Trends in child and adolescent health, and what they mean for paediatricians and child health workers

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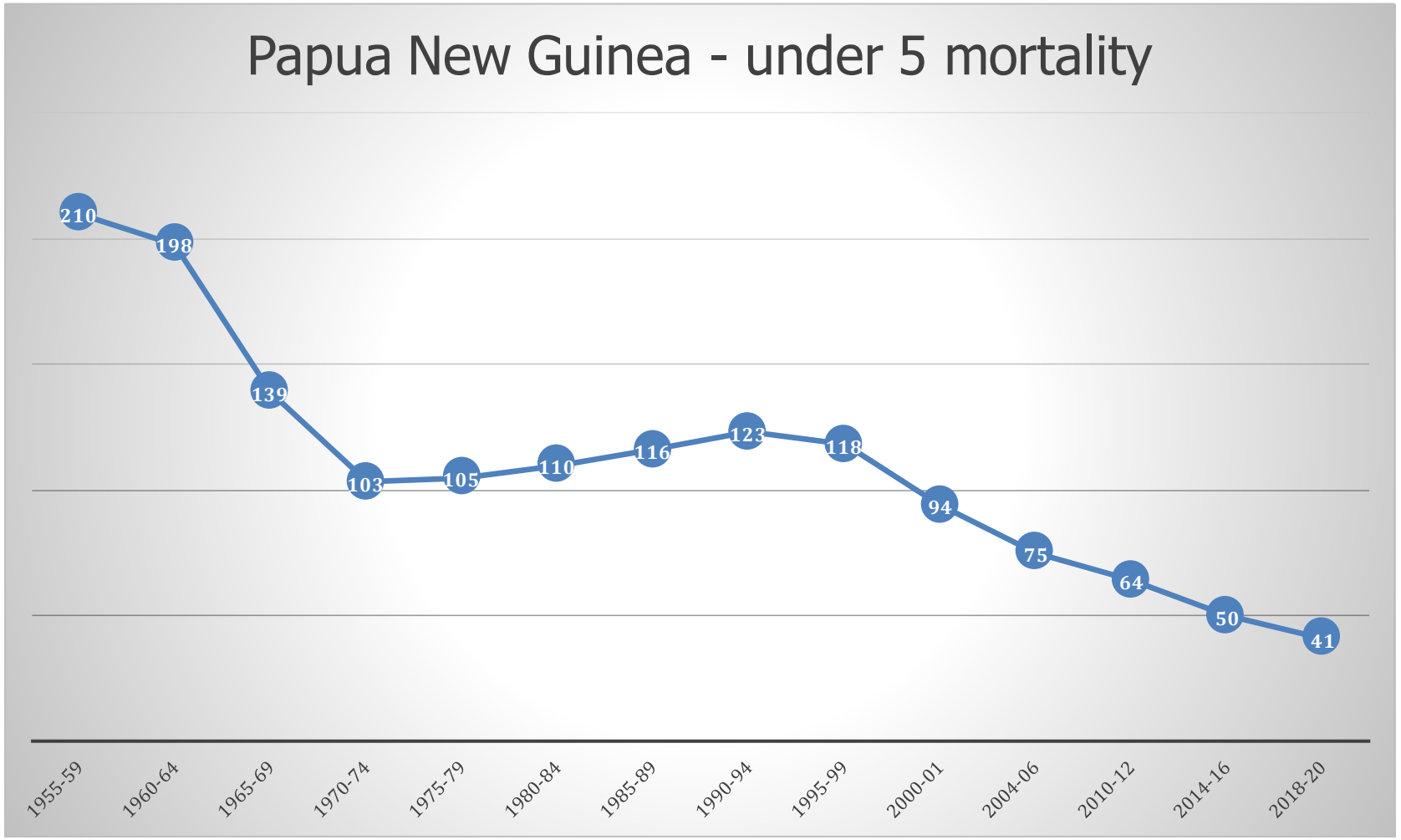
Trends

1. Reduction in infant and child mortality in all countries
   - Changing disease patterns
2. Social and environmental changes
3. Rise in pathogen resistance
4. Quality of care revolution

