

Health Policy

in Non-communicable disease

Diabetes

- **Burden e trend delle malattie non trasmissibili**
- **An overview of strategies and elements to address non-communicable disease prevention and chronic disease at local level**
- **Non Communicable Diseases Foresight in the European Region: THE FRESHER PROJECT**
(FoResight and Modelling for European Health policy and Regulation)
- **Invecchiamento e cronicità: un problema per il futuro della sanità e dell'assistenza**

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Non-communicable diseases (NCDs) — including cancer, cardiovascular disease, chronic respiratory diseases, diabetes, and mental health and neurological disorders (such as Alzheimer's disease) — are a major challenge to health and human development in the 21st century. NCDs are the leading cause of death and disability worldwide, accounting for 34.5 million of the 52.8 million deaths in 2010 (65%). With 23 million of these deaths (80%) occurring in the poorest countries, NCDs exact a heavy and growing toll on physical health, economic security, and human development.

Driven in large part by widespread exposure to four common modifiable risk factors across the lifecourse — tobacco use, physical inactivity, unhealthy diet, and the harmful use of alcohol

— NCDs perpetuate and entrench poverty within households and communities.

This HEALTH POLICY IN NON-COMMUNICABLE provides an analysis of the political, social, economic, epidemiological and clinical impact of the NCDs in the National and Local Health System.

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Burden e trend delle malattie non trasmissibili

di S. Capizzi, C. de Waure, F. Di Nardo, S. Boccia

ABSTRACT

Le malattie non trasmissibili (Non Communicable Disease - NCD) sono la più importante causa di mortalità. Più del 60% di tutti i decessi sono, infatti, imputabili alle NCD (in particolar modo alle malattie cardiovascolari, al diabete, al cancro e alle malattie respiratorie croniche) e quasi l'80% di essi si verifica in paesi a basso o medio reddito, dove la proporzione di morti da NCD tra gli under-60 è più elevata. La prevalenza delle NCDs probabilmente aumenterà in futuro. Gran parte delle NCD è prevenibile grazie all'eliminazione dei principali fattori di rischio comportamentali (fumo di tabacco, alcol, alimentazione scorretta e sedentarietà) e metabolici (valori non fisiologici di colesterolo e pressione arteriosa, sovrappeso e obesità). L'elevata prevalenza di NCD ha un impatto molto negativo sullo sviluppo sociale ed economico dal momento che le stesse riducono la produttività e determinano povertà. Secondo le simulazioni macroeconomiche, le NCD saranno responsabili di una perdita di produttività globale pari a 47 trilioni di dollari statunitensi nei prossimi vent'anni. Le patologie cardiovascolari rappresentano il principale responsabile di questa perdita. Esistono già, in molti paesi, linee guida per la riduzione dei fattori di rischio e la prevenzione delle NCD. Gli interventi che permettono di combinare più approcci di efficacia scientificamente provata sembrano essere i più promettenti.

Definizione di Malattie Non Trasmissibili (Non Communicable Disease - NCD)

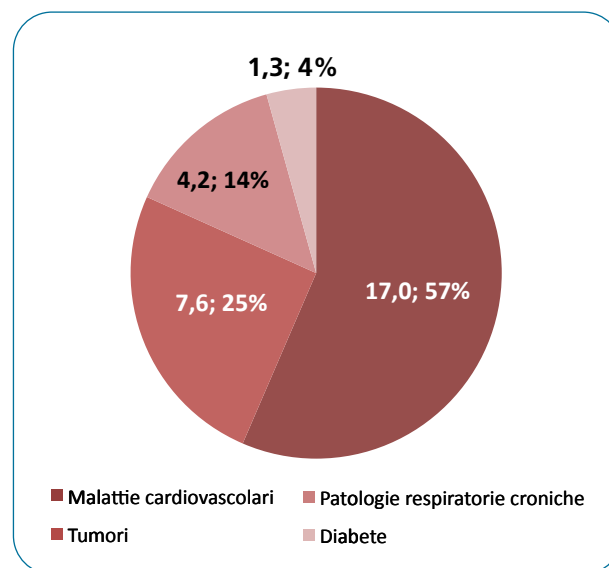
Le NCD sono definite come malattie di lunga durata e, generalmente, a lenta progressione. Sono la principale causa di morte nei soggetti adulti di tutto il mondo [1]. In termini di mortalità e morbosità, tra le NCD pesano maggiormente le malattie cardiovascolari, il diabete, il cancro e le patologie respiratorie croniche [2].

