Health and disease in people over 85

Despite disease, disability is low



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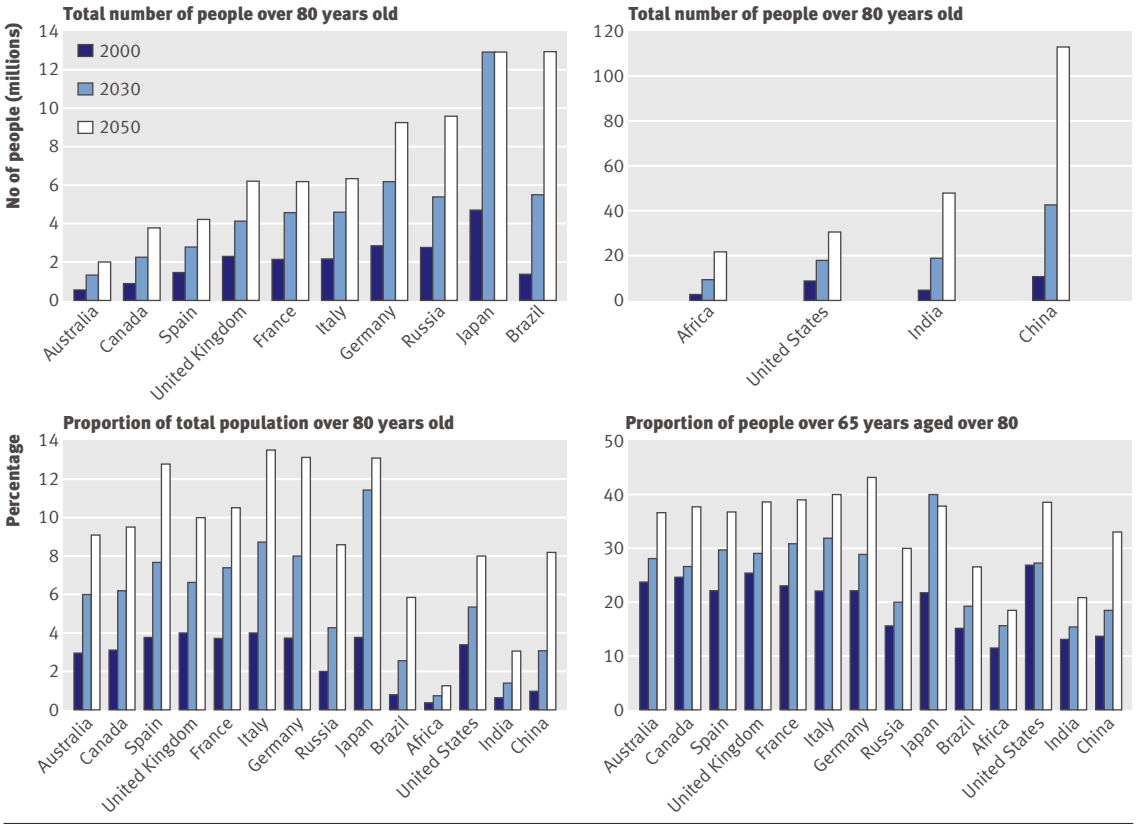
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People aged 80 years and over are the world's fastest growing age group.[1] In the United States from July 2007 to July 2008 the over 85 age group grew by 3.5%, whereas the overall population grew by 0.73%.[2] In the linked population based study, Collerton and colleagues point out that despite this unprecedented growth, relatively little is known about what is perceived by many to be a predominantly frail and disabled group.[3 4] The authors recruited 53 of 64 general practices in Newcastle upon Tyne and North Tynside to send letters of invitation to all but their terminally ill patients who were born in 1921. Sociodemographic, medical, cognitive function, and physical function data were collected from personal visits and reviews of the medical records. In all, 1042 people (72%) agreed to participate (62% women, 38% men), 10% of whom were living in non-family care settings.

