LUCAS NAVIGATOR

Maintain wellbeing and functional competence,
detect frailty and dependency early on!

MOBILITY IN THE ACTIVITY SPACE

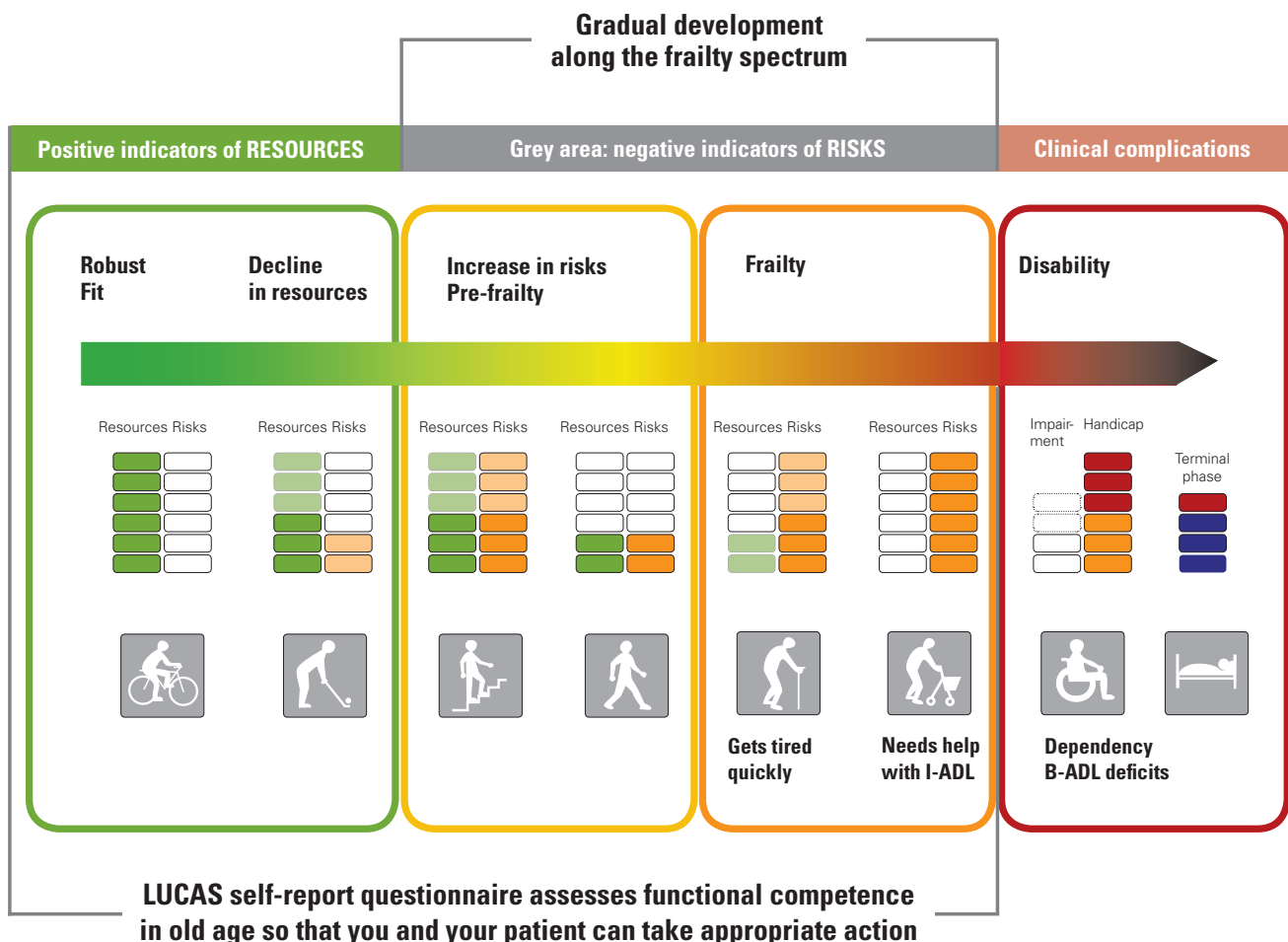| Whole town including new destinations | Whole town, familiar routes | Neighbour-hood | Own home |

LUCAS NAVIGATOR

Maintain wellbeing and functional competence, detect frailty and dependency early on!

FACT: In older patients, a gradual loss of resources and a simultaneous accumulation of risks lead to a vicious circle of avoidance behaviour and lack of exercise. The result is accelerated functional decline. When frailty syndrome is fully developed, pain and dysregulated metabolism can occur and there is a greater likelihood of serious complications such as falls, dependency and premature death.

CONSEQUENCE: Priority must be given to building up resources (promoting health and preventing disease) and to early detection and medical investigation BEFORE the hard-to-treat frailty syndrome sets in (see illustration). For further information see the last page.

The illustration below shows the geriatric continuum from robust to disabled. The transition into frailty happens gradually; the LUCAS NAVIGATOR helps in the early recognition of pre-frailty and frailty. It includes a self-report questionnaire asking 12 questions about functional resources and risks. The answers to this questionnaire yield a measure known as the LUCAS Functional Ability Index (FAI).

Figure: The geriatric continuum of functional competence – recognising a need for care

Gradual development along the frailty spectrum

Positive indicators of RESOURCES	Grey area: negative indicators of RISKS	Clinical complications

Robust Fit — **Decline in resources** — **Increase in risks Pre-frailty** — **Frailty** — **Disability**

Resources Risks

Impairment Handicap Terminal phase

Gets tired quickly — Needs help with I-ADL — Dependency B-ADL deficits

LUCAS self-report questionnaire assesses functional competence in old age so that you and your patient can take appropriate action

USING THE LUCAS NAVIGATOR IN A GP PRACTICE

STEP 1

RECOGNISING A NEED FOR CARE

The LUCAS NAVIGATOR is incorporated into practice routine, e.g. when a patient aged 60+ first makes contact, with the annual flu vaccination, at routine screening check-ups or every 2 years as a regular screening procedure for all patients aged 60+. A medical assistant or practice nurse should ask the questions on the red form relating to the need for care. This is because patients who are known to need care, those living in care homes and all patients with recognisable functional limitations or loss of ability to perform basic activities of daily living (B-ADL) are already beyond frailty. The LUCAS self-report questionnaire is no longer indicated for these patients. In their case, disability is present and rehabilitation needs to be considered as does support for informal carers (for suggestions see red sheet for in-need-of-care patient group).

STEP 2

LUCAS SELF-REPORT QUESTIONNAIRE ON FUNCTIONAL COMPETENCE IN OLD AGE

Older patients WITHOUT functional limitations or loss of ability to perform basic activities of daily living (Step 1) should be given the LUCAS self-report questionnaire on functional competence in old age. These 12 questions, which at first sight are not medical, provide wide-ranging insights into physical and mental development. The patients complete the questionnaire on their own in the waiting room. It will take them about 5 minutes (and save the practice team some time).

Practical tip: If a patient is not able to complete the questionnaire although he or she has no physical disabilities, then cognitive problems are very likely. This means neuropsychological tests should be considered (e.g. Clock-Drawing Test, Mini-Mental State Examination).

STEP 3

EVALUATION SCHEDULE (LUCAS FUNCTIONAL ABILITY INDEX)

The GP, medical assistant or practice nurse quickly evaluates the LUCAS self-report questionnaire to find out whether the patient belongs to the ROBUST, PRE-FRAIL or FRAIL patient group.

STEP 4

DECIDING WHAT TO DO

The GP then uses the result, along with the findings of medical examinations, to decide whether action is called for and what particular action should be taken. Suggestions specific to the patient groups and /or clinical pathways are given at the end of the LUCAS NAVIGATOR.

