

Professional relatives can initiate young ones into jobs that include disgust and boredom. The other day a nurse told one of us that bedpan cleaning for bedridden patients is important. Can we eliminate the disgust for the excretion of sick people? Laundry work was unwanted in the past years. Now technology has improved cloth cleaning with washing machines. Nurses' aides' jobs must become a blessing and a joy in our lifetime.

How can young ones be encouraged to clean the elderly and physically disabled with love?

Give a calculus-based plan for this purpose. Give differential and integration equations.

You're trying to solve a real human problem—how to transform work that many people instinctively avoid into something meaningful and even fulfilling. Calculus can't literally remove disgust, but it *can* model how attitudes change over time and what interventions accelerate that change. Think of it as a way to design and optimize a system of training, exposure, and reinforcement.

1) Model the emotional state over time

Let:

- $L(t)$ = level of *compassion/love* a caregiver feels at time t
- $D(t)$ = level of *disgust/aversion*
- $E(t)$ = exposure to caregiving tasks (practice, hours worked)
- $S(t)$ = social reinforcement (mentorship, praise, cultural respect)
- $T(t)$ = training quality (education, psychological framing)

We can model change with differential equations:

$$\frac{dL}{dt} = \alpha T(t) + \beta S(t) + \gamma E(t) - \delta D(t)$$

$$\frac{dD}{dt} = -\eta T(t) - \theta E(t) - \kappa S(t) + \mu N(t)$$

Where:

- $N(t)$ represents negative shocks (bad experiences, stigma)

- All Greek constants are positive coefficients representing sensitivity

Interpretation:

- Love increases with training, support, and exposure.
 - Disgust decreases with repeated exposure (desensitization), good training, and positive social framing.
 - Disgust can spike with negative experiences if not managed.
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2) Use integration to define lifetime impact

We want to maximize total compassion over a career:

$$\text{Maximize } \int_0^T L(t) dt$$

and minimize total disgust burden:

$$\text{Minimize } \int_0^T D(t) dt$$

This reframes the goal: not “eliminate disgust instantly,” but reduce its *area under the curve* over time.

3) Design interventions as control functions

We treat $T(t)$, $S(t)$, $E(t)$ as controllable inputs.

(a) Gradual exposure function

Instead of throwing someone into the hardest tasks:

$$E(t) = E_0(1 - e^{-\lambda t})$$

This means exposure increases slowly at first, then stabilizes—reducing shock and burnout.

(b) Training as cognitive reframing

Let training emphasize dignity, biology, and meaning:

$$T(t) = T_0 + A \sin(\omega t)$$

Periodic reinforcement (refreshers, storytelling, reflection sessions) keeps the mindset strong.

(c) Social reinforcement

Recognition programs, mentorship:

$$S(t) = S_0 + \rho \int_0^t L(\tau) d\tau$$

This creates a feedback loop: the more compassion someone shows, the more recognition they receive, which further increases compassion.

4) Key insight from the system

If you solve or simulate these equations, you'll typically find:

- Without support: $D(t)$ decays slowly or even rises → burnout
- With structured inputs: $D(t) \rightarrow 0$, $L(t) \rightarrow$ high steady state

There's a **threshold effect**:

If $\alpha T + \beta S + \gamma E > \delta D$, then compassion grows faster than disgust.

5) Translate math into real-world actions

The equations point to practical design:

1. Early normalization (reduce initial $D(0)$)

- Teach biology and caregiving dignity early (schools, family exposure)

2. Controlled first experiences

- Start with low-intensity care tasks
- Pair with experienced mentors

3. Immediate positive reinforcement

- Verbal appreciation from patients and supervisors
- Public recognition of caregiving roles

4. Meaning-making

- Connect tasks to human outcomes (comfort, dignity, relief)

5. Technology support

- Tools that reduce sensory discomfort (odor control, hygiene systems)
- Just like washing machines reduced laundry aversion

6) A more human conclusion

Disgust is partly biological—it won't disappear completely. Trying to "eliminate" it isn't realistic. But the model shows something encouraging:

You don't need to erase disgust. You need to **outgrow it with meaning, familiarity, and respect.**

When $L(t) \gg D(t)$, the same task is experienced differently—not as degrading, but as caregiving.

If you want, I can simulate this system with example parameters and show how different training strategies change outcomes over time.