The authors found that despite high prevalence and complexity of age related diseases, these people had difficulty with a median of only three of 17 basic and instrumental activities of daily living. A fifth had no difficulty at all. They also found that 40% rated their health as excellent or very good compared with other people of the same age. Only 4% thought their health was poor.

Although the prevalence and multiplicity of various diseases is substantial in this age group, age related diseases such as ischaemic heart disease, heart failure, and cerebrovascular disease occurred at relatively low rates: 37%, 13%, and 25%, respectively. These rates are consistent with figures reported by the Framingham Heart Study and the Cardiovascular Health Study.[5] Accordingly, Collerton and colleagues noted that the increased growth of the over 85 population mainly results from decreased age specific death rates at the oldest ages. These declines have been dramatic. For example, in people aged 65 and older in the US, deaths related to cardiovascular disease declined from 40% of deaths in 1980 to 30% in 2004.[6] From 1999 to 2005, annual deaths in developed countries from cardiovascular disease declined from 6063 deaths to 4778 deaths per 100 000 people over 85, a decrease of 22% in six years.[7] As mortality for middle age and older age groups continue



International data on people aged over 80 in 2000 and projections for 2030 and 2050. Derived from US Census Bureau and National Institute on Aging report[1]

See the news feature in January's *Student BMJ*, at www.student.bmj.com



to fall, and as large birth cohorts such as the "baby boomers" age (figure), the increase in the over 80 age group from 2000 to 2050 will be dramatic. Furthermore, the over 80 group will make up an increasingly greater proportion both of the total population and those over 65 years in nearly all the countries shown. By virtue of the sheer numbers involved, the projected growth in the US, China, and India is particularly striking. Even the countries of Africa will see an impressive growth in people over 80.

Decreasing the risk for premature death from causes such as cardiovascular disease also allows other age related causes of death to become more prevalent. For example, from 1999 to 2005, deaths from Alzheimer's disease in over 85 year olds in the US increased from 601 to 862 per 100 000 people—an increase of 30%.[7] The Medical Research Council's Cognitive Function and Ageing Study found that the incidence of dementia increases with age: 7.4 cases per 1000 person years at age 65-79 years to 68.5 cases per 1000 person years at age 85 and older.[8]

Does this increase in Alzheimer's disease in the fastest growing segment of our population predict a looming disaster? Yes and no. Without the development of effective preventive measures, the sheer number of people aged 85 and over will probably result in millions more people developing the disease, and governments must prepare for this—from research into prevention and treatment to provision of care.[9] A large proportion of older people do not develop Alzheimer's disease, however, and its incidence may even plateau in the nonagenarian years.[10] This muted incidence is probably the result of demographic selection, which results in the existence of select cohorts at the most extreme ages that have decreased risks for certain age related diseases and disabilities that are associated with premature death.[11] The fact that demographic selection is a potent force at the oldest ages underlies the importance when studying this population of further segregating the oldest old into even older age groups when possible.

As Collerton and colleagues point out, the presence of age related diseases and functional impairment seem to be disconnected in the over 85 age group. Terry and colleagues saw this phenomenon with centenarians, and they speculated that disability, rather than disease, is the better predictor of mortality at these older ages, and that people who cope better with their disease(s), perhaps via enhanced functional reserve or adaptive capacity, are the survivors.[12] Thus, the social and individual effect of various age related diseases may be attenuated in the over 85s. Functional status, rather than age alone, must be an important consideration in establishing goals of medical treatment in the very old. Understanding the genetic and modifiable underpinnings of how some people deal with disease better than others should be a priority.

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Topical intranasal corticosteroids for otitis media with effusion in primary care

Are ineffective, and active observation is the best policy



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Otitis media with effusion refers to an accumulation of fluid in the middle ear cavity behind an intact tympanic membrane with no signs or symptoms of an acute infection. It is one of the most common diseases of childhood. The condition can cause conductive hearing loss, which can result in impairments of speech, language, and cognitive development.[1] The effusion often resolves spontaneously within three months, and this needs to be taken into account when managing the condition.