Patient information

Surname

First name

Date of birth

LUCAS NAVIGATOR

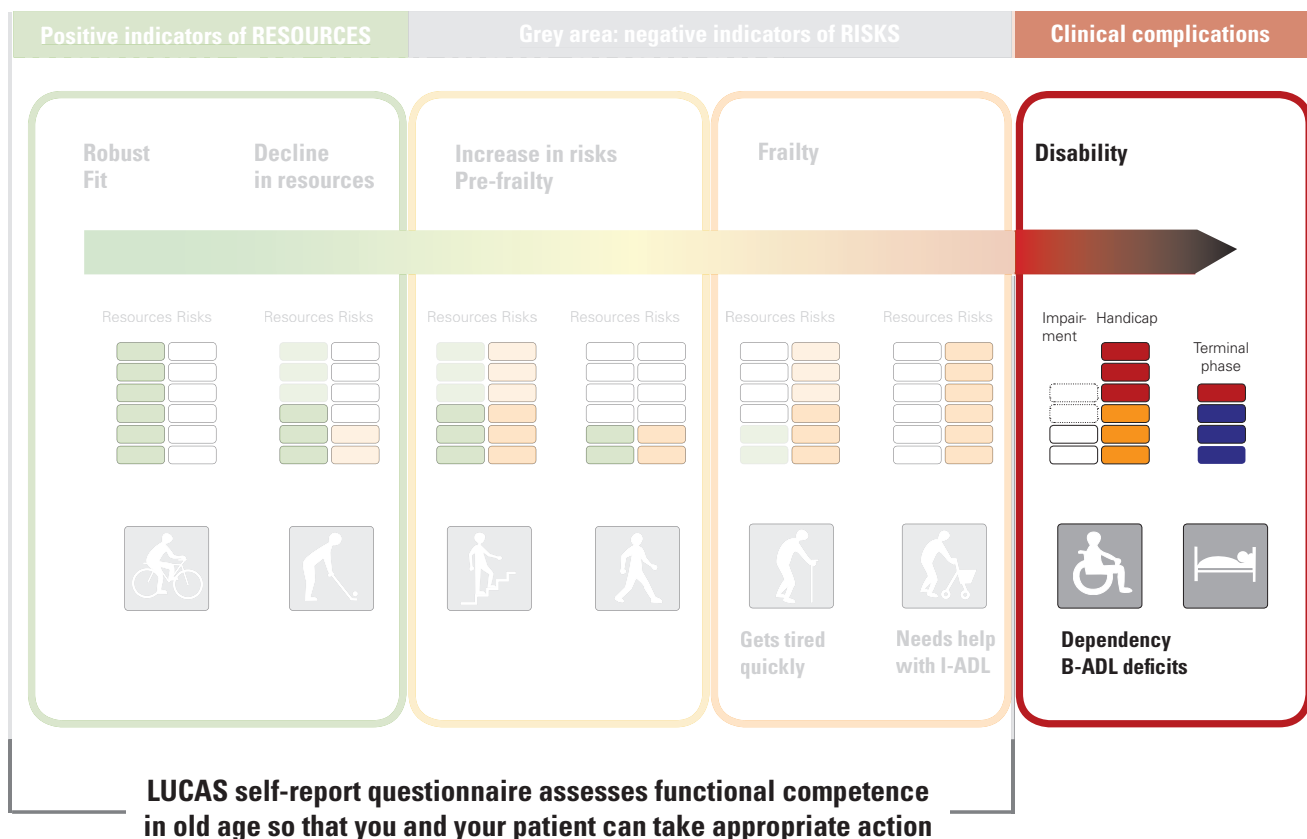**Form for assessment of need for care by the GP practice**

STEP 1

Recognising NEED FOR CARE / NEED FOR SERVICES

These 5 questions should be answered by a member of the GP practice staff after she or he has interviewed the patient

Before a patient is asked to complete the LUCAS self-report questionnaire, a staff member should establish that the person has no (beginning) need for care. A member of staff at the GP practice (or alternatively a carer) can ask the patient these 5 questions, perhaps at their first appointment, and then enter the answers on this form. If any of the answers to these 5 questions is coded with the value "1", it means the patient is in need of care and the LUCAS self-report questionnaire is NOT to be used.

Figure: The geriatric continuum of functional competence – recognising a need for care

Positive indicators of RESOURCES	Grey area: negative indicators of RISKS	Clinical complications

Robust
Fit

Decline in resources

Increase in risks
Pre-frailty

Frailty

Disability

Resources Risks — Resources Risks — Resources Risks — Resources Risks — Resources Risks — Resources Risks

Impairment Handicap

Terminal phase

Gets tired quickly

Needs help with I-ADL

**Dependency
B-ADL deficits**

LUCAS self-report questionnaire assesses functional competence in old age so that you and your patient can take appropriate action

Recognising a need for care

A member of the GP practice staff interviews the patient to find out the answers to these 5 questions

If your health system carries out an assessment of care needs at the patient's home, please answer question 1. If not, skip to question 2.

1. Has the patient been found to be in need of care after assessment by the responsible organisation in your country?

❏ 0 No

❏ 0 Not yet but an application is planned or has already been submitted or rejected

❏ 1 Yes

_____

_____

_____

2. Does the patient use an aid or device to move around

❏ 0 No

❏ 0 Yes
    ❏ 0 walking stick or
    ❏ 0 wheeled walker (rollator)
    ❏ 1 wheelchair / electric mobility scooter

Please ask the patient whether she or he is able to do the following things. Find out whether the patient is able to do them completely independently or whether she or he has difficulty, needs an aid device or needs help from another person.

3. Bathing or showering
(tick only one answer)

❏ 0 Independent without difficulty
❏ 0 Independent but with difficulty
❏ 0 Possible but only with a device
❏ 1 Possible but only with help
❏ 1 Not possible

4. Walking about 500 metres
(tick only one answer)

❏ 0 Independent without difficulty
❏ 0 Independent but with difficulty
❏ 0 Possible but only with a device
❏ 1 Possible but only with help
❏ 1 Not possible (serious impairment or wheelchair user)

5. Light shopping
(tick only one answer)

❏ 0 Independent without difficulty
❏ 0 Independent but with difficulty
❏ 0 Possible but only with a device
❏ 0 Possible but only with help
❏ 1 Not possible (serious impairment or wheelchair user)

Evaluation: Answers about need for care
Total number of all answers coded with 1 = need for care

Number ☐ ONLY WHEN THIS NUMBER IS ZERO (0), please continue with the LUCAS self-report questionnaire. Patients complete this on their own.

LUCAS Self-report questionnaire on functional competence for patients

Please answer these 12 questions and give the form back to a member of the practice staff.

1. Have you lost 5 kg (a stone) or more over the past 6 months without trying to do so?

   ❑ 0   No

   ❑ 1   Yes

2. Over the past 7 days, how often did you take a walk outside your home or garden for any reason? E.g. just for fun, to go shopping, to visit friends or for other activities.
   (tick only one answer)

   ❑ 0   on 5 - 7 days

   ❑ 0   on 3 - 4 days

   ❑ 1   on 1 - 2 days

   ❑   Never

3. During the past 12 months, have you ever fallen to the ground or floor?

   ❑ 0 No   ❑ 1   Yes

We would like to know whether your health or a change in your body has caused you to alter your habitual way of doing the following things. In the past 12 months, <u>have you changed the way</u>

4. ...you walk 1 kilometer?

   E.g. do you walk more slowly or carefully than you did a year ago? Has your posture or stride changed? Have you have started to walk with a stick or another walking aid? Do you stop to rest more often than before?

   ❑ 0   No   ❑ 1 Yes

5. ...you climb 10 steps?

   E.g. do you climb stairs more slowly or more carefully than you did a year ago? Has your posture or stride changed? Do you stop to rest more often than before? Have you been using the handrail more often in the last 12 months?

   ❑ 0   No   ❑ 1 Yes

6. ...you get into or out of a car or bus?

   E.g. do you get in or out more slowly than you did a year ago? Have you been using your hands more to support yourself? Do you pull yourself up more with your arms? Do you take longer than before? Have you started letting other people help you in the last 12 months?

   ❑ 0   No   ❑ 1 Yes

Evaluation

Total number of answers coded with 1 = total risk points

Number [   ]   out of 6 possible points for risks (orange answer boxes)

LUCAS Self-report questionnaire on functional competence for patients

Please answer these 12 questions and give the form back to a member of the practice staff.

7. Over the past 7 days, did you engage in <u>moderate sport</u> or recreational activities?

❏ 0   No

❏ 1   Yes, if yes which ones:

   ❏ strength training e.g. water gymnastics, training on exercise machines, Theraband exercises

   ❏ balance training e.g. cycling, tai chi, dancing

   ❏ stamina /endurance training e.g. walks in the country, nordic walking, jogging, swimming

8. Over the past 7 days, did you engage in <u>strenuous sport</u> or recreational activities?

❏ 0   No

❏ 1   Yes, if yes which ones:

   ❏ strength training e.g. circuit training on machines, bench pressing

   ❏ balance training e.g. competitive dance

   ❏ endurance training e.g. swimming sport, spinning

9. Do you limit your activities because you are afraid you will fall?

❏ 1   No   ❏ 0   Yes

10. Please indicate if you are able to do the following. Say whether you can do it completely independently or whether you have difficulties or need to use a device or have help from another person.

Walk 500 meters?

❏ 1   independent without difficulty

❏ 0   independent but with difficulty

❏ 0   possible but only with a device

❏ 0   possible but only with help

❏ 0   not possible (seriously impaired or wheelchair user)

11. Over the past 7 days, how often did you take a walk outside your home or garden for any reason? E.g. just for fun, to go shopping, to visit friends or for other activities

(tick only one answer)

❏ 0   Never

❏ 0   on 1 - 2 days

❏ ╲   on 3 - 4 days
   1
❏ ╱   on 5 - 7 days

12. Do you work at present, either for pay or as a volunteer?

❏ 0   No

❏ 1   Yes   ❏ part-time   ❏ full-time

Evaluation

Total number of answers coded with 1 = total resource points

Number [   ]   out of 6 possible points for resources (green answer boxes)

Evaluation schedule (LUCAS Functional Ability Index)

STEP 3

Evaluation of the LUCAS self-report questionnaire by the GP practice

Deciding the patient group – ROBUST, PREFAIL, FRAIL – by combining the patient's orange and green answer boxes

---

Evaluation: risk answer boxes
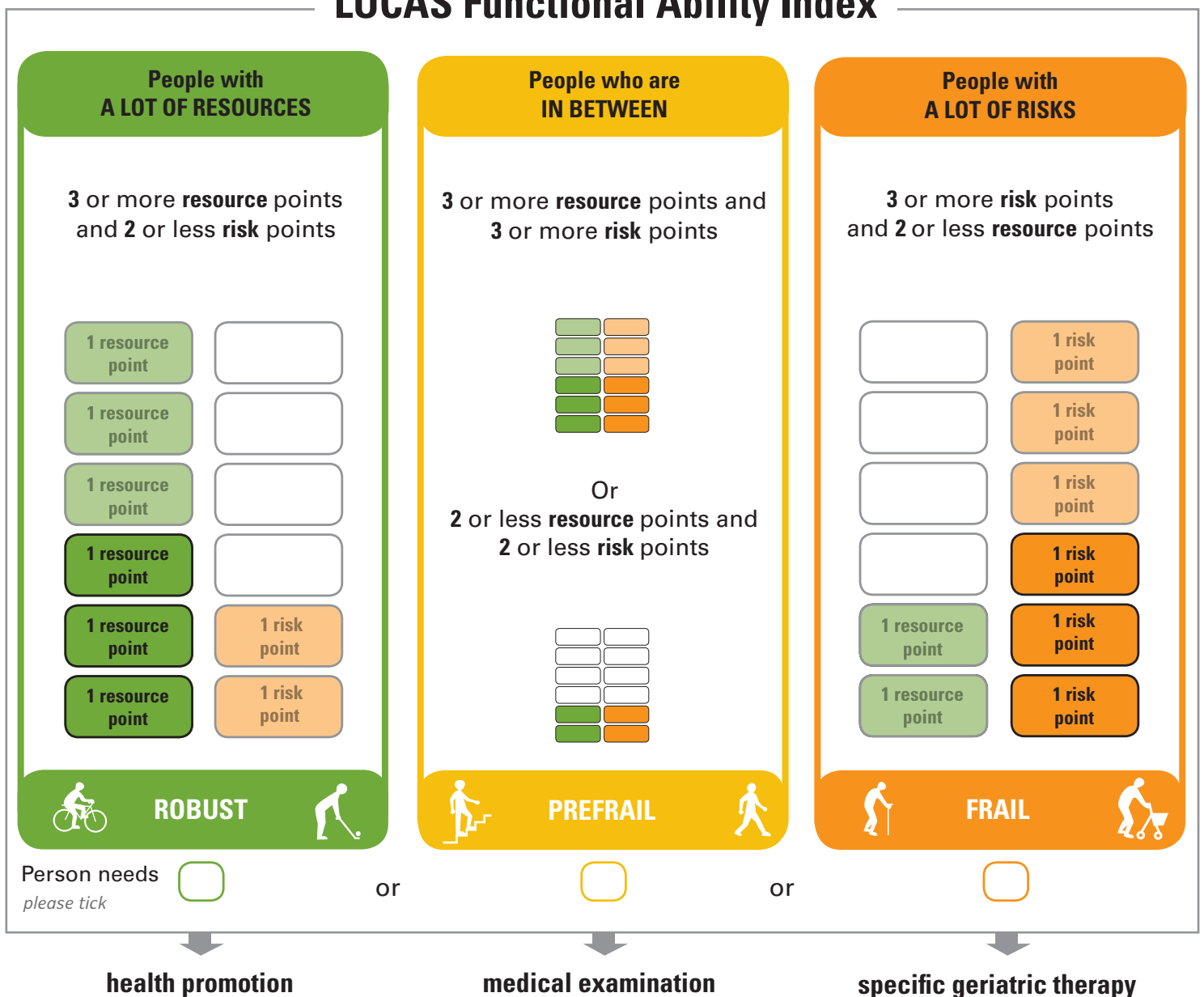
Total number of answers coded with 1 = total risk points

Number [ ] out of 6 possible points for risks (orange answer boxes)

Evaluation: resource answer boxes

Total number of answers coded with 1 = total resource points

Number [ ] out of 6 possible points for resources (green answer boxes)

LUCAS Functional Ability Index

People with **A LOT OF RESOURCES**	People who are **IN BETWEEN**	People with **A LOT OF RISKS**
3 or more **resource** points and **2** or less **risk** points	**3** or more **resource** points and **3** or more **risk** points	**3** or more **risk** points and **2** or less **resource** points

IN BETWEEN:

Or
2 or less **resource** points and **2** or less **risk** points

ROBUST	PREFRAIL	FRAIL

Person needs
please tick [ ] or [ ] or [ ]

health promotion   **medical examination**   **specific geriatric therapy**

See the next page to find specific pathways for each patient group

Deciding what to do for each patient group on the basis of responses to the LUCAS self-report questionnaire on functional competence

ROBUST patient group

Most of the population aged 60+ is ROBUST, so building up resources needs to be taken seriously. This is the most important protective factor!

WHAT TO DO TO PROMOTE HEALTH AND PREVENT DISEASE

❑ Primary prevention (vaccination, giving up smoking)

❑ Secondary prevention (cancer screening, health check-up)

❑ Recommendations to promote health (build up resources): physical exercise a varied balanced diet, social involvement and participation, education

PREFRAIL patient group

CAUTION, symptoms are still preclinical!
But what happens now will decide the future patient career.

MEDICAL EXAMINATION

❑ Find the medical triggers (it is important to consider all medical areas such as psychology, internal medicine, orthopaedics, neurology) – especially in people who previously (e.g. 2 years earlier) were robust

❑ Consultation at outpatient facility e.g. geriatric outpatient clinic, centre for geriatric medicine, falls clinic, geriatric mobility centre

❑ If basic diagnostic examination and geriatric assessment are not clear, refer to specialist (e.g. memory clinic)

FRAIL patient group

CAUTION – these are undetected HIGH RISK PATIENTS!

SPECIFIC GERIATRIC THERAPY

❑ Give priority to medical treatment of symptoms, investigation of new symptoms and sustaining factors, social support in parallel

❑ Introduce services to compensate by providing help, e.g. home care advice centres, municipal senior citizens' advice centres

❑ Home visit by geriatrician or care service may be useful (only to observe the home situation)

❑ Method of choice: rehabilitation by means of specific geriatric therapy as an in-patient or partial in-patient

IN-NEED-OF-CARE patient group (see Step 1)

Patient has functional limitations but good prognostic potential

Consider specific geriatric treatment: rehabilitation comes before care (e.g. care needs assessment), social support (e.g. aids and devices, living in serviced housing)

Patient is in the terminal or final phase of life

Consider palliative care: pain medication, specialist outpatient palliative care, end-of-life care

Further examination by GP practice (see above) if necessary and depending on the indications:

❑ no further examination necessary as situation is known and stable

❑ social advice / support indicated, e.g. municipal advice for older people, home care advice centre

❑ medical examination / prognosis, specific geriatric therapy if appropriate

❑ medical examination / prognosis, ambulatory palliative treatment on palliative ward if appropriate, hospice

❑ change status for service provision, e.g. apply for home care or higher level of care

❑ organise support, e.g. homecare service, training for informal carers or admission to care/ nursing home

Hamburg | Behörde für Gesundheit und Verbraucherschutz

LUCAS NAVIGATOR: the background

Functional competence is a central consideration in geriatric medicine [WHO Report on Ageing and Health 2015]. The LUCAS project is developing appropriate interventions to promote functional competence and maintain it for as long as possible. The aim is to delay the onset of frailty [Clegg et al. 2013, Cesari et al. 2016], a syndrome that is characterised by cumulative declines across multiple physiological systems and leads to accelerated functional deterioration. Frailty increases vulnerability to events such as falls and can ultimately lead to disability, hospitalisation and death [Fried et al. 2001, Bergman et al. 2004].

Functional competence cannot be determined from the calendar age [Dapp et al. 2014], partly because transition between the functional stages appears to be reversible ([Lang et al. 2009]. We developed the LUCAS Functional Ability Index to detect functional worsening while still at a preclinical stage and we used it in Hamburg from the year 2000 onwards to monitor the functional development of the representative LUCAS cohort [Dapp et al. 2016]. At the start the members of the cohort were all at least 60 years old, healthy, living independently and not in need of care. They were asked to complete the LUCAS self-report questionnaire. This questionnaire asks 12 questions that flag up risks and resources in equal proportions. It identifies not only risk factors for frailty (e.g. physical inactivity, exhaustion and weakness) which precede losses of function and dependency, but also functional resources (e.g. frequency and movement radius of physical activity or voluntary work). The respondents were then assigned to one of the following patient groups on the basis of their answers:

- ROBUST (many resources & few or no risks),
  see LUCAS FAI Evaluation Schedule: the green group
- postROBUST (many resources & many risks),
  see LUCAS FAI Evaluation Schedule: the yellow group
- preFRAIL (few or no risks & few or no resources),
  see LUCAS FAI Evaluation Schedule: the yellow group
- FRAIL (many risks & few or no resources),
  see LUCAS FAI Evaluation Schedule: the orange group

The LUCAS NAVIGATOR allocates all patients showing preclinical symptoms, both the postROBUST and the preFRAIL patients, to the yellow group.

Long-term analysis over a period of 8 years revealed differences between the groups that were highly statistically significant. Survival was shown to be longest in people who were initially classed as ROBUST and shortest in people initially classed as FRAIL. These results demonstrate the dynamics of frailty syndrome, loss of function, dependency and survival [Dapp et al. 2014]. Importantly, long-term analysis also indicated windows of time lasting several years in which proactive and rehabilitative measures can be effective [Dapp et al. 2018]. To help practitioners identify these opportunities and make full use of them, we have now developed the LUCAS NAVIGATOR as a special tool to be used in GP practices with patients who are anywhere on the continuum from robust to disabled [Dapp 2017, WHO 2015].

References:

Bergman H, Béland F, Karunananthan S et al. (2004): Developing a Working Framework for Understanding Frailty. Gérontologie et société 109:15–29. http://catalogue.iugm.qc.ca/GEIDEFile/Frailty. PDF?Archive=195068091324&File=Frailty_PDF (accessed 15.06.2019)

Cesari M, Prince M, Thiyagarajan JA et al. (2016): Frailty: An Emerging Public Health Priority. J Am Med Dir Assoc 17:188- 192

Clegg A, Young J, Iliffe S, et al. (2013): Frailty in elderly people. The Lancet 381:752–762

Dapp U, Minder CE, Anders J et al. (2014): Long-term prediction of changes in health status, frailty, nursing care and mortality in community-dwelling senior citizens – results from the Longitudinal Urban Cohort Ageing Study (LUCAS). BMC Geriatrics 14:141, open access: http://www.biomedcentral.com/1471-2318/14/141 (accessed 15.06.2019)

Dapp U, Dirksen-Fischer M, Rieger-Ndakorerwa G et al. (2016): Comparability of studies of epidemiological research on aging: Results from the Longitudinal Urban Cohort Ageing Study (LUCAS) and three representative Hamburg cross-sectional studies of healthy aging [German]. Bundesgesundheitsbl 59:662–678. https://link.springer.com/content/pdf/10.1007/s00103-016-2342-7.pdf (accessed 15.06.2019)

Dapp (2017): Mobilität und funktionale Kompetenz im Alter – Ergebnisse der Longitudinalen Urbanen Cohorten-Alters-Studie (LUCAS). In: von Renteln-Kruse W, Dapp U, Neumann L, Anders J, Pröfener F, Brieler P, Püschel K. Mobilität und Verkehrssicherheit im Alter. In: Kuhlmey A, von Renteln-Kruse W (Reihen-Hrsg.). Praxiswissen Gerontologie und Geriatrie kompakt. Walter de Gruyter Verlag, Berlin, pp. 46-60

Dapp U, Minder CE, Neumann L, Golgert S, Klugmann B, von Renteln-Kruse W (2018): Effectiveness of „Active health promotion in old age": Results regarding compression of morbidity by target groups in 13.8 years of observation in LUCAS [German]. Z Gerontol Geriatr 2018; 51:379-381. https://www.albertinen.de/fileadmin/Media/Medizin_Gesundheit/AH/Geriatrische_Forschungsabteilung/LUCAS/10.1007_s00391-018-1392-x.pdf (accessed 15.06.2019)

Fried LP, Tangen CM, Walston J et al. (2001): Frailty in older adults: evidence for a phenotype. Journals of gerontology series A, biological sciences and medical sciences 56 A:M146–156

Lang PO, Michel JP, Zekry D (2009): Frailty syndrome: A transitional state in a dynamic process. Gerontology 55:539-549

WHO / World Health Organization (2015): World report on Ageing and Health. Geneve https://www.who.int/ageing/events/world-report-2015-launch/en/ (accessed 15.06.2019)