Impatto globale e trend: mortalità e morbosità

Le NCD sono la principale causa di morte al mondo, essendo responsabili di un numero di decessi superiori rispetto a quello da tutte le altre cause messe insieme. Infatti, oltre il 60% dei decessi a livello globale è attualmente imputabile a esse [3].

Nel 2008 le NCD hanno provocato 36 milioni di morti, la cui distribuzione per causa è descritta in figura 1.

FIGURA 1. Morti annuali da NCD per causa (in milioni e in percentuale sulle morti da NCD)

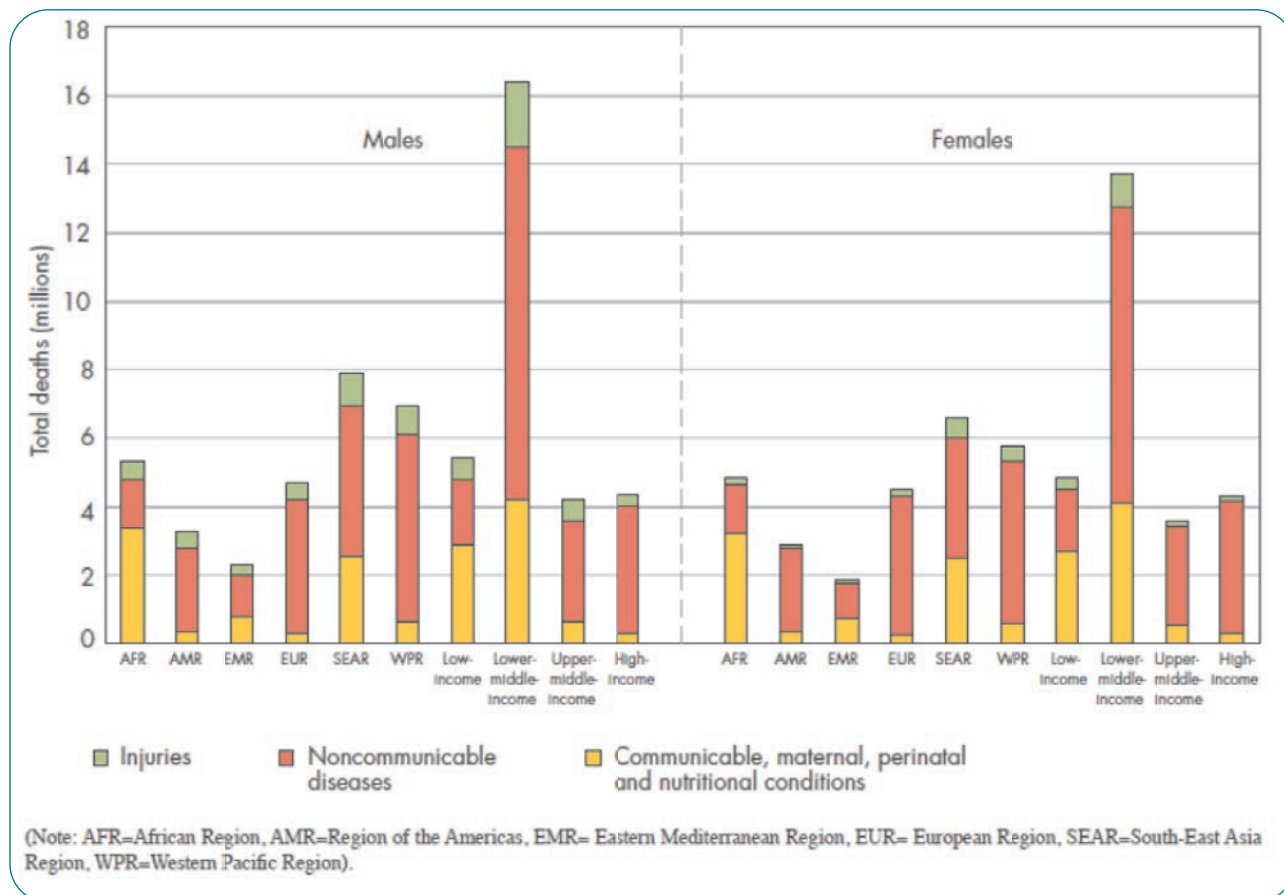


I decessi imputabili a NCD sono in aumento a causa dell'invecchiamento della popolazione e sono previsti 52 milioni per il 2030. Contrariamente all'opinione diffusa, quasi l'80% delle morti da NCD si verificano in paesi a basso o medio reddito [4]. Le NCD sono, infatti, la più frequente

causa di morte nella maggior parte dei paesi delle Americhe, del Mediterraneo Orientale, dell'Europa, del Sud-Est Asiatico e del Pacifico Occidentale. In Africa si registrano ancora più morti da malattie infettive che da NCD (Figura 2) [4]. Tut-

tavia, anche in Africa esse stanno rapidamente aumentando: è, infatti, previsto che entro il 2030 queste surclasseranno, quali più comune causa di morte, le malattie infettive, le malattie congenite, le malattie perinatali e la sotto nutrizione [5].