In the linked randomised controlled trial, Williamson and colleagues assessed the effectiveness of topical intranasal corticosteroids compared with placebo in 217 children with bilateral otitis media with effusion. They found no significant difference between the two groups at one or three months.[2]

Recent guidance from the National Institute for Health and Clinical Excellence (NICE) recommends active observation for three months before intervention is considered.[3] Surgery should then be considered in children who have bilateral otitis media with effusion documented over three months and a hearing level in the better ear of 25-30 dB or worse, and also in those with persistent disease but a hearing loss less than 25-30 dB if the effects on developmental, social, or educational status are judged to be serious.

Primary care doctors, who are mainly responsible for the period of active observation, may be challenged by parents to start medical treatment. One option is to use intranasal corticosteroids, which relieve a range of allergic inflammatory symptoms. Because of the supposed association

between dysfunction of the eustachian tube and otitis media, it has been suggested that intranasal corticosteroids might suppress the release of inflammatory mediators and prevent the occurrence of signs and symptoms related to otitis media in children. However, the association between atopy and otitis media is still unclear.[4]

Current evidence on the effects of steroids on otitis media with effusion is conflicting. A systematic review showed that oral steroids had some effect in the short term (two weeks) but not in the longer term.[5] The two included studies, done in a paediatric outpatient clinic, that evaluated the effect of intranasal corticosteroids found no effect on resolution of the disease.[6 7] Another study, which was published after the review, showed resolution in 42% of children receiving intranasal corticosteroids compared with 15% in the control group (absolute risk difference 27%, 95% confidence interval 12% to 42%), but this study was performed in 63 children with otitis media with effusion who were on a waiting list for adenoidectomy or insertion of tympanostomy tubes (or both) in an academic tertiary care centre.[8] On the basis of this evidence the NICE guidance stated that there was insufficient good quality evidence for intranasal steroids and that they should not be given for otitis media with effusion.[3]

Williamson and colleagues show that treatment with topical nasal steroids is ineffective in primary care.[2] The resolution rate of about 50% in both groups is high, so it could be argued that only less severe cases were included. However, the rates are consistent with other studies performed in primary care.[9] Furthermore, the authors show that the severity of disease was comparable to that seen in studies in secondary care.

Williamson and colleagues' trial adds robust and substantial weight to the argument that children with otitis media with effusion should not be treated with intranasal steroids in primary care.[10] So what can clinicians do? Bearing in mind the potential for speech, language, and cognitive problems, otitis media with effusion should not be considered a condition that can be left untreated. Ideally, any intervention would be preventive, non-toxic and have sustained efficacy for several months at least, but no such intervention exists at present. Further research should focus on new and creative options that are based on modern insights into the pathophysiology of otitis media with effusion. In the meantime, active observation remains the best management option.

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Is primary care research a lost cause?

A new report points to a direction out of the doldrums

Six years ago Richard Horton asked the provocative question, "Is primary care research a lost cause?"[1] The result was an initial mixture of dismay and an indignant sense of betrayal among primary care researchers, then some deeper reflection. General practice research was once great, as shown by a report from the Academy of Medical Sciences,[2] which is based on a conference held last year.[3] Exemplary general practitioner researchers include Sir James McKenzie (who did primary research in cardiology, especially arrhythmias, in the late 19th century), William Pickles (who showed that hepatitis A was an infectious disease with a three week incubation period by meticulous record keeping in Wensleydale in 1930), and more recently Julian Tudor Hart (with his 1960s view of preventive care based on an epidemiological viewpoint in Welsh valleys) and John Howie (with his 1970s analysis of prescribing in acute respiratory infections).

Since then it seems that primary care research has hit the doldrums. It drifted into regions with little relevance to our clinical colleagues, who have remained so indifferent to this storm[1] that few are even aware of it. Since the middle of the last century, the research focus seems to have shifted from diseases (which are of immediate interest to practising clinicians) to processes (table).

The problem with researching illnesses in primary care is how to avoid stepping on the toes of researchers who specialise in specific illnesses and relegate them to the system seen in clinical practice—where general practitioners refer patients to specialists for the treatment of particular illnesses. This lack of self confidence within the discipline of primary care may be one reason for the change in research focus from diseases to models of care and health services research.[4]

For research to be relevant to primary care clinicians, it has to be new, important, and have the potential to change clinical practice and patient outcomes. Perhaps in

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"Universities have become imprisoned in the search for large sums of research money to survive, resulting in restructuring of research activity and the pursuit of high earning high technology activities, neither of which are helpful to the preferred agendas of academic general practice"
John Howie, emeritus professor of general practice, University of Edinburgh, in a rapid response

Evolution of areas of primary care research

Time	Topic	Purpose	Form of research	
			Basic	Applied
Earliest	Clinical	Management of individual illnesses	Yes	Yes
1960s to 1970s	Processes of primary care	Models of care		Yes
1980s	Health services research	Organisation of care		Yes
1990s	Evidence based medicine	Translating empirical research into clinical practice		Yes

the past, research has too often looked at processes such as the doctor-patient consultation, patient centredness, and holistic care. Although these form the essence of traditional general practice it is hard to show that they make much difference to patient outcomes. Besides, they were discarded as soon as primary care was forced to modernise with a workforce no longer expected (or expecting) to work all hours and the requirement for convenience and quick service.[5]

As intended, the report by the Academy of Medical Sciences is a stimulus for those in academic primary care to think about where they should direct their research efforts. The report applauds the leadership role of primary care research in introducing the notions of preventive care as a primary responsibility for clinicians (surprisingly recently[6]) and understanding what goes on when patients talk to doctors, which led to the development of patient centredness. But it warns that it might be time to remember disease research and move on. It also mentions the importance of translational research, usually known as evidence based medicine, which synthesises empirical research in such a way that clinicians can apply it to clinical practice. For example, a recent Cochrane review has shown that aerobic exercise improves functional ability for patients with rheumatoid arthritis—the opposite of what many clinicians were taught at medical school.[7]

Primary care researchers need to know what to research. They need to ensure that clinically relevant disease orientated research, perhaps done in conjunction with basic scientists,[8] is combined with other research on how to improve patient outcomes.

One last thing—even the quantity of research we produce for practising general practitioners in relation to the denominator of our numbers in clinical practice is small compared with other disciplines (for example, <2% of that produced for surgeons[9]). So we still need more research funding and support. We have a lot of catching up to do.

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Improving outcomes after surgery

Early recognition and treatment of complications, and high quality clinical databases are key



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About 230 million major surgical procedures are performed worldwide each year,[1] and morbidity and mortality after surgery vary widely. A recent study of more than four million patients in the United Kingdom found hospital mortality after surgery to be 1.9% (0.44% in elective procedures, 5.4% in emergency procedures).[2] A study of 300 000 patients by the National Surgical Quality Improvement Program (NSQIP) in the United States reported that 30 day mortality was 1.8% and that 12.2% of patients had complications.[3] This similarity in reported mortality may be misleading because "raw" (unadjusted) mortality and rates of complications depend on the population studied and the criteria used.[4] However, using an alternative definition of postoperative harm, the postoperative morbidity survey, the prevalence of clinically relevant postoperative morbidity in patients undergoing major surgery in a UK teaching hospital (hospital mortality 1.4%) was 53% on day 5 and 31% on day 8.[5]

Two recent publications highlight the long term implications of surgical complications. The presence of complications within 30 days of surgery was reported to be the strongest determinant of decreased postoperative survival.[6] Similarly, taking "sickness absence" for more than seven days after any operation has been associated with an adjusted hazard ratio for mortality of 1.9 (95% confidence interval 1.2 to 3.1), the second largest category effect after circulatory diseases.[7]

The goals of surgery are to increase the length of life (for example, tumour resection) or the quality of life

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(for example, joint replacement). However, the trauma that surgery causes to the tissues and the physiological disturbance of anaesthesia and other perioperative interventions can harm some patients. Although the pathophysiological causes of postsurgical complications remain obscure, associated factors are well described. Patient susceptibility to postoperative harm, the type and extent of the surgical insult, and the quality of perioperative care interact to determine the outcome.[8] Increasing age, specific comorbidities, and functional limitation (exercise intolerance) increase morbidity and mortality after surgery.[8] Risk is also increased in patients having emergency surgery, "major surgery" (such as intracavity surgery), or prolonged procedures, and in those who lose large amounts of blood.[8]

Although factors such as increasing number of procedures carried out by the surgeon and hospital are associated with improved outcomes, many of the differences in structures and processes that explain variability between hospitals are undefined. Significant differences exist between institutions in different countries,[9] so a substantial proportion of adverse outcomes after surgery are likely to be preventable.

A recent study exploring the relation between postsurgical complications and mortality in US hospitals raises important questions.[10] Data from the NSQIP clinical registry (2005-7) were used to stratify hospitals by risk adjusted mortality. The incidence of complications was similar for hospitals with low and high overall mortality, but mortality after a complication was twice as high in hospitals with high mortality. Differences in structures and processes were not compared between hospitals, but the authors proposed that the capacity to respond to complications quickly and effectively distinguished low mortality hospitals from others. Although it is difficult to generalise the findings beyond the US, the study is consistent with other evidence that a large proportion of harm after surgery is avoidable.

How can postoperative outcomes be improved? The goals of perioperative care should be to minimise the physiological disturbance associated with surgery and anaesthesia and to accelerate the return of normal function. "Fast track surgery" and "enhanced recovery programmes" are methods used to achieve these goals.[11] Explicit definition of the perioperative patient pathway—which may improve the recognition of abnormality and lead to timely and effective intervention—is central to enhanced recovery programmes.

Other proposals that may improve outcomes after major surgery merit further evaluation. Firstly, we need a more precise way to assess the risk of postoperative outcomes (complications and mortality). A combined approach using clinical variables, physiological testing (for example, cardiopulmonary exercise testing), and biomarkers of susceptibility to disease (including genetic markers) will probably be most effective.[7]

Secondly, patients should be triaged to receive specific intraoperative and postoperative interventions (such as level 2 (high dependency unit) and level 3 (intensive care unit) care) according to their likelihood of benefit. Alarmingly, fewer than 15% of "high risk" patients (hospital mortality 12%) were admitted to intensive care in one recent UK study.[2]

Thirdly, the intensity of care outside of level 2 and 3 environments, where nurse to patient ratios are often low, needs to be increased. Fourthly, the recognition and treatment of patients who have deviated from their planned postoperative track needs to be improved, and new technologies (such as wireless monitoring of basic physiological variables) may help in this. Although it is hoped that "track and trigger" systems (frequent recording of vital signs coupled with the use of early warning scores) will be beneficial, results to date have been disappointing.[12]

Finally, we need high quality epidemiological data about surgical risk and outcome. Although the registries of surgical societies monitor specific complications of defined procedures, high quality generic perioperative datasets to compare institutions and systems (for example, NHS and private provision) are not widely available in the UK. There is a strong case for a perioperative database of generic outcomes (including patient reported outcome measures) modelled on the highly respected case-mix programme run by the Intensive Care Audit and Research Centre (https://www.icnarc.org/). Linkage of perioperative and critical care databases with long term tracking of mortality would provide an invaluable resource for monitoring variations in outcome, and a way of tackling clinically important questions. From a patient, financial, and policy perspective, this is long overdue.

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Energy drinks for children and adolescents

Erring on the side of caution may reduce long term health risks



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Energy drinks have catapulted to popularity with young consumers. Clever marketing has been the key, with companies playing on associations with danger, power, and youth culture. Energy drinks represent a rapidly expanding segment of the beverage industry, with nearly 200 brands of energy drinks available in more than 140 countries, and 31% of 12-17 year olds have reported regular consumption of the drinks.[1]

Energy drinks are set apart from other soft drinks and sports drinks by their high caffeine content and their promotion as a way to relieve fatigue and improve performance.[2] Most energy drinks contain about 80 mg of caffeine per 250 ml can, although some contain as much as 300 mg.[3] In comparison, the same amount of tea contains around 30 mg, and percolated coffee contains 90 mg.

Caffeine is a widely used addictive drug that is generally recognised as safe. It stimulates the central and peripheral nervous system and is the only psychoactive drug legally available to children.[4] At moderate intakes, caffeine can enhance endurance performance and concentration in adults.[5 6] But when consumed in larger doses, caffeine can cause anxiety, agitation, sleeplessness, gastrointestinal problems, and arrhythmias.[7]

Concerns over the side effects of excessive caffeine consumption led to an outright ban of energy drinks in Denmark and France. However, the French government removed the ban after a recent assessment by the European Food Safety Authority found no problems with safety. Sales to children (<15 years) are banned in Sweden, with labels warning against consuming these drinks after exercise or mixing them with alcohol. In Norway, sales are restricted to pharmacies, and Argentina's senate has proposed a ban on energy drinks in nightclubs. In the United Kingdom, the stimulant drinks committee recommended that labels on energy drinks should state that they are unsuitable for children (<16 years), pregnant or lactating women, and people who are sensitive to caffeine.

In Australia and New Zealand, manufacturers are bypassing regulation through a legal loophole—if a product is called a "dietary supplement" it is not bound by caffeine limits of 80 mg per 250 ml can. However this law may soon change after concerns from government ministers, school prinicipals, and health professionals about the effects of energy drinks on children and young people.

Opinions on whether energy drinks should be banned for children differ, with some experts suggesting that problems occur only with overconsumption. However, anecdotal evidence suggests that children who regularly consume energy drinks become dependent on them,[8] and even moderate consumption at this age may be detrimental. Caffeine acts on parts of the brain that mediate reward and addiction, potentially affecting future preferences for foods or drinks paired with caffeine[9]—in this case, sugary soft drinks, which may have future implications for obesity and type 2 diabetes.

Childhood and adolescence are periods of rapid growth and the final stages of brain development,[9] a time when adequate sleep and good nutrition are especially important. Caffeine in energy drinks can cause sleep disruption, and the sugar content (up to nine teaspoons per can) may replace more nutrient dense forms of energy intake.

Although caffeine has some beneficial effects in children,[10] most children gain little benefit from habitual caffeine intake.[11] Drug Education UK has noted disruptive and hyperactive behaviour associated with energy drinks.[12] Caffeine has no nutritive value, so erring on the side of caution by banning energy drinks may be warranted.

On a local level, many schools already have bans in place. However, banning sales to minors from other outlets, such as convenience stores, may be difficult to enforce and may have implications for the sale of other caffeinated drinks, such as coffee flavoured milk drinks and cola. But not all the responsibility can be placed on stores—parents sometimes give their children energy drinks, and they may be unaware of the risks of caffeine.

For practitioners, asking about consumption of energy drinks may be a useful way to identify young people at risk of excess caffeine intake.[2] Suspected cases of caffeine toxicity should be referred to a poison control centre, where pooled data can drive national analysis and ultimately legislation on caffeinated products.

From a cautionary viewpoint, bans in schools are justified and feasible, and parents should also limit their children's access to high caffeine drinks. Further research into the long term effects of energy drinks and the suitability of restriction options is needed before widespread bans are put in place. In the meantime, health professionals and parents should promote water as the preferred drink for everyone.

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