Trend #1: Reduction in infant and child mortality



Changing disease patterns

1. **Persistence of acute infectious diseases** (pneumonia, diarrhoea, malaria – even *these* are changing)
2. **Chronic infectious conditions** (TB and HIV) even *these* are changing
3. **Chronic non-communicable diseases** (asthma, epilepsy, cerebral palsy, cancer, cardiac disease, pre-term babies, kidney disease)
4. **Impacts of poverty, environment, social issues**: malnutrition, child neglect, domestic violence, trauma and injuries
5. **Adolescent health concerns** including mental health, self-esteem, nutrition, substance use, sexual health, social media pressures
6. **Neurodevelopment and mental health issues**

Paediatric hospital reporting – chronic NCDs

- 2021: 1235 children admitted with chronic non-communicable illnesses – asthma, chronic lung disease, rheumatic and congenital heart disease, epilepsy, cerebral palsy, and cancer
- 158 deaths
- 4% of all admissions, 10% of all paediatric deaths
- On the increase…

WHO Child Health Redesign

- To extend the focus of programmes from survival of children under 5 years to health, nutrition, and psychosocial support in the first two decades of life.
- To build children's resilience, whether they have a chronic disease, mental health issues, or going through adolescent transition where making healthy choices is important.
- To address mortality in vulnerable populations, with more emphasis on quality, coverage, and equity

UNIVERSAL INTERVENTIONS

- Promotion of health
- Prevention of illness and injuries
- Reduction of risk factors for physical and mental ill health
- Early detection of conditions requiring additional care

SITUATIONAL INTERVENTIONS

MANAGEMENT OF ILLNESS

- Early recognition and management of acute illness
- Prevention of complications
- Mitigation of chronic diseases
- Counseling and supportive care

REHABILITATION

- Quality of life improvement
- Optimization of function
- Prevention of complications

SOCIAL PROTECTION

- Social support and care
- Protection of vulnerable children, families and communities
- Building family and community resilience

Hospitals are set up to manage acute illness

Not so good at the longer-term management of chronic illness

And not so good at identifying when care is deficient

The care of children with chronic diseases

- Higher proportion of school-aged and teens
- Individualised treatment plans and goals of care
- Not just survival - optimal development and quality of life
- Adherence to medications
- Rehabilitation
- Continuity of care, and links between hospitals and primary care
- School attendance, community participation
- Parent’s understanding of the condition and how they can contribute to care
- Children's understanding of their condition and how they can help themselves
- Issues of prognoses, ethical issues, and sometimes palliative care
- Sometimes child safety and protection issues
- Transition to adult services

Asthma: written personal management plan

Efficacy of an individualized written home-management plan in the control of moderate persistent asthma: A randomized, controlled trial

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Table I. Individualized asthma home-management plan.

Name: .....
Predicted PEFR: .....
Personal best PEFR: .....

Zone	Green	Yellow	Red
Symptoms	None	Some symptoms present	Present even at rest
Disruption of activities	None	Present	Significant
Interruption of sleep	None	May be present	Significant
Morning PEFR, %	⩾..... (⩾80%)	..... (50–80%)	<..... (<50%)
Interpretation	Under control	Impaired control	Uncontrolled
Action to be initiated	Continue use of inhaled corticosteroids. Drug: ..... Dosage:	Double the dose of inhaled corticosteroids from ..... to ..... for seven days. Then reduce the dose to the initial level over the next week. If 48 hour after increasing the dose, there is no improvement, proceed to Red zone.	Start oral prednisolone.....mg tablets ..... times per day (1.5 mg/kg/d) for 5 days with ..... (β_2 agonist 100 µg/puff) 2 puffs thrice daily and contact Dr .....

Note: Grade your zone to the maximum severity even if all criteria are not present.

- 60 children with moderate persistent asthma in India
- Fewer exacerbations
- Fewer school absences
- Improved symptom score
- Similar results from a study in Trinidad
- Symptom based and PEFR

Asthma: peer education in schools

Peer-led Education for Adolescents With Asthma in Jordan: A Cluster-Randomized Controlled Trial

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www.pediatrics.org/cgi/doi/10.1542/peds.2011-0346

- 261 students from 4 schools
- Students in year 11 trained to deliver asthma education to students in year 8-10
- Educational video, 3D airway model, asthma first aid kit
- Increased knowledge of self-management
- Able to resist smoking
- Improvements in standardised asthma quality of life scores