FIGURA 2. Morti totali per gruppi di causa per Regione OMS, reddito e genere.
Le NCD sono rappresentate in rosso



Da: World Health Organization. Global status report on non-communicable diseases 2010. Geneva: World Health Organization. Disponibile online: <http://www.who.int>

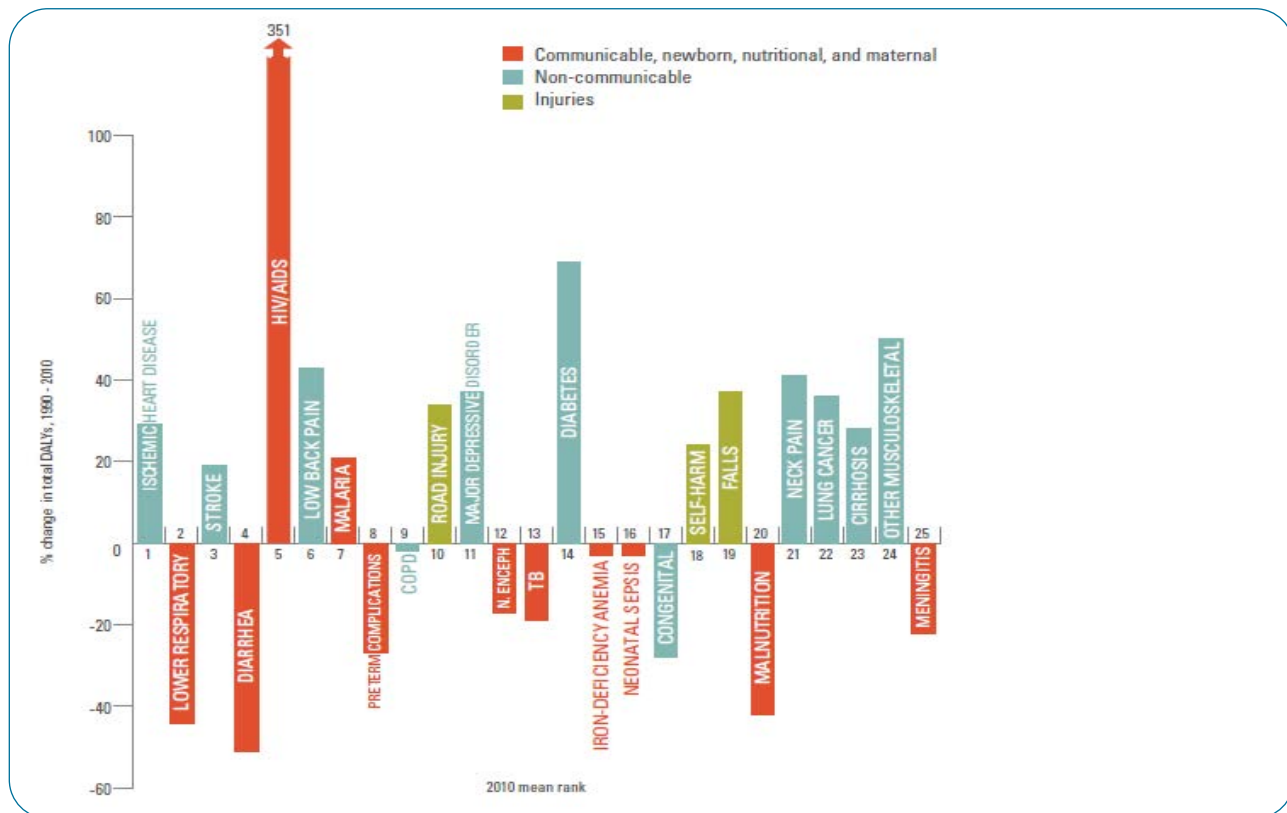
I paesi a basso e medio reddito presentano la più elevata proporzione di decessi da NCD sotto i 60 anni d'età. Le cosiddette morti premature da NCD sono pari al 41% e al 28% del totale nei paesi a basso e medio-basso reddito rispettivamente mentre risultano il 13% e il 25% del totale rispettivamente nei paesi ad alto e a medio-alto reddito [6]. Per quanto riguarda i trend, dal 1990 al 2010 è stata osservata un'importante diminuzione dei tassi standardizzati per età dei decessi da malattie cardiovascolari, ma anche da malattie respiratorie e cancro (rispettivamente -21,2%, -41,9% e -13,8%). Ciononostante, abbiamo assistito anche a un aumento del numero assoluto di decessi da malattie cardiovascolari e tumori. Allo stesso modo, i morti da diabete sono aumentati, così

come i tassi standardizzati per età dei decessi per diabete [7].

In generale, le morti da NCD sono diminuite da 645,9 per 100.000 a 520,4 per 100.000 nel ventennio 1990-2010 [8].

Al fine di gestire al meglio l'epidemia di NCD, sono importanti non solo le informazioni sul numero di decessi, ma anche i dati di morbosità. Dati attendibili sono purtroppo indisponibili in molti paesi. Tuttavia, è ben noto che, con l'invecchiamento delle popolazioni, le NCD sono diventate sempre meno causa di morte e sempre più causa di disabilità (Figura 3) [8]. Globalmente, le NCD sono responsabili di oltre il 50% di tutti i DALY (gli anni di vita aggiustati per disabilità, o Disease Adjusted Life Years, dati dalla somma

FIGURA 3. Variazioni nelle cause di DALY dal 1990 al 2010



Da: Institute for Health Metrics and Evaluation. *The Global Burden of Disease: Generating Evidence, Guiding Policy*. Seattle, WA: IHME, 2013

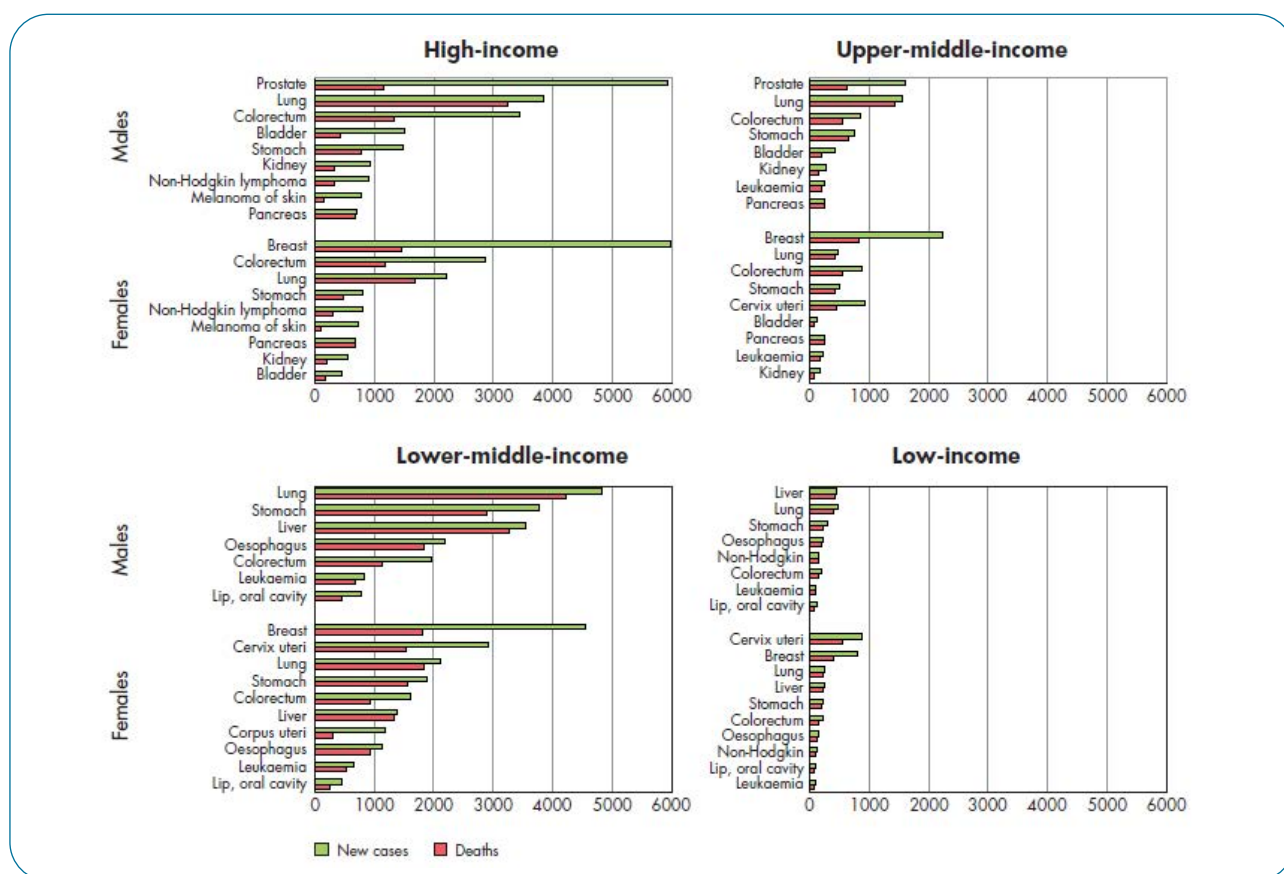
degli anni di vita persi e gli anni di vita vissuti con malattia). Questa percentuale sale all'80% in Australia, Giappone e nei paesi più ricchi dell'Europa Occidentale e del Nord America [8].

I dati disponibili più completi e attendibili riguardano diabete e cancro di cui di seguito sintetizziamo il quadro epidemiologico. L'incidenza dei tumori maligni è stata di 12,7 milioni di nuovi casi nel 2008 [9], ma si prevede un incremento dell'incidenza, maggiore nei paesi a basso (+82%) e a medio reddito (+70%) rispetto a quelli a reddito medio alto (+58%) e alto (+40%) [10]. Per il 2030, se l'esposizione ai fattori di rischio noti non cambierà, sono previsti 21,4 milioni di nuovi casi, quasi due terzi dei quali saranno diagnosti-

cati nei paesi a basso e medio reddito [10].

Nei paesi più ricchi i tumori più comuni sono il carcinoma prostatico nei maschi e il carcinoma della mammella nelle donne. Per entrambi i sessi, il tumore ai polmoni e il cancro del colon-retto seguono per frequenza. Nei paesi a basso reddito sono più comuni, oltre al tumore al seno e al cancro polmonare, quelli a eziologia infettiva: i tumori della cervice uterina, dello stomaco e del fegato. Nei paesi a reddito medio-basso i più frequenti sono i tumori polmonari, i tumori allo stomaco e i tumori del fegato nei maschi, il carcinoma mammario, il cancro della cervice ed il cancro polmonare nelle donne (Figura 4) [4].

Figura 4. Numero annuale di nuovi casi e morti per cancro, per reddito e genere. Dieci tumori più frequenti nel 2008.



Da: World Health Organization. Global status report on non-communicable diseases 2010. Geneva: World Health Organization. Disponibile online: <http://www.who.int>

Per quanto riguarda invece il diabete, la prevalenza a livello mondiale si attesta sul 10% tra gli adulti sopra i 25 anni di età. La prevalenza del diabete è più elevata nella regione del Mediterraneo Orientale e nelle Americhe (11% per entrambi i sessi) e più bassa nella regione del Pacifico Occidentale (9% per entrambi i sessi). Questi dati sono soggetti a variazioni molto limitate. Per i paesi a reddito più basso la prevalenza è inferiore (8% per entrambi i sessi), mentre i paesi a reddito medio-alto mostrano una prevalenza maggiore (10% per entrambi i sessi). Tra i soggetti diabetici il rischio di infarto è raddoppiato [11]. Il diabete è inoltre la principale causa di insufficienza renale in molte popolazioni, a prescindere dal reddito [4]. Nei paesi sviluppati, le amputazioni agli arti inferiori sono almeno 10 volte più frequenti tra i diabetici rispetto ai soggetti non diabetici e più della metà di tutte le amputazioni degli arti inferiori non legate a traumi sono dovute al diabete [12]. Infine, il diabete è una delle principali cause di cecità e disturbi della vista nei paesi sviluppati [13]. I soggetti affetti da diabete impiegano pertanto risorse del sistema sanitario in entità due/tre volte superiore rispetto a chi non ne soffre [14].

Fattori di rischio

Per quanto riguarda l'eziopatogenesi, le NCD sono dovute a una complessa interazione tra numerosi fattori che vengono di seguito elencati.

Fattori di rischio comportamentali

Gran parte delle NCD sono prevenibili attraverso il controllo di cinque fattori di rischio comportamentali:

1. **Fumo di tabacco:** quasi 6 milioni di persone muoiono ogni anno a causa del fumo di tabacco, compresi i cosiddetti "fumatori passivi" [15]. Entro il 2020 questo numero crescerà a 7,5 milioni e al fumo saranno quindi imputabili il 10% di tutti i decessi [16]. Si stima che il fumo oggi provochi il 71% di tutti i tumori polmonari, il 42% di tutte le malattie respiratorie croniche e quasi il 10% di tutte le malattie cardiovascolari [17]. La prevalenza di fumatori è generalmente più elevata nei paesi a reddito medio-alto rispetto ai paesi a reddito medio-basso [4].
2. **Sedentarietà:** circa 3,2 milioni di persone muoiono ogni anno a causa della sedentarietà [18]. Le persone che non praticano a sufficienza attività fisica hanno un rischio di morire aumen-

tato del 20-30%. L'esercizio regolare abbatte il rischio cardiovascolare e il rischio di sviluppare ipertensione, diabete, carcinoma mammario, cancro del colon-retto e depressione [19]. La sedentarietà è tipica dei paesi più ricchi, ma oggi è sempre più spesso osservata anche in paesi a medio reddito, specialmente tra le donne [4].

3. **Alcol:** circa 2,3 milioni di persone muoiono ogni anno a causa dell'alcol. Più della metà di questi decessi sono provocati da NCD (cancro e cirrosi epatica) [20]. Il consumo pro-capite è generalmente più elevato nei paesi ad alto reddito [4].
4. **Dieta scorretta:** circa 16 milioni di DALY e 1,7 milioni di decessi sono imputabili ogni anno ad una scarsa assunzione di frutta e verdure. Un maggior consumo ridurrebbe il rischio cardiovascolare e il rischio di cancro dello stomaco e del colon-retto [21]. Molti paesi fanno un uso eccessivo di sale nella dieta, aumentando il rischio di ipertensione e malattie cardiovascolari [22-23]. Un consumo eccessivo di grassi (specialmente se saturi) espone a un maggior rischio di malattia cardiaca [24]. Diete scorrette si vedono sempre più frequentemente nei paesi e nei contesti più poveri, dove il consumo di grassi è rapidamente aumentato a partire dagli anni '80 [4].
5. **Infezioni:** almeno 2 milioni di tumori (il 18% di tutti i tumori) sono provocati da malattie infettive croniche da papillomavirus, virus dell'epatite B, virus dell'epatite C ed *Helicobacter pylori*. Si tratta di infezioni ampiamente prevenibili o curabili [4].

Fattori di rischio metabolici

1. **Aumentata pressione arteriosa:** è uno dei fattori di rischio maggiori per malattia cardiovascolare e si stima che provochi ogni anno 7,5 milioni di morti, ossia il 12,8% di tutti i decessi [21]. La prevalenza dell'ipertensione arteriosa è simile in tutto il mondo, sebbene inferiore nei paesi ad alto reddito [4].
2. **Sovrappeso e obesità:** almeno 2,8 milioni di persone muoiono ogni anno a causa di sovrappeso e obesità. Un aumento dell'indice di massa corporea (Body Mass Index - BMI) corrisponde ad un incrementato rischio di malattia cardiovascolare, diabete, ictus e di alcuni tumori. Un tempo era considerato un problema dei paesi ricchi, ma il sovrappeso è oggi molto comune anche nei contesti urbani dei paesi a basso e medio reddito. Nel 2011 più di 40 milioni di bambini sotto i 5 anni d'età era sovrappeso (e più di 30 milioni di questi vivevano in paesi in via di sviluppo) [25].

3. **Aumentato colesterolo:** un alto valore di colesterolo nel sangue si associa a un elevato rischio di malattia cardiaca e ictus e provoca ogni anno 2,6 milioni di morti, soprattutto in paesi ad alto reddito [4].

Determinanti sociali

Molti studi suggeriscono che le NCD siano associate anche a determinanti sociali (specialmente il livello di istruzione, il reddito e l'accesso alle cure sanitarie). Infatti, i soggetti più vulnerabili o socialmente svantaggiati si ammalano e muoiono prima rispetto agli individui di più elevata estrazione sociale, specialmente a causa del più alto rischio di essere esposti a sostanze dannose, come il fumo di tabacco o cibi poco sani, e alla ridotta possibilità di accedere all'assistenza sanitaria. Inoltