >100 residents Population served: older adults Demographics for residents in intervention group: NR	Intervention period examined: 2 weeks to 5 weeks (depending on the community) Evaluation period: 8 weeks Intervention details: Infectious agent: SARS-CoV-2 NPIs evaluated: Individual: none Community: PD Environmental: none Additional services provided: NR Guidelines used for decision making: LTC community Decision maker for implementing NPIs: LTC community Comparison group: French NHs following standard procedures	Outcomes reported: incidence among residents, staff, and overall; mortality due to infection among residents; proportion of communities with an infection Infection lab confirmed or self-report: lab- confirmed Results: Incidence among residents: Intervention, change: 0.4% Control, change: 4.4% Absolute difference: -4.0pct pts Relative difference: -90.9% Incidence among staff: Intervention, change: 0.8% Control, change: 3.8% Absolute difference: -3.0pct pts Relative difference: -3.0pct pts Relative difference: -80.1% Incidence overall: Intervention, change: 0.5% Control, change: 2.5% Absolute difference: -78.6% Mortality due to infection among residents: Intervention, change: 0.4% Control, change: 1.8% Absolute difference: -1.4pct pts Relative difference: -77.8% Proportion of communities with an infection: Intervention, change: 5.9%
			Control, change: 48.3%

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
			Absolute difference: -42.5pct pts
			Relative difference: -87.8%
Author year: Cazzoletti	Location: Italy	Intervention period	Outcomes reported: associations between NPIs
2021		examined: NR	evaluated and incidence among residents
	Population density: mixed		
Study design: cross-	(urban, rural)	Evaluation period: 12 weeks	Infection lab confirmed or self-report: lab-
sectional			confirmed
Sectional	Fligibility criteria: all NHs for the	Intervention details:	commed
Suitability of design:	elderly in the province of Trento.	Infectious agent: SARS-CoV-2	Results:
least	excluded other LTC settings for		Narrative summary
icast	neonle with disabilities and	NPIs evaluated:	HH: no statistically significant association
Quality of execution:	bospital based LTC	Individual: HH DDE	hotwoon hand bygiono and the median
fair	nospital based LTC		sumulative incidence of COVID 10 in NHs
Idii	Comple size	Environmentaly CD	
	Sample Size:	Environmental: CD	h=0.912
	# of continuinces: 45	Additional convises provided, ND	DDE, no statistically significant association
		Additional services provided: NR	PPE: no statistically significant association
	# OF STATT: NR		between PPE use and the median cumulative
		Guidelines used for decision	incidence of COVID-19 in NHs, p=0.742
	Community type: NHs or skilled	making: national	
	nursing facilities		PD (isolation): isolation of cases was not
		Decision maker for implementing	statistically significantly associated to the median
	Community characteristics:	NPIs: NR	cumulative incidence of COVID-19 in NHs,
	Size of community: 36% small to		p=0.941
	medium; 64% large (>70 beds)	Comparison group: N/A	
	Population density: 24% urban;		CD (sanitation): no statistically significant
	76% rural		association between sanitization and the median
			cumulative incidence of COVID-19 in NHs,
	Population served: older adults		p=0.408
	Demographics for residents in		
	intervention group: NR		
Author year: Ehrlich	Location: Connecticut, U.S.	Intervention period	Outcomes reported: incidence among residents
2021	, -	examined: 12 weeks	adjusted for community prevalence: proportion
	Population density: mixed		of communities with reduced incidence:
Study design: single	(urban, suburban, rural)	Evaluation period: NR	relationship between test frequency and
group before-after		······	reduction in infections
	Eligibility criteria: NHs selected	Intervention details:	
Suitability of design:	based on size of their outbreaks	Infectious agent: SARS-CoV-2	Infection lab confirmed or self-report: lab-
least	and notential immediate effect of		confirmed
	control measures	NPIs evaluated:	
		Individual: none	Posults
			INCJUILJ.

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
Quality of execution:	Sample size:	Community: testing (weekly	Incidence among residents:
fair	# of communities: 34	routine testing; SHS and PD	Relative change: -80%, 95% CI: -89% to -64%
	# of residents: 437	when tested positive)	
	# of staff: NR	Community: none	Narrative summary
			Proportion of communities with reduced
	Community type: NHs or skilled	Additional services provided: NR	incidence: compared with 4 weeks before
	nursing facilities		implementation, incidence rates in residents
		Guidelines used for decision	decreased in 85% of the communities in the 12-
	Community characteristics:	making: state	week follow-up period, p<0.05
	Size of community: about 135		
	beds per NH	Decision maker for implementing	Relationship between test frequency and
	Denuistion conveduation adulta	NPIS: State	reduction in infections: a positive but
	Population served: older adults		days between each round of testing and the
	Domographics for residents in	intervention	number of cases identified in a LTC community
	intervention group: ND	Intervention	
	intervention group. NR		
Author year: Geeraedts	Location: the Netherlands	Intervention period	Outcomes reported: incidence prevented:
2022		examined: 4.5 weeks	excess death due to SARS-CoV-2 infection
	Population density: urban		prevented
Study design: before-		Evaluation period: immediately	
after with concurrent	Eligibility criteria: large LTC	after intervention ended	Infection lab confirmed or self-report: lab-
comparison group	communities in the Twente region		confirmed
	with an infection prevention	Intervention details:	
Suitability of design:	professional in service	Infectious agent: SARS-CoV-2	Results:
greatest			Narrative summary
	Sample size:	NPIs evaluated:	Incidence prevented: with an estimated basic Ro
Quality of execution:	# of communities: 7	Individual: none	between 0.7 and 1.0 for the Netherlands, 101 to
fair	# of residents: 5,649	Community: testing (routine	144 secondary infections may have been
	# of staff: 13,438	testing; SHS and PD when tested	prevented; with an estimated Ro of 2 to 3 for
		positive)	LTC communities, 288 to 432 transmissions may
	Community type: LTC	Environmental: none	have been prevented
	communities, all included		
		Additional services provided: NR	Excess death due to infection prevented:
	Community characteristics: NR	Cuidelines used for desision	Intervention region: 8% excess death
	Denuistion conveduation adulta	Guidelines used for decision	Comparison regions: 21% to 74%
	Population served: older adults		intervention region had excess mortality rate
	Demographics for residents in	Decision maker for implementing	that was 2.6 times (62%) to 9.3 times (89%)
	intervention group: NR	NPIs: regional	lower than in comparison regions
		Comparison group: LTC	
		communities in other regions in	

Study	Setting and Population	Intervention Characteristics	Results
		the Netherlands without routine testing	
Author year:	Location: Spain	Intervention period	Outcomes reported:
Gil-Llario 2023		examined: 30 weeks	Mental health:
	Population density: NR		Anxiety: level of anxiety symptoms measured
study design: simple	Eligibility exiterio , a single	Evaluation period: 91 weeks	Dy Diagnostic Assessment for Severely
unie series	community was selected for	Intervention details:	lower score favorable
Suitability of design:	evaluation: for residents to be	Infectious agent: SARS-COV-2	Depression: level of depressive symptoms
least	included in the analysis, they need		measured by DASH-II, Spanish version,
	to have diagnosis of mild or	NPIs evaluated:	validated; lower score favorable
Quality of execution:	moderate intellectual disability;	Individual: none	 Organic syndromes: now referred to as
good	over 18 years of age; residing in	Community: PD (cohorting), VR	neurocognitive disorders, such as increased
	the community; assessed by the	Environmental: none	restlessness, difficulties in focusing attention or
	center on variables of interest	Additional convices: ND	remembering things the individual used to
	before the pandernic	Additional services. INK	in mood measured by DASH-II Spanish
	Sample size:	Guidelines used for decision	version, validated: lower score favorable
	# of communities: 1	making: national	QoL:
	# of residents: 24	5	• Self-determination: assessed through two
	# of staff: NR	Decision maker for implementing	scales, INICO-FEAPS Scale of Comprehensive
		NPIs: national	Assessment of the Quality of Life of People with
	Community type: residential LTC		Intellectual or Developmental Disabilities; San
	communities	comparison group: pre	Martin Scale of Assessment of the Quality of
	Community characteristics: NR	Intervention	higher score favorable
	community characteristics. NR		Emotional wellbeing: same scales used to
	Population served: people with		determine scores; higher score favorable
	intellectual disabilities		• Social inclusion: same scales used to determine
			scores; higher score favorable
	Demographics for residents in		• Interpersonal relationship: same scales used to
	intervention group:		determine scores; lower score favorable
	Age, mean: 40.2 years		Boculto
	3ex. 34.2% Ternale, 43.8% Inale		Narrative summary
			Mental health
			• Anxiety: VR didn't increase anxiety; VR + PD
			(cohorting) increased anxiety; relaxing VR +
			PD decreased anxiety; results not statistically
			significant.
			• Pre-intervention: 2.0 ± 2.33
			 VR only: 1.79 ± 1.91

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			 VR + PD (cohorting): 2.67 ± 3.41 Reopening: 2.12 ± 2.27
			 Depression: VR didn't increase depression; VR + PD (cohorting) increased depression; relaxing VR + PD decreased depression and was nearly approximate to pre-pandemic levels; results not statistically significant Pre-intervention: 4.46 ± 4.42 VR only: 4.21 ± 4.21 VR + PD (cohorting): 5.12 ± 5.17 Reopening: 4.5 ± 4.59
			 Organic symptoms: VR worsened organic symptoms, VR + PD (cohorting) worsened symptoms more; relaxing VR + PD improved organic symptoms but did not reach prepandemic levels; results statistically significant Pre-intervention: 2.42 ± 1.86 VR only: 3.26 ± 3.24 VR + PD (cohorting): 3.79 ± 3.5 Reopening: 2.83 ± 2.53
			QoL • Self-determination: VR improved self- determination; VR + PD (cohorting) worsened self-determination; relaxing VR + PD (cohorting) worsened it further but did not reach pre-pandemic levels; results not statistically significant • Pre-intervention: 46.33 ± 24.82 • VR only: 47.25 ± 26.25 • VR + PD (cohorting): 44.37 ± 27.16 • Reopening: 44.63 ± 26.71
			 Emotional well-being: VR worsened emotional well-being, VR + PD (cohorting) improved it slightly; relaxing VR + PD (cohorting) didn't change it and did not reach pre-pandemic levels; results not statistically significant Pre-intervention: 45.38 ± 23.67 VR only: 41.58 ± 23.03 VR + PD (cohorting): 42.79 ± 24.04

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			• Reopening: 42.67 ± 24.56
			 Social inclusion: VR improved social inclusion; VR + PD (cohorting) worsened it; relaxing VR + PD (cohorting) worsened it further; results not statistically significant Pre-intervention: 42.63 ± 24.91 VR only: 44.37 ± 28.31 VR + PD (cohorting): 40 ± 31.15 Reopening: 39.92 ± 27.39
			 Interpersonal relationship: VR improved interpersonal relationship; VR + PD (cohorting) didn't change it; relaxing VR + PD (cohorting) improved it but not to pre-pandemic levels; results not statistically significant Pre-intervention: 41.29 ± 28.81 VR only: 43.13 ± 28.98 VR + PD (cohorting): 43.71 ± 33.12 Reopening: 44.67 ± 26.8
Author year: Green	Location: England	Intervention period	Outcomes reported: incidence among residents
2021	Bonulation density: mixed	examined: 2.5 weeks	Infection lab confirmed or colf-reports lab-
Study design: single group before-after	(urban, suburban, rural)	Evaluation period: NR	confirmed
5 1	Eligibility criteria: all LTC	Intervention details:	Results:
Suitability of design:	communities with no confirmed or	Infectious agent: SARS-CoV-2	Narrative summary
least	suspected cases in the Liverpool		No significant difference between crude
	area	NPIs evaluated:	prevalence of residents testing positive between
Quality of execution:		Individual: none	the first and second round of testing; $p=0.11$
fair	Sample size:	Community: testing (routine	
	# of communities: 33	testing)	When COVID-19 prevalence is low, repeat testing
	# of residents: 812	Environmental: none	at two to three weeks had limited or no public
	# UI SLAII: NK	Additional services provided:	staff and residents for symptoms
	Community type: LTC	regular check-in: all LTC	
	communities, all included	communities received extensive	Communities with asymptomatic residents
		advice and support from	showed no evidence of disease transmission or
	Community characteristics:	Liverpool area health and care	development of outbreaks, suggesting that
	Size of community: 856 beds	partners	current infection prevention and control
	overall		measures are effective in preventing
			transmission

Study	Setting and Population Characteristics	Intervention Characteristics	Results
	Type of community: 52.9% purely residential in nature, remining offered nursing care Population served: older adults Demographics for residents in intervention group: <i>Age, mean</i> : 74 years <i>Sex</i> : 60% female; 40% male	Guidelines used for decision making: local Decision maker for implementing NPIs: local Comparison group: pre- intervention	
Author year: Gustafsson 2022 Study design: interrupted time series Suitability of design: moderate Quality of execution: fair	Location: Sweden Population density: NR Eligibility criteria: all respondents who completed both the 2019 and 2020 National Board of Health and Welfare Questionnaires and were age 70 or older in 2020 Sample size: # of communities: NR # of residents: 11,782 # of staff: NR Community type: NHs or skilled nursing facilities Community characteristics: NR Population served: older adults Demographics for residents in intervention group: Age, mean: 88.2 years Sex: 71% female; 29% male Insurance: 21% private providers; 79% public providers	Intervention period examined: NR Evaluation period: 11 weeks Intervention details: Infectious agent: SARS-COV-2 NPIs evaluated: Individual: none Community: VR Environmental: none Additional services: NR Guidelines used for decision making: national Decision maker for implementing NPIs: national Comparison group: pre- intervention	Outcomes reported: Mental health: loneliness; measured by a survey consisting of 20-25 items covering perceptions of the eldercare and self-rated loneliness and health, administered by the National Board of Health and Welfare in Sweden Infection lab confirmed or self-report: N/A Results: Narrative summary Compared to the period before VR and to the trends of the corresponding periods in 2019, there was a relative decrease in loneliness trends after VR was implemented RR = 0.974, 95% CI: 0.949 to 0.998 However, this decrease was not statistically significant after adjusting for other factors, and it became even less significant after also considering health in 2019 and 2020 RR = 0.984, 95% CI: 0.961 to 1.008
Author year: Hodge 2023	Location: Australia	Intervention period examined: NR	Outcomes reported: associations between NPIs evaluated and outcomes that include incidence

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
	Population density: urban, rural		among residents and staff, and outbreak
Study design: cross-		Evaluation period: 32 weeks	duration
sectional	Eligibility criteria: all LTC		
	communities with an outbreak	Intervention details:	Outbreak duration: defined by Communicable
Suitability of design:	within the Wide Bay Public Health	Infectious agent: SARS-COV-2	Disease Network Australia, measured in number
least	Unit, excluding multi-purpose	_	of days from outbreak start (the day the
	health services; outbreak defined	NPIs evaluated:	outbreak criteria was met) to outbreak end (7
Quality of execution:	as 2 or more residents tested	Individual: PPE, SHS	days after the last case in community)
fair	positive for SARS-CoV-2 within 5	Community: testing, PD	
	days and have been onsite at the	Environmental: none	Infection lab confirmed or self-report: lab-
	LTC communities during their		confirmed
	infectious period; or 5 or more	Additional services provided:	
	staff, visitors, and/or residents	collaboration, support, provided	Results:
	tested positive within the past 7	by Wide Bay Public Health Unit	Incidence among residents and staff
	days who worked or visited during		• PD (staff cohorting) is associated with a 64.3%
	their infectious period	Guidelines used for decision	reduction in incidence, $p=0.0073$
		making: NR	
	Sample size:	5	• Strict enforcement of SHS produced larger
	# of communities: 27	Decision maker for implementing	reductions in incidence
	# of residents: NR	NPIs: NR	 Staff SHS + close contact vs. staff SHS:
	# of staff: NR		3.85 vs. 16.20, -76.2%, NS
		Comparison group: cross-	 Staff SHS + close contact vs. most staff
	Community type: LTC	sectional comparison; association	SHS: 3.85 vs. 27.11, -85.8%, NS
	communities, all included	between intervention vs. no	 Staff SHS vs. most staff SHS: 16.20 vs.
		intervention or different levels of	27.11, -40.2%, NS
	Community characteristics: NR	implementation and incidence	
			 Shorter turnaround time between sample
	Population served: older adults		collection and receipt of results statistically
	-		significantly associated with fewer infections
	Demographics for residents in		• Same day turnaround vs. next day:
	intervention group: NR		13.77 to 24.42, -43.6%
			 Same day turnaround vs. several days
			later: 13.77 vs. 23.96, -42.5%
			• Next day vs. several days later: 24.42 vs.
			23.96, 1.9%, NS
			 Strict cohorting was statistically significantly
			associated with fewer infections
			All cohorting vs. most cohorting: 11.22
			vs. 14.21, -21.0%
			• All cohorting vs. no: 11.22 vs. 31.47, -
			64.3%

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			 Most cohorting vs. no: 14.21 vs. 31.47, - 54.8%
			Outbreak duration in days • PD (staff cohorting) is not associated outbreak duration
			 Strict enforcement of SHS shortened outbreak duration Staff SHS + close contact vs. staff SHS: 13.5 vs. 21, -35.7%, NS Staff SHS + close contact vs. most staff SHS: 13.5 vs. 14, -3.6%, NS Staff SHS vs. most staff SHS: 21 vs. 14, 50.0%, NS
			 Turnaround time between sample collection and receipt of results was not associated with outbreak duration Same day turnaround vs. next day: 20 vs. 20.5, -2.4%, NS Same day turnaround vs. several days later: 20 vs. 22.5, -11.1%, NS Next day vs. several days later: 20.5 vs. 22.5, -8.9%, NS
			 Strict cohorting was not associated with outbreak duration All cohorting vs. most cohorting: 21 vs. 20, 5%, NS All cohorting vs. no: 21 vs. 21, 0%, NS Most cohorting vs. no: 20 vs. 21, -4.7, NS
Author year: Huang 2021	Location: Taiwan Population density: NR	Intervention period examined: 36 weeks	Outcomes reported: ED visits and hospitalization due to viral respiratory infection over 36 weeks; length of hospital stay in days
Study design: single group before-after Suitability of design:	Eligibility criteria: one NH was selected for unreported reasons; all residents living in the NH and	Evaluation period: NR Intervention details: Infectious agent: SARS-CoV-2	Infection lab confirmed or self-report: electronic records
least	staff who continuously worked in	NPIs evaluated:	Results: ED visits:

Study	Setting and Population	Intervention Characteristics	Results
_	Characteristics		
Quality of execution:	the community from 1/2019 to	Individual: HH, PPE	Pre: 93
fair	9/2020	Community: testing (PD when	Post: 42
		tested positive), PD, VR	Absolute change: -51 visits
	Sample size:	Environmental: CD	Relative change: -54.8%, p<0.001
	# of communities: 1		
	# of residents: 183	Additional services	Hospitalization due to infection:
	# of staff: 127	provided: collaboration with the	Intervention:
		local hospital, with doctors visit	Pre: 79
	Community type: NHs or skilled	residents weekly, outpatient	Post: 33
	nursing facilities	department visits	Absolute change: -46 visits
			Relative change: -58.2%, p<0.001
	Community characteristics: NR	Guidelines used for decision	
		making: national	Hospital stays:
	Population served: older adults		Pre: 1009
		Decision maker for implementing	Post: 387
	Demographics for residents in	NPIs: national	Absolute change: -622 days
	intervention group:		Relative change: -61.6%, p<0.001
	Age: 60.7% were 80+ years old	Comparison group: pre-	
	Sex: 64% female; 36% male	intervention	
	Underlying conditions: 78.1% with		
	ADL score ≤ 20 ; 95.6% with		
	Charleston Comorbidity Index ≥ 6		
Author year:	Location: Florida Georgia North	Intervention period	Outcomes reported: incidence among
Jutkowitz 2022	Carolina, South Carolina, U.S.	examined: 6 weeks	residents: proportion of communities with
			infections per week; proportion of communities
Study design:	Population density: NR	Evaluation period: 8 weeks	with infection-related deaths per week
interrupted time series		•	
·	Eligibility criteria: NHs in a	Intervention details:	Infection lab confirmed or self-report: lab-
Suitability of design:	same multi-facility corporation in	Infectious agent: SARS-CoV-2	confirmed
moderate	the southern U.S. which agreed to		
	install air purifiers and share	NPIs evaluated:	Results:
Quality of	community-level data with	Individual: none	Incidence among residents per week:
execution: fair	researchers	Community: none	Intervention:
		Environmental: vent	Pre: 14.3 infections per week per 1,000 residents
	Sample size:		Post: 9.3 infections per week per 1,000 residents
	# of communities: 84	Additional services provided: NR	Change: -35%
	# of residents: NR		
	# of staff: NR	Guidelines used for decision	Comparison:
		making: NR	Pre: 25.0 infections per week per 100,000
	Community type: NHs or skilled		community members
	nursing facilities	Decision maker for implementing	Post: 18.5 infections per week per 100,000
		NPIs: LTC community	community members

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
	Community characteristics: one		Change: -26%
	company with LTC communities	Comparison group:	
	throughout the Southeastern U.S.	Incidence: wider community	Relative difference: -34.5%
		infections from the same period	
	Population served: older adults	Other outcomes: pre-intervention	Regression coefficient translates to a reduction of
			1.69 COVID-19 cases per 1,000 residents per
	Demographics for residents in		week in the post compared to the pre period,
	Intervention group:		to 0.05
	Aye, mean: 76.5 years		10 0.95
	Pace/Ethnicity: 64 5% White:		Proportion of communities with infections per
	31 5% African American: 0.9%		week
	Hispanic		Pre: 21.5%
	inopanie		Post: 9.6%
			Absolute change: -11.9 pct pts
			Relative change: -55.3%
			Regression coefficient translates to a 0.02 pct pts
			reduction in the probability of a community
			having a COVID-19 case pre week in the post
			compared to the pre period
			Proportion of communities with infection-related
			deaths per week:
			Pre: 8.8%
			Absolute change: 7.0 pct ptc
			Pelative change: -70 5%
			Regression coefficient translates to a 0.01 pct pts
			increase in the probability of a NH having a
			COVID-19 death pre week in the post compared
			to the pre period
Author year: Kovach	Location: Midwest, U.S.	Intervention period	Outcomes reported: incidence among
2017		examined: 52 weeks	residents; hospitalization due to infection
	Population density: NR		
Study design: single		Evaluation period: immediately	Intection lab confirmed or self-report:
group before-after	Eligibility criteria: all residents	arter intervention ended	symptomatic
Suitability of design:	upper Midwest: reason for	Intervention details:	Poculto
lost	choosing the specific community	Intervention details:	Results: Incidence among residents
	not provided	respiratory infections	Narrative summary
Author year: Kovach 2017 Study design: single group before-after Suitability of design: least	Location: Midwest, U.S. Population density: NR Eligibility criteria: all residents of a single LTC community in the upper Midwest; reason for choosing the specific community not provided	Intervention period examined: 52 weeks Evaluation period: immediately after intervention ended Intervention details: Infectious agent: pneumonia, respiratory infections	Outcomes reported: incidence among residents; hospitalization due to infection Infection lab confirmed or self-report: symptomatic Results: Incidence among residents Narrative summary

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
Quality of execution:			Pre-intervention (2012 to 2014) compared with
fair	Sample size:	NPIs evaluated:	post-intervention (2015) period, LTC community
	# of communities: 1	Individual: none	acquired infections had a small decrease, while
	# of residents: NR	Community: none	hospital acquired rates showed an increase; the
	# of staff: NR	Environmental: CD	ratio increased from pretest to posttest indicating
			that as the hospital acquired rate was increasing
	Community type: NH or skilled	Additional services provided: NR	the rate of LTC community acquired infections
	nursing facility		was decreasing or staying the same
		Guidelines used for decision	
	Community characteristics: NR	making: NR	Hospitalization due to infection:
			Pre: 15 cases
	Population served: older adults	Decision maker for implementing	Post: 5 cases
		NPIS: LIC community	Relative change: -66.7%
	Demographics for intervention		
	group: NR	Comparison group: pre-	
		Intervention	
Author year:	Location: Massachusetts, U.S.	Intervention period	Outcomes reported: associations between NPIs
Lipsitz 2020		examined: NR	evaluated and outcomes that include incidence
	Population density: mixed		among residents and mortality due to infection
Linked to Dufour 2021	(urban, suburban, rural)	Evaluation period: NR	
			Infection lab confirmed or self-report: lab-
Study design: simple	Eligibility criteria: NHs in MA	Intervention details:	confirmed
time series	area with infection control	Infectious agent: SARS-CoV-2	
	deficiencies, including those that		Results:
Suitability of design:	failed an initial audit	NPIs evaluated:	Incidence among residents:
least		Individual: none	• For each 1-point increase in checklist audit
	Sample size:	Community: testing (routine	score, the weekly infection rate decreased
Quality of	# of communities:	testing; SHS and PD when tested	further
execution: good	Intervention:123	positive), PD	 Overall: -8%, p=0.0007
	Control: 237	Environmental: CD	 Similar reduction for LTC communities
			whether non-White residents was <20%
	# of residents: NR	Additional services provided:	or ≥20%
	# of staff: NR	collaboration with government	 LTC communities with low dementia
		agencies to receive	prevalence (0-50%): -1%
	Community type: NHs or skilled	implementation support;	LTC communities with middle dementia
	nursing facilities	assessment and feedback of NPI	prevalence (50-62%): -8%
		adherence through checklist;	 LTC communities with high dementia
	Community characteristics: NR	resources deployment; virtual	prevalence (62-100%): -12%
		visits; incentives for LTC	• For each 1-point increase in checklist audit
	Population served: older adults	communities	score, the likelihood of a zero-infection rate
			increased by 13%, p=0.004)

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics Demographics for residents in intervention group: Age, mean: 81 years Sex: 66% female; 44% male Race/Ethnicity: 85.0% White; 15.0% non-White Underlying conditions: 55% with dementia	Guidelines used for decision making: national and local Decision maker for implementing NPIs: state Comparison group: association between intervention vs. no intervention or different levels of implementation and outcomes	 PD (cohorting) was associated with reductions in weekly infection rate Overall: -50%, p=0.004 LTC communities with <20% non-White residents: -51% LTC communities with ≥20% non-White residents: -78% LTC communities with low dementia prevalence (0-50%): -38% LTC communities with middle dementia prevalence (50-62%): -63% LTC communities with high dementia prevalence (62-100%): -56% PD (cohorting) was associated with increased OR of zero-infection rate among residents Overall AOR: 3.00, 95% CI: 1.34 to 6.71, p=0.0076 LTC communities with <20% non-White residents AOR: 5.4 LTC communities with ≥20% non-White residents AOR: 5.03
			 For each 1-point increase in checklist audit score, the weekly mortality rate decreased by 3%, (p=0.179), and the likelihood of a zero-mortality rate increased by 16% (p=0.0009), regardless of resident demographics PD (cohorting) was associated with a 38% reduction in weekly mortality rate (p=0.0379) and 98% increased odds of zero mortality among residents
Author year: Lipsitz 2022	Location: Intervention: Massachusetts, U.S. Comparison: New Hampshire,	Intervention period examined: 15 weeks	Outcomes reported: incidence among residents and staff
Study design: simple time series with comparison group	Rhode Island, Connecticut, U.S.	Evaluation period: immediately after intervention ended	Infection lab confirmed or self-report: lab- confirmed
Suitability of design:	(urban, suburban, rural)	Intervention details:	Results:
greatest	Eligibility criteria: residents at 20 LTC communities in	NPIs evaluated:	Early intervention, May 10 to June 3, 2020: the adjusted risk of infection declined by about 27%

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
Quality of execution:	Massachusetts where NPIs were	Individual: PPE	in comparator states (Hazard Ratio [HR], 0.73,
fair	implemented; present at the	Community: testing (routine	95% CI 0.54 to 1.00) relative to the baseline
	study's beginning, followed for 20	testing; SHS and PD when tested	period; the adjusted risk of infection declined by
	weeks or until developing COVID-	positive), PD	66% relative to baseline for Massachusetts; this
	19, discharge, or death; new	Environmental: none	is a 53% additional reduction in risk beyond that
	admissions were excluded due to		observed in comparator states (state-by-time
	varying state restrictions and	Additional services provided:	interaction HR 0.47, 95% CI 0.37 to 0.59)
	potential immunity to new	virtual and in-person assessment	
	infections	and feedback by using checklist	Late intervention, June 3 to August 12, 2020:
		for shortcomings and ways to	residents in Massachusetts experienced
	Sample size:	improve; resource access and	additional decline in infection relative to the
	# of communities:	deployment; regular check ins for	comparator states (HR 0.80, 95% CI 0.64 to
	Intervention: 20	quality improvement; incentive	1.00)
	Comparison: 45	to staff; virtual visits for	
		residents	
	#of residents:		
	Intervention: 2,085	Guidelines used for decision	
	Comparison: 4,493	making: nation and state	
	# of staff: NR	Decision maker for implementing	
		NPIs: state	
	Community type: NHs or skilled		
	nursing facilities	Comparison group: LIC	
		communities in other New	
	Community characteristics: NR	England States (Rhode Island,	
	Demolation commade aldem adulta	New Hampshire, and	
	Population served: older adults	connecticut); used same	
	Domographics for residents in	intervention group	
	intervention group	intervention group	
	Λ_{79} , 7% < 65, 7% 65-69, 11%		
	$70_74 \cdot 13\%$ $75_79 \cdot 14\%$ $80_84 \cdot 13\%$		
	180685-80.3006 > 00		
	Sev: 67% female: 33% male		
	Bace/Ethnicity: 87% White: 4%		
	Black or African American: 9%		
	Hispanic or other		
	Insurance: 30% private		
	insurance: 10% Medicare: 50%		
	Medicaid		
	Inderlying health conditions: ADI		
	score of 17.3: 53% dementia		
	27% congestive heart failure:		

Study	Setting and Population Characteristics	Intervention Characteristics	Results
	21% coronary artery disease; 26% asthma or COPD; 28% chronic kidney disease; 80% hypertension; 36% diabetes; 19% post-acute patient		
Author year: Makris 2000	Location: Delaware and New Jersey, U.S.	Intervention period examined: 52 weeks	Outcomes reported: incidence of upper respiratory infections among residents
Study design: group RCT	Population density: mixed (urban, suburban)	Evaluation period: immediately after intervention ended	Outcome measure: number upper respiratory infections/ 1000 patient days
Suitability of design: greatest Quality of execution: fair	Eligibility criteria: 8 communities enrolled in the Medisys, Inc, an infection control surveillance program, selected based on similar admission rate, size, acuity levels, availability of services, overall infection rates, and in- house environmental departments Sample size: # of communities Intervention: 4 Control: 4 # of residents: NR # of staff: NR Community type: LTC communities, unspecified Communities, unspecified Community characteristics: Intervention: 2 urban and 2 suburban communities, with a total of 443 beds Control: 2 urban and 2 suburban	Intervention details: Infectious agent: respiratory infections NPIs evaluated: Individual: HH Community: N/A Environmental: CD Additional services provided: resource access and deployment; regular check-in; in- person assessment and feedback through mentor and education Guidelines used for decision making: national and LTC community Decision maker for implementing NPIs: LTC community Comparison group: 4 comparable communities maintaining existing infection control policies and procedures	Infection lab confirmed or self-report: symptomatic Results: Intervention: Change: -58.4% Control: Change: -33.1% Absolute difference: -25.3 pct pts Relative difference: -76.6%
	communities, with a total of 447 beds Population served: older adults		

Study	Setting and Population	Intervention Characteristics	Results
	Demographics for residents in		
	intervention group: NR		
Author year: McArthur	Location: Canada	Intervention period	Outcomes reported:
2021		examined: 10 weeks	Mental health:
	Population density: NR		 Depression: assessor-rated depressive
Study design: single		Evaluation period: 4 weeks	symptoms using the Depression Rating Scale;
group before-after	Eligibility criteria: French	T	scored 0 (no symptom) to 14 (high symptom
Cuitability of designs	speaking LIC communities in a	Intervention details:	burden)
Suitability of design:	Visionnairos in New Brunswick	Infectious agent: SARS-Cov-2	Aggressive behavior: severity of expressions and behaviors assessed by using Aggressive
ledst	Canada	NPIc ovaluatod:	Behavior Scale: scored 0 (no behaviors) to 12
Quality of	Callada	Individual: none	(most severe)
execution: good	Sample size:	Community: PD, VR	Delirium: assessed using Delirium Clinical
good good	# of communities: 7	Environmental: none	Assessment Protocol, examining if behavior
	# of residents: 765		appears different from usual functioning, either
	# of staff: NR	Additional services provided:	new onset or worsening, such as easily
		virtual visits for family members,	distracted, episodes of disorganized speech,
	Community type: LTC	with recreation staff to foster	mental function varies over the course of day,
	communities, all included	connections between residents	or acute changes in mental status from usual
		and family members; local	state; assessed for residents without or with
	Community characteristics:	government supplied 1 iPad per	dementia
	privately owned LTC communities	every 10 residents to help	Desults
	with between 30 and 85 resident	ennance virtual visits	Results:
	Deus	Guidelines used for decision	 Depression: proportion of residents with
	Population served: older adults	making: NR	indications of depression decreased with PD
	people with dementia		and VR in place (19.9% to 11.5% , p<0.002):
		Decision maker for implementing	multivariate analysis showed reduced odds for
	Demographics for residents in	NPIs: regional	experiencing depression (adjusted OR: 0.86,
	intervention group:	-	95% CI 0.66 to 1.11)
	Age, mean: 81.4 years	Comparison group: pre-	Aggressive behavior: with PD and VR, there
	Sex: 59.5% female; 40.5% male	intervention	was no significant change in the proportion of
	Underlying health conditions:		residents experiencing behavioral problems
	55.6% Alzheimer's disease or		(35.5% to 30.2%, p=0.19); multivariate
	dementia; 6.8% with a diagnosis		analysis showed aggressive behaviors
			95% CI 0.72 to 1.06)
			Delirium, residents without dementia: there
			was no significant change in the proportion of
			residents experiencing delirium (4.5% to 3.5%,
			p=0.51) during PD and VR; multivariate
			analysis showed increased odds of experiencing

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			 delirium (adjusted OR 1.21, 95% CI 0.57 to 2.57) Delirium, residents with dementia: less likely to experience delirium during PD and VR as compared with residents without dementia (adjusted OR 0.29, 95% CI 0.07 to 1.16)
Author year:	Location: nationwide, U.S.	Intervention period	Outcomes reported: association between NPI
McGarry 2023		examined: NR	characteristics and outcomes that include
Study decign, cross	Population density: NR	Evaluation pariod, 77 weeks	incidence among residents and mortality due to
sectional	Fligibility criteria: NH had to	Evaluation period: 77 weeks	mection
Sectional	have reported to the National	Intervention details:	Testing frequency: high-testing communities
Suitability of design: least	Healthcare Safety Network of Centers for Disease Prevention	Infectious agent: SARS-CoV-2	(90th percentile of test volume) compared with low-testing communities (10th percentile)
	and Control	NPIs evaluated:	
Quality of execution:		Individual: none	Testing turnaround time: communities that
good	Sample size:	Community: testing (routine)	mostly send samples out for testing, with
	# of residents: NR	Environmental: none	turnaround time with 0-2 days vs. 23 days
	# of staff: NR	Additional services: NR	Infection lab confirmed or self-report: lab- confirmed
	Community type: NHs or skilled	Guidelines used for decision	
	nursing facilities only	making: NR	Results: Narrative summary
	Community characteristics:	Decision maker for implementing	
	most had between 107.7 and	NPIs: LTC community	Testing frequency:
	111.4 beas and were for-profit	Comparison group: cross-	Incidence among residents: high-testing
	Population served: older adults	sectional comparison: association	than low-testing communities: this difference
		between testing frequency and	was larger during pre-vaccine period than after
	Demographics for residents in	outcomes of interest	vaccines became available
	intervention group:		High testing vs. low testing, overall:
	Age, mean: 79.4 years		Absolute change: -71.5 cases
	19.6% non-White		High testing vs low testing pre-vaccine:
	<i>Insurance</i> : 59.5% Medicaid		Absolute change: -300.3 cases
			Relative change: -28.3%
			Mortality due to infection: high-testing
			communities had fewer adjusted COVID-19
			deaths than low-testing communities; the

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			difference was larger during the pre-vaccine period than after vaccines became available High testing vs. low testing, overall: Absolute change: -7.1 deaths Relative change: -14.3% High testing vs low testing, pre-vaccine: Absolute change: -41.6 deaths Relative change: -24.9%
			Testing turnaround time: Incidence among residents: communities with a shorter turnaround time had fewer adjusted COVID-19 cases than communities with a longer turnaround time; the difference was larger during the pre-vaccine period than after vaccines became available Shorter turnaround vs. low testing, overall: Absolute change: -26.5 cases Relative change: -5.2% Shorter turnaround vs. low testing, pre-vaccine: Absolute change: -112 cases Relative change: -12.6%
			Mortality due to infection: communities with a shorter turnaround time had fewer adjusted COVID-19 deaths than communities with a longer turnaround time; the difference was larger during the pre-vaccine period than after vaccines became available Shorter turnaround vs. low testing, overall: Absolute change: -17.5 deaths Relative change: -29.6% Shorter turnaround vs. low testing, pre-vaccine: Absolute change: -44.1 deaths Relative change: -27.6%
Author year: Oliveira 2023 Study design: interrupted time series	Location: Spain Population density: rural Eligibility criteria: included patients with dementia with or without severe cognitive decline,	Intervention period examined: NR Evaluation period: 8 weeks Intervention details: Infectious agent: SARS-COV-2	 Outcomes reported: Mental health: Anxiety: anxiety status assessed by a clinician using the Hamilton Anxiety Rating Scale; Spanish version, validated; 14 item scale with each item 0-4 points; higher score denotes greater anxiety

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
Suitability of design: moderate Quality of execution: fair	with permission from legal guardians; excluded staff and relatives who refused to participate; residents who were terminally ill and those with acute medical conditions preventing baseline evaluation (e.g., fractures, respiratory or severe infections, heart attack,	NPIs evaluated: Individual: none Community: VR Environmental: none Additional services: NR Guidelines used for decision	 Depression: assessed using Yesavage test for residents, specifically designed for older adults; Spanish version, validated; higher score denotes higher depression QoL: Social support: self-perception of social support assessed using DUKE-UNC questionnaire; Spanish version, validated; lower score denotes
	pneumonia, etc.) Sample size: # of facilities: 3	making: national Decision maker for implementing NPIs: national	lower perceived social support Infection lab confirmed or self-report: N/A
	 # of residents: 301 # of staff: 119 Community type: NHs or skilled nursing facilities Community characteristics: NR Population served: older adults, people with dementia Demographics for residents in intervention group: Age, mean: 85 years Sex: 75.0% female; 25.0% male 	Comparison group: pre- intervention	 Results: Narrative summary Mental health Anxiety: Significant decrease in anxiety in residents when VR was implemented Anxiety level returned to baseline levels when VR was lifted Anxiety level not impacted by age of residents Compared with male residents, female residents exhibited a clear increase in anxiety when VR was implemented Depression: Significant decrease in depression in residents when VR was implemented Depression level returned to baseline Depression level returned to baseline
			 levels when VR was lifted, indicating increased self-perception of depression Older residents showed greater increase in depression Depression not impacted by sex of residents Compared with residents with dementia, residents with normal cognitive status and mild cognitive decline showed greater reduction in depression when VR was implemented

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			 QoL Social support: During implementation and relaxing of VR, residents' perception of their social support didn't change Perception of social support was independent of sex, age, or baseline cognitive status
Author year: Orlando 2022	Location: Italy	Intervention period examined: NR	Outcomes reported: association between NPIs evaluated and outbreak
Study design: cross- sectional	Population density: mixed (urban, suburban, rural)	Evaluation period: 43 weeks	Outbreak: 2 or more test-confirmed cases of COVID-19 within 14 days
Suitability of design: least	Eligibility criteria: included all 185 LTC communities in Lazio region in Italy; excluded communities catering specifically	Intervention details: Infectious agent: SARS-CoV-2 NPIs evaluated:	Infection lab confirmed or self-report: lab- confirmed
Quality of execution: fair	to younger adults and those for specific health conditions or rehabilitation communities for drug addicts	Individual: PPE Community: testing (PD when tested positive), PD, VR, ATR Environmental: CD	 Results: Narrative summary ATR: admission of new residents after a COVID-19 outbreak, or lack of admission and transfer restrictions, was associated with an
	Sample size: # of communities Intervention: 20 Control: 80 # of residents: NB	Additional services provided: provision of external cleaning company when needed Guidelines used for decision making: NR	 increased risk of an outbreak Binary analysis: OR: 6.46, 95% CI: 1.58 to 27.58, p<0.01 Multivariable analysis: OR: 4.04, 95% CI: 0.87 to 20.0, p=0.07
	# of staff: NR Community type: LTC communities, all included	Decision maker for implementing NPIs: LTC community	• PD (isolation): LTC communities with an isolation environment (isolating residents who tested positive for COVID-19) had increased risk of an outbreak compared with those without
	Community characteristics: NR	sectional comparison	 Binary analysis: OR: 2.5, 95% CI: 0.72 to 11.27
	Population served: older adults Demographics for residents in intervention group: NR		• PD (reduce interaction): LTC communities with a separate entrance for staff who were and were not in touch with residents had no change in their risk of a COVID-19 outbreak compared with those without

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			• Binary analysis: OR: 1.1, 95% CI: 0.3 to 3.41
			 Testing: LTC communities with active surveillance for staff (regular temperature checking and, when available, regular testing for COVID-19) had a -26% risk of a COVID-19 outbreak compared with those without Binary analysis: OR: 0.74, 95% CI: 0.06 to 40.88
			 Relaxing of VR: LTC communities reporting opening to visitors post first lockdown was associated with a slight increased risk of an outbreak Binary analysis: OR: 1.1, 95% CI: 0.03 to 3.41
Author year: Pereiro	Location: Spain	Intervention period	Outcomes reported:
2023	Population density: NR	examined: 7 weeks	Mental health: • Cognitive function: assessed using Mini-Mental
Linked papers: Pereiro 2021	Eligibility criteria: recruited	Evaluation period: 12 weeks	State Examination, a 35-point Spanish adaption of the tool measuring cognitive function; lower
Study design: single	residents who resided in LTC communities in the Galicia and	Intervention details: Infectious agent: SARS-CoV-2	score denotes impaired cognitionDepression: assessed using Geriatric
group before-after	Valencia regions of Spain, <60 years of age, spent entire study	NPIs evaluated:	Depression Scale, a 15-item Spanish adaption measuring depressive symptomatology; higher
Suitability of design: least	period (March 14 to May 4, 2020) in the LTC, had 2 pre-VR	Individual: none Community: PD, VR	score denotes greater depression
Ouality of execution:	measurements; residents with poor cognitive status were	Environmental: none	QoL: functional status; assessed using the Barthel Index, a brief instrument for assessment
fair	excluded	Additional services provided:	of functional status in basic activities
	Sample size: # of communities: 4	or increase therapeutic routines	Infection lab confirmed or self-report: N/A
	# of residents: 365	Guidelines used for decision	Results:
	# of staff: NR	making: national	Narrative summary Mental health:
	Community type: LTC communities, unspecified	Decision maker for implementing NPIs: national	Cognitive function: MMSE score was higher at pre-intervention measurements than in the post measurement indicating a decrease in
		Control group: pre-intervention	cognition; however, change in MMSE scores was higher for the pre-intervention period when

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics Community characteristics: 60% of beds subsidized by public administration Population served: older adults, people with dementia Demographics for residents in intervention group: Age, mean: 84 years old Sex: 60% female; 30% male Education: 51.2% basic literacy; 35.9% primary school completion; 12.9% high school or university education		 compared with post-intervention, suggesting there was a greater downward trend in the pre-intervention period Pre2 vs. Pre2, mean difference: -1.18, SE: 0.27; p<0.001 Post-intervention vs. Pre2, mean difference: -0.90, SE: 0.27, p<0.001 In one rural LTC community, there was a decreasing trend in cognitive functions but not statistically significant Depression: GDS scores remained stable through the study period In one rural LTC community, depressive symptoms significantly increased after PD and VR implementation QoL: Functional status: no evidence of worsening of self-reported functional status associated with PD or VR Results from the rural LTC community were comparable to other LTC communities
2021 Study design: cross- sectional Suitability of design: least Quality of	 Population density: mixed (urban, suburban, rural) Eligibility criteria: residents in the 12 LTC communities in Herault Department that had experienced a COVID-19 outbreak between March and May 2020 	examined: N/A Evaluation period: 12 weeks Intervention details: Infectious agent: SARS-Cov-2 NPIs evaluated: Individual: PPE	evaluated and outbreak size Outbreak size: total number of residents infected per floor of LTC communities Lab confirmed or self-report: lab confirmed Results: Narrative summary
execution: fair	Sample size: # of communities: 12 # of residents: 930 # of staff: 360 Community type: NHs or skilled nursing facilities	Additional services provided: NR Guidelines used for decision making: national and regional	isolation): the presence of a COVID unit to isolate patients who were infected was significantly associated with decreased outbreak size

Study	Setting and Population Characteristics	Intervention Characteristics	Results
	Community characteristics: public and private LTC communities with an average of 3.3 floors per community Population served: older adults Demographics for residents in intervention group: NR	Decision maker for implementing NPIs: regional Comparison group: cross- sectional comparison	
Author year: Rolland	Location: France	Intervention period	Outcomes reported: associations between NPIs
2020	Population density: NR	examined: 1.5 weeks	
Study design: cross- sectional	Eligibility criteria: all LTC	Evaluation period: 6 weeks	Infection lab confirmed or self-report: lab- confirmed
Suitability of design:	communities registered by the	Intervention details:	Pasults
least	France		Narrative summary
Quality of execution: fair	Sample size: # of facilities: 124 # of residents: NR # of staff: NR Community type: LTC communities, all included	NPIs evaluated: Individual: HH, PPE Community: testing (symptomatic testing), PD Environmental: N/A Additional services provided: NR Guidelines used for decision	 HH: availability of a satisfactory supply of hydro-alcoholic solution was associated with a higher likelihood a confirmed case; OR: 2.10, 95% CI: 0.61 to 7.24, p = 0.24 PD (cohort staff): staff compartmentalization within zones was significantly associated with a lower likelihood of having a confirmed cased of SARS-CoV-2; OR: 0.17, 95% CI: 0.04 to 0.67, p=0.01
	Community characteristics: NR	making: global and national	PD (cohort residents): resident compartmentalization within zones was
	Population served: older adults	Decision maker for implementing NPIs: regional	significantly associated with a higher likelihood of having a confirmed case; OR: 3.01, 95% CI:
	Demographics for residents in intervention group: NR	Comparison group: cross- sectional comparison	 0.51 to 18.51, p=0.22 PD (reduce interaction): reduced interaction was non-significantly associated with reduced likelihood of a confirmed case of SARS-CoV-2 Separating residents during meals: OR: 0.63, 95% CI: 0.34 to 1.15, p = 0.13 Cessation of group activities: OR: 0.89, 95% CI: 0.41 to 1.91, p = 0.77
Author year: Saegerman 2022	Location: Belgium	Intervention period examined: 6 weeks	Outcomes reported: proportion of communities with one or more infection among staff; mortality due to infection among residents

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
Study design: single	Population density: mixed	Evaluation period: immediately	
group before-after	(urban, suburban, rural)	after intervention ended	Infection lab confirmed or self-report: lab-
Suitability of design:	Eligibility criteria: all NHs in	Intervention details:	commed
least	Wallonia Belgium	Infectious agent: SARS-CoV-2	Pocults
least	Wallonia, Deigiani	Infectious agent. SARS-COV-2	Proportion of communities with 1 or more staff
Quality of execution:	Sample cize:	NPIs evaluated:	tested positive:
fair	# of communities: 530	Individual: none	Pro: 31.4%
ian	# of residents: NP	Community: testing (routine	Post: 13.4%
	# of staff: 32,000	tosting SHS when tosted	Absolute change: -21.0 pct pts
	# 01 Stall: 52,900	positivo)	Robative change: 61.0%; p.c0.0001
	Community type, NHs or skilled	Environmental, none	
	nursing facilities	Litvitonmental. none	Thore was a significant linear decrease in the
	nursing racincies	Additional convices provided: NP	properties of communities with one or more staff
	Community characteristics, ND	Additional services provided. NK	tosted positive
	Community characteristics: NR	Cuidelines used for desision	
	Bonulation convolu older adults	Buildennes used for decision	Mortality due to infection among residents:
	Population served. older adults	making. national	Compared with non-intervention areas, mortality
	Demographics for residents in	Decision maker for implementing	due to infection decreased more in the
	intervention group: NP	NPIs: regional	intervention area
	intervention group. NR	NF15. Tegional	
		Comparison group: pre-	
		intervention	
Author year:	Location: the Netherlands	Intervention period	Outcomes reported:
Schuengel 2020		examined: 14 weeks	Mental health: aggressive behaviors of
5	Population density: NR		residents, incidence report by staff on aggressive
Study design:		Evaluation period: immediately	behavior of residents
interrupted time series	Eligibility criteria: residents in	after intervention ended	
	the long-term care organization		Infection lab confirmed or self-report: N/A
Suitability of design:	Hereen Loo	Intervention details:	
moderate		Infectious agent: SARS-CoV-2	Results:
	Sample size:	-	Narrative summary
Quality of execution:	# of communities: 1,000	NPIs evaluated:	Poisson regression analysis for incidents with
fair	# of residents: 14,027	Individual: none	aggression showed a significant drop from pre-
	# of staff: NR	Community: PD, VR, ATR	COVID-19 levels to the start of the COVID-19
		Environment: none	phase. Post implementation of PD, VR, and ATR,
	Community type: LTC		the trend in aggression incidence inverted from a
	communities, all included	Additional services provided: NR	negative to a positive trend. Authors reported
			that increasing number of incidents in the
	Community characteristics: NR	Guidelines used for decision	COVID-19 phase remained within the bounds
		making: national and LTC	observed during the preceding period
		communities	

Study	Setting and Population Characteristics	Intervention Characteristics	Results
	Population served: people with disabilities Demographics for residents in intervention group: NR	Decision maker for implementing NPIs: national Comparison group: pre- intervention	
Author year: Shallcross, 2021 Study design: cross-	Location: United Kingdom Population density: mixed (urban, suburban, and rural)	Intervention period examined: NR Evaluation period: 3.5 weeks	Outcomes reported: associations between NPIs evaluated and outcomes that include incidence among residents or staff and proportion of communities with infections
sectional Suitability of design:	Eligibility criteria: LTC communities identified through a nationwide directory: excluded	Intervention details : Infectious agent: SARS-CoV-2	Infection lab confirmed or self-report: lab- confirmed
Quality of execution: good	LTC communities without test results from a nationwide testing program	NPIs evaluated: Individual: PPE Community: ATR, testing (PD when tested positive), VR	Results: Narrative results Incidence among residents or staff • ATR: no change in incidence among residents
	Sample size: # of communities: 5,126 # of residents: 160,033 # of staff: 248,594	Environmental: CD Additional services provided: NR	 (OR: 1.01, 95% CI: 1.01 to 1.01) or staff (OR: 1.00, 95% CI: 1.00 to 1.01) with each new unit of admission CD: higher frequency of cleaning common areas (building a day, up area a day) accepted with
	Community type: LTC communities, all included	Decision maker for implementing	reduced incidence among residents (OR: 0.95, 95% CI: 0.91 to 1.00) and staff (OR: 0.91; 95% CI: 0.85 to 0.97) • PD (cohorting staff with infected or uninfected
	Size of community: mean number of 32.2 residents per community	Control group: cross-sectional comparison; association between intervention vs. no intervention	residents): staff cohorting was statistically significantly associated with reduced risk for infection among residents (OR: 0.77, 95% CI: 0.73 to 0.81) and staff (OR: 0.83, 95% CI:
	Demographics for residents in	or different levels of implementation and reported outcomes	 0.77 to 0.88) PD (inability to isolate residents): difficulty in isolating residents with infection, was
	intervention group: Socioeconomic status: 17.0% of communities from areas considered most deprived based on the social deprivation index		 associated with increased incidence among residents (OR: 1.33, 95% CI: 1.28 to 1.38) and staff (OR: 1.48, 95% CI: 1.41 to 1.56) VR (duration of VR): no association between duration of VR and incidence among residents (OR: 1.02, 95% CI: 1.00 to 1.04) or staff (OR: 1.02, 95% CI: 1.00–1.03)

Study	Setting and Population Characteristics	Intervention Characteristics	Results
			 Proportions of communities with infections ATR: each new unit of admission is linked to 8% increased risk of having infections in LTC communities (OR: 1.08, 95% CI: 1.05 to 1.10) CD: higher frequency of cleaning common areas (twice a day vs once a day) associated with reduced likelihood of infections in LTC communities; OR: 0.95; 95% CI: 0.73 to 1.25 PD (cohorting staff with infected or uninfected residents): staff cohorting was statistically significantly associated with reduced likelihood of infections in LTC communities (OR: 0.39, 95% CI: 0.29 to 0.52) PD (inability to isolate residents): difficulty in isolating residents with infection, was associated with increased likelihood of having infections in LTC communities (OR: 1.84, 95% CI: 1.48 to 2.30) VR (duration of VR): no association between duration of VR and likelihood of having infections in LTC communities (OR: 0.99, 95% CI: 0.92 to 1.07)
Author year: Shimotsu 2021 Study design: before- after with concurrent comparison group Suitability of design: greatest Quality of execution: fair	Location: Pennsylvania, U.S. Population density: rural Eligibility criteria: all residents, staff, and visitors involved in the Twin Pines LTC community's daily activities Sample size: # of communities: 1 # of residents: 111 # of staff: 92 Community type: LTC communities, all included Population served: older adults,	Intervention period examined: 10 weeks Evaluation period: NR Intervention details: Infectious agent: SARS-CoV-2 NPIs evaluated: Individual: PPE, HH Community: testing (routine testing; PD and SHS when tested positive), PD, VR, ATR Environmental: CD Additional services provided: NR Guidelines used for decision	Outcomes reported: incidence among residents Infection lab confirmed or self-report: lab- confirmed Results: Narrative summary Based on data obtained, the LTC community's case number was 17 times lower than that of neighboring communities when adjusted for the community census Frequent testing and symptom surveys enabled the detection of infected staff members early enough to prevent spread within the community
	people with dementia	making: national	

Study	Setting and Population	Intervention Characteristics	Results
	Demographics for intervention group: NR	Decision maker for implementing NPIs: LTC community Comparison group: neighboring LTC communities that did not use the above bundle of NPIs	
Author year: Simoni- Wastila 2021 Study design: cross-	Location: nationwide, U.S. Population density: NR	Intervention period examined: NR Evaluation period: NR	Outcomes reported: association between NPIs evaluated and outcomes that include incidence among staff and residents, hospitalization due to infection, and mortality due to infection
Suitability of design: least	collected community-level data from 13,156 U.S. NH, representing 85% of all Medicare and Medicaid LTC communities:	Intervention details: Infectious agent: SARS-CoV-2	Infection lab confirmed or self-report: lab- confirmed
Quality of execution: fair	data taken from Nursing Home Compare	Individual: PPE Community: none Environmental: none	Narrative summary PPE availability: compared with no shortages, N95 mask shortages were associated with
	# of communities: 13,156 # of residents: NR # of staff: NR	Additional services provided: NR Guidelines used for decision making: NR	staff (OR: 1.21, 95% CI: 1.05 to 1.40), increased odds of a community having at least one hospitalization due to infection (OR: 1.26, 95% CI 1.13 to 1.40), and no change in
	Community type: NHs or skilled nursing facilities	Decision maker for implementing NPIs: NR	mortality due to infection.
	Community characteristics: NR Population served: older adults	Comparison group: cross- sectional comparison; association	
	Demographics for residents in intervention group: NR	outcomes	
Author year: Stemler 2022	Location: Germany	Intervention period examined: 8 weeks	Outcomes reported: incidence among residents; mortality due to infection
Study design: group non-randomized	(urban, suburban)	Evaluation period: NR	Infection lab confirmed or self-report: lab- confirmed
controlled trial	Eligibility criteria: NHs in the Cologne region in Germany,	Intervention details: Infectious agent: SARS-CoV-2	Results:

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
Suitability of design:	selected based on resident		Narrative summary
greatest	numbers and willingness to	NPIs evaluated:	Incidence among residents: no significant benefit
	participate in study	Individual: none	of increased testing frequency compared with the
Quality of execution:		Community: testing (routine	control communities
fair	Sample size:	voluntary testing; SHS and VR	
	# of communities	when tested positive)	Mortality due to infection: one intervention LTC
	Intervention: 2	Environmental: none	community experienced one SARS-CoV-2
	Control: 2		outbreak, with a three times higher mortality in
		Additional services provided: NR	the fourth quarter of 2020; however, all LTC
	# of residents:		communities in the study had slightly lower
	Intervention: 260	Guidelines used for decision	COVID-19-related mortality when compared with
	Control: 261	making: regional and LTC	other communities during the same period
		communities	
	# of staff:		
	Intervention: 335 (nursing staff	Decision maker for implementing	
	162)	NPIs: LTC communities	
	Control: 425 (nursing staff 207)		
		Control group: other NHs in the	
	Community type: NHs or skilled	region without frequent regular	
	nursing facilities	testing	
	Community characteristics: NR		
	Population served: older adults		
	Demographics for residents in		
	intervention group: NR		
Author year: Suwono	Location: Germany	Intervention period	Outcomes reported: incidence among residents
2022		examined: 30 weeks	and staff; hospitalization due to infection;
	Population density: mixed		mortality due to infection for residents ≥ 65
Study design: before-	(urban, suburban, rural)	Evaluation period: NR	years; incidence prevented
after with concurrent			
comparison group	Eligibility criteria: LTC	Intervention details:	Infection lab confirmed or self-report: lab-
	communities in Germany	Infectious agent: SARS-CoV-2	confirmed
Suitability of			
design: greatest	Sample size:	NPIs evaluated:	Results:
	# of communities: NR	Individual: PPE	Incidence among residents and staff:
Quality of	# of residents: NR	Community: testing (routine	Pre: 7.4%
execution: fair	# of staff: NR	testing), VR	Post: 6.2%
		Environmental: none	Absolute change: -1.2 pct pts
	Community type: LTC		Relative change: -16.0%
	communities, all included	Additional services provided: NR	

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics Community characteristics: NR Population served: older adults, people with dementia, people with disabilities Demographics for residents in intervention group: Age, mean: 85 years Sex: 71.60% female; 28.40% male	Guidelines used for decision making: national Decision maker for implementing NPIs: national Comparison group: pre- intervention	Hospitalization due to infection: Pre: 18.1% Post: 10.9% Absolute change: -7.3 pct pts Relative change: -40.1% Mortality due to infection for residents ≥65 years: Pre: 27.5% Post: 21.1% Absolute change: -6.3 pct pts Relative change: -23.0% Incidence prevented: Narrative summary Estimated using a counter factual model, there were 4,657 SARS-CoV-2 LTC community outbreaks and 34,039 infections prevented in 2nd pandemic wave when NPIs were implemented
Author year: Teesing 2021	Location: the Netherlands	Intervention period examined: 12 weeks	Outcomes reported: incidence among residents, environmental contamination
Study design: group RCT	(urban, suburban, rural)	Evaluation period: 43 weeks	Infection lab confirmed or self-report: symptomatic
Suitability of design: greatest Quality of execution: fair	Eligibility criteria: 33 NHs with 2 NH units each, recruited from different NH organizations, situated throughout the country to capture diversity, providing intense psychogeriatric and or somatic care to geriatric residents	Intervention details: Infectious agent: influenza-like illness, pneumonia, rhinovirus NPIs evaluated: Individual: HH Community: none Environmental: none	Results: Incidence of influenza-like-illness: intervention group had reduction in incidence when compared with control group Incidence Rate Ratio (IRR): 0.51, 95% CI: 0.31 to 0.82, p<0.01
	Sample size: # of communities: 33 NHs with 66 NH units Intervention: 36 NH units Control: 30 NH units # of residents: NR # of staff: NR	Additional services provided: reminders in the form of signs etc., assessment and feedback, incentive for staff, regular check-in, e-learning for staff, arts and craft projects for residents	Incidence of pneumonia: intervention group had reduction in incidence when compared with control group IRR: 0.87, 95% CI: 0.60 to 1.26, p=0.47 Environmental contamination: reduction in total positive Rhinovirus samples after intervention implementation, and multi-level regression model showed a weak association (p=0.07)

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
	Community type: NHs or skilled nursing facilities	Guidelines used for decision making: global and national	between presence of rhinovirus in the living area and HH compliance
	Community characteristics: Size of communities: intervention arm had more small and medium- sized NHs (<88 beds, 88–118 beds) while the control arm had	Decision maker for implementing NPIs: national	
	larger NHs (>118 beds)	Control group: Usual NPIs	
	Population served: older adults		
	Demographics for residents in intervention group: NR		
Author year: Telford	Location: Georgia, U.S.	Intervention period	Outcomes reported: incidence overall or among residents or staff, hospitalization due to
2020	Bonulation density: mixed	Cxumicul 4 weeks	infaction overall or among residents or staff
Study docign, simple	(urban suburban)	Evaluation pariod 4 works	metality due to infection overall or among
time series with		Evaluation period: 4 weeks	residents or staff
comparison group	Eligibility criteria: LTC	Intervention details:	
	communities in Fulton County that	Infectious agent: SARS-CoV-2	Infection lab confirmed or self-report: lab-
Suitability of design:	performed early testing for		confirmed
greatest	infection	NPIs evaluated:	
		Individual: none	Results:
Quality of execution:	Sample size:	Community: testing (routine	Incidence overall:
fair	# communities:	testing)	Intervention, change: +0.8 pct pts
	Intervention: 13	Environmental: none	Control, change: +9.1 pct pts
	Control: 15		Absolute difference: -8.2 pct pts
		Additional services provided:	
	# of residents:	collaboration between local	Incidence among residents:
	Intervention: 2 868	Fulton County Board of Health	Intervention change: +1 0 pct pts
	Control: NR	and LTC communities for	Control change: +14.4 pct pts
		implementation support	Absolute difference: -13.4 nct nts
	# of staff:	inplementation support	
	Intervention: 2,803	Guidelines used for decision	Incidence among staff:
	Control: NR	making: national	Intervention, change: +0.7 pct pts
			Control, change: +4.4 pct pts
	Community type: LTC community, all included	Decision maker for implementing NPIs: local	Absolute difference: -3.7 pct pts
			Hospitalization due to infection, overall: Intervention, post: 18.8%

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
	Population served: older adults,	Comparison group: LTC	Control, post: 16.6%
	people with dementia	communities with reactive	Absolute difference: 2.2 pct pts
		testing, performing testing 1 to 5	
	Demographics for residents in	days after the identification of	Hospitalization due to infection, residents:
	intervention group: NR	the positive case	Intervention, post: 29.4%
			Control, post: 19.9%
			Absolute difference: 9.5 pct pts
			Hospitalization due to infection, staff:
			Intervention, post: 6.7%
			Control, post: 6.1%
			Absolute difference: 0.6 pct pts
			Mortality due to infection, overall:
			Intervention post: 0.2%
			Control post: 3.0%
			Absolute difference: -2.8 pct pts
			Hospitalization due to infection residents:
			Intervention post: 0.3%
			Control post: 6.4%
			Absolute difference: 6.1 pct ptc
			Absolute difference0.1 pct pts
			Hospitalization due to infection staff:
			Intervention, post: 0,1%
			Control post 0.0%
			Abashita differences 0.1 net nte
			Absolute difference: 0.1 pct pts
Author years Tomto	Location, Wisconsin, U.S.	Intervention period	Outcomes reported. ED visits due to infection
2022	Location. Wisconsin, 0.3.	avamined 108 wooks	bespitalization due to infection, mortality due to
2025	Deputation density ND	examined. 100 weeks	infostion
Study design: group	Population density: NR	Evaluation period: immediately	
	Eligibility critoria: 44 LTC	after intervention ended	Infection lab confirmed or colf-report: lab-
KC1	communities were invited to	arter intervention ended	confirmed
Suitability of design:	participate and 20 agreed; sites	Intervention details:	comme
graptost	with insufficient resources	Intervention details.	Bosulto
greatest	with insufficient resources,	Infectious agent: influenza	Results:
Quality of constitution	property sale, or not an LIC	NDIa avaluated	Narrauve summary
Quality of execution:	community were excluded	NPIS evaluated:	ED VISIts due to Infection: 2% Increase in ER
fair		Individual: none	visits for respiratory illness when LIC
	Sample size:	Community: testing	communities used rapid testing compared with
	# of communities:	(symptomatic, rapid onsite	traditional sent out testing
	Intervention: 10	testing; early testing)	
	Control: 10	Environmental: none	

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
			Hospitalization due to infection: 11% decrease in
	# of residents: NR	Additional services provided:	hospitalization due to respiratory illness when
	# of staff: NR	researchers providing support to	LTC communities used rapid testing compared
		staff via email/calls	with traditional sent out testing
	Community type: LTC		
	communities, all included	Guidelines used for decision	Mortality due to infection: 19% decrease in
	Community characteristics		deaths due to respiratory liness when LIC
	Community characteristics:	communicies	traditional cont out testing
	size of community. Max bed	Decision maker for implementing	
	control 72 3); average number of	NPIs: ITC communities	
	residents (intervention, 63.4:		
	control, 53.4); average bed	Comparison group: TC	
	occupancy (intervention, 80.1%;	communities following regular	
	control, 75.3%)	protocols, performing testing by	
		sending out the tests; late	
	Population served: older adults	testing	
	Demographics for residents in		
	intervention group:		
	Age, mean: 83.7 years		
	Sex: 70.3% female; 29.7% male		
Author year: Tulloch	Location: United Kingdom	Intervention period	Outcomes reported: proportion of LTC
2021		examined: 6 weeks	communities with infections, proportion of
	Population density: urban		residents and staff who were infected
Study design: before-		Evaluation period: 1.5 weeks	
after with concurrent	Eligibility criteria: all LTC		Infection lab confirmed or self-report: lab-
comparison group	communities in the Liverpool City	Intervention details:	confirmed
	Council (LCC) region; 11 out of	Infectious agent: SARS-CoV-2	
Suitability of design:	the 86 communities enrolled in the		Results:
greatest	Intervention	NPIS evaluated:	Narrative summary
Quality of executions	Sample cizer	Community: tosting (SHS and VR	there was no statistical difference in the
fair	# of communities	when tested positive)	proportion of outbrooks obsorved during the
Tan	# Of confidences	Environmental: none	study period
	Control: 71		Odds ratio: 2.1: 95% CI 0.5-9.4%: $P = 0.32$
		Additional services	Intervention: 54.5%; 95% CI 23.4–83.3%
	# of residents: NR	provided: collaboration, receiving	Control: 36.6%; 95% CI 25.5–48.9%
	# of staff: NR	support from LCC	
			Proportion of residents and staff who were
	Community type: LTC	Guidelines used for decision	infected: there was no statistical difference in the
	communities, all included	making: national and regional	

Study	Setting and Population	Intervention Characteristics	Results
	Community characteristics: NR Population served: older adults Demographics for residents in intervention group: NR	Decision maker for implementing NPIs: LTC communities Comparison group: LTC communities in LCC not participating in the intervention	size of outbreak amongst residents and staff, P = 0.42 Intervention: median 0%, range 0-38.8% Control: median 0%, range: 0-64.8%
Author year: Vijh 2021	Location: Canada	Intervention period	Outcomes reported: incidence among residents and staff
Study design: interrupted Time Series Suitability of design: moderate Quality of execution: fair	Population density: mixed (urban, suburban, rural) Eligibility criteria: LTC communicates in the Vancouver Coastal Health region, Canada, with lab-confirmed COVID-19 cases Sample size: # of communities: 7 # of residents: 1,144 # of residents: 1,298 Community type: NH or skilled nursing facilities	Evaluation period: 16 weeks Intervention details: Infectious agent: SARS-CoV-2 NPIs evaluated: Individual: PPE Community: testing (routine and symptomatic testing, PD when tested positive), PD, ATR Environmental: CD Additional services provided: collaboration with local health department using a team-	Infection lab confirmed or self-report: lab- confirmed Results: Incidence among residents: there was a reduction in infection after NPIs were implemented Relative change: -16%, 95% CI: -49% to 36% Incidence among residents vs. staff: a greater reduction in infection for staff when compared with residents RR: 0.30, 95% CI: 0.10 to 0.88, p<0.05
	Community characteristics: Size of communities: 108 to 259 staff and 107 to 210 residents per community Population served: older adults Demographics for residents in intervention group: Age, mean: 87 years Sex: 67% female; 33% male	based approach, resource deployment, regular check-in Guidelines used for decision making: NR Decision maker for implementing NPIs: regional Control group: pre-intervention	
Author year: Vijh 2022	Location: Canada	Intervention period examined: NR	Outcomes reported: associations between NPI adherence and incidence overall
Study design: cross- sectional	Population density: mixed (urban, suburban, rural)	Evaluation period: 45 weeks	

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
			Infection lab confirmed or self-report: lab-
Suitability of design:	Eligibility criteria: LTC	Intervention details:	confirmed
least	communities within the company	Infectious agent: SARS-CoV-2	
	Fraser Health that were monitored		Results:
Quality of execution: good	for exposure or outbreaks; excluded 12 private-pay communities, a new community built in April 2020, and a pediatric LTC community Sample size: # of communities: 74 # of residents: NR # of staff: NR Community type: LTC communities, all included Community characteristics: Size of communities: ranges from 26 to 252 beds per community, with a median of 101 Population served: older adults Demographics for residents in intervention group: NR	NPIs evaluated: Individual: HH, PPE SHS Community: testing (symptomatic testing), PD, VR, ATR Environmental: CD Additional services provided: assessment and feedback on ways to improve NPI implementation, access to resources Guidelines used for decision making: national Decision maker for implementing NPIs: regional Comparison group: cross- sectional comparison; association between implemented NPIs and outcomes	 NPI adherence examined using assessment tool score: for every item not met in the assessment tool, there was a 22% increase in the attack rate; adjusted rate ratio: 1.2, 95% CI: 1.1 to 1.4 This is especially pronounced when NPIs in the dining areas were not met, which include both HH and CD, with an adjusted rate ratio of 6.4, 95% CI: 2.7 to 15.0
Authorization		Intervention newied	Outeenes venerted, incidence among vesidente
Vogazianos 2021	Location: Cyprus	examined: NR	and staff
	Population density: mixed		
Study design: simple time series	(urban, suburban, rural)	Evaluation period: 4 weeks	Infection lab confirmed or self-report: lab- confirmed
	Eligibility criteria: national	Intervention details:	
Suitability of design:	initiative with all residents or staff	Infectious agent: SARS-COV-2	Results:
least	in LTC communities in Cyprus		Incidence overall:
		NPIs evaluated:	Pre: 2.8%
Quality of execution:	Sample size:	Individual: PPE	Post: 1.5%
fair	# of communities: 165	Community: testing (routine	Absolute change: -1.3 pct pts
	# of residents: 3,100	testing), PD, VR	Relative change: -45.6%
	# or staff: 2,015	Environmental: CD	Tasidanas anasas pasidantas
			Pre: 3.7%

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
	Community type: LTC	Additional services	Post: 1.6%
	communities, all included	provided: resource deployment;	Absolute change: -2.1 pct pts
		assessment and feedback	Relative change: -56.8%
	Community characteristics:	through a checklist; collaboration	
		with the task force set up by	Incidence among staff:
	Size of community: ranging from	Cyprus government	Pre: 1.6%
	<10 to >50 residents per		Post: 1.4%
	community	Guidelines used for decision	Absolute change: -0.2 pct pts
		making: global	Relative change: -12.5%
	Population served: older adults,		
	people with disabilities	Decision maker for implementing	
		NPIs: national	
	Demographics for residents in		
	intervention group: NR	Comparison group: pre-	
		intervention	
Author year: Yeung	Location: Hong Kong, China	Intervention period	Outcomes reported: hospitalizations due to
2011		examined: 2 weeks	infection
	Population density: mixed		
Study design: group	(urban, rural)	Evaluation period: 26 weeks	Infection lab confirmed or self-report:
RCT			hospital records
	Eligibility criteria: private and	Intervention details:	
Suitability of design:	semi-private residential LTC	Infectious agent: pneumonia	Results:
greatest	communities in the city recruited		Intervention:
	by snowball sampling	NPIs evaluated:	Pre: 0.09%
Quality of execution:		Individual: HH	Post: 0.03%
fair	Sample size:	Community: none	Absolute change: -0.06 pct pts
	# of communities:	Environmental: none	Relative change: -66.7%
	Intervention: 3		
	Control: 3	Additional services provided:	Control:
		reminders provided as signs etc.	Pre: 0.037%
	# of residents:		Post: 0.053%
	Intervention: 255	Guidelines used for decision	Change: 0.02 pct pts
	Control: 420	making: NR	Relative change: 44.5%
	# of staff:	Decision maker for implementing	Absolute difference: -0.1 pct pts
	Intervention: 72	NPIs: LTC communities	Relative difference: -76.9%
	Control: 108		
		Comparison group: LTC	
	Community type: NHs or skilled	communities matched to	
	nursing facilities	intervention group based on	
		nursing staffing levels and levels	
	Community characteristics: NR	of resident disability; received a	

Study	Setting and Population	Intervention Characteristics	Results
	Characteristics		
	Population served: older adults	basic life support program and continued usual hand hygiene practices	
	Demographics for residents in intervention group: NR <i>Underlying health</i> conditions: 79.2% with moderate to severe disabilities; 20.8% with severe disabilities		