Asthma: education *for child* and caregivers

- Uruguay, Cuba, Spain: Group education for children with asthma
  - Education of care-givers sufficient
  - Education of children with asthma reduces rates of asthma attacks and hospitalisation – frequency of asthma episodes reduced by 1.6 attacks / year
    (Cano-Garcinuno J Invest Allergol Clin Immunol 2007)
- China – school-based asthma education improves knowledge of asthma, self-efficacy, and self-management behaviours
  (Coffman JM Pediatrics 2009; 124: 729)

Asthma – access to preventative inhalers

- Brazil – municipal asthma management program – free access to MDI (albuterol + beclomethasone) and spacers, written personal plan, teaching on self-management
- Zambia
  - 2008, little recognition or treatment for asthma.
  - 2016: Education of health-care workers and public awareness campaigns. Increased access to inhalers; Zambian standard treatment guideline for paediatric asthma revised to include steroid inhalers.

Improving paediatric asthma care in Zambia

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Asthma

- 2022: WHO reviewing budesonide-formoterol as an Essential Medicine for Children, guideline to follow

Written personal management plans

- Personal details
  - Name
  - Date of birth
  - Parents names
  - Address and contact details
- Type of chronic disease
- Severity and frequency of exacerbations
- Long-term treatment / preventative medications
- Description of exacerbations
- What helps prevent exacerbations
- Medications for “sick days”
- What other treatments help?
- Emergency plan
- Phone numbers of paediatrician / GP who looks after me
- Date the plan compiled
- Anything else about me? Likes / dislikes in the way I am managed

Personal management plan

"Know me, know my epilepsy"

My name
My date of birth
My parent's / guardian's name
Address and contact details
Type of chronic illness
Severity and frequency of exacerbations
Description of exacerbations: what happens when I get sick
Long-term treatment / preventative medications
What else helps to stop me getting sick
Extra medications I take on "sick days"
What other treatments help me when I am sick?
Emergency plan
Step 1
Step 2
Step 3
Phone number of paediatrician / GP who looks after me
Anything else about me?
Likes / dislikes in the way I am looked after
This plan was compiled by (name and signature)
Date this plan was compiled

Trend #2: Social and environmental change

- Urbanisation
- The Internet and social media
- Advances in education
- Information and misinformation
- Epigenetics
- Climate change

Opportunities created by these social changes

- A life-course approach (the health of the mother strongly influences the health of her baby)
- Healthy environments, urban and community health, reducing environmental pollution
- Optimising education for children, including those with chronic illness, marginalised families, or displaced children
- The role of advocacy

Trend #3: Rise in pathogen resistance

- To antibiotics, antimalarials, anti-retroviral therapy, TB medicines.
- 30 years ago, we had chloroquine for malaria, simple antibiotics for pneumonia, standard treatment for TB, and no HIV.
- Now there are second and third-line treatments, high level multi-drug resistance in TB, HIV, neonatal sepsis, meningitis, and community acquired MRSA.
- (Rare to see paediatric chronic lung disease 25 years ago…)
- Complexity in diseases and therapeutics that did not exist before.
- Need for risk assessment, second-line therapy, systems for monitoring of resistance, systems for procurement of new therapies, continuous training in new initiatives, and restraint in the use of therapies that are prone to resistance.

Trend #4: The Quality-of-Care revolution in health

- Better outcomes, safer and more cost efficient for patient care
- Communities and patients are increasingly demanding higher quality of care
- Governments are requiring it
- A science around it
- We need to incorporate these concepts into health care worker training.

Managing new diagnostic tests

- Achieve greater diagnostic accuracy
- Enable new or specific treatments, reduce harm, provide information to families
- Know what they add to clinical diagnoses (not replace clinical skills!)
- Currently we do not make the most of the tests we have available: FBE, blood pressure measurement
- CT, ultrasound, rapid diagnostic / point of care tests, sensitivity testing

Implications for services and training

- Paediatrician
  - an expanded role: clinician, coordinator of care, skills in QI, advocacy for children, teacher, mentor, skills in epidemiology, research / data interpretation
  - Need to understand the changing epidemiology and the interdependence
- Paediatric nurses – curriculum, expanded skills, responsibilities
- Allied health: physiotherapy, and rehabilitation units
- Quality improvement programs
- **Training and CME that updates on all these changes**


DO NOT
LITTER

Need for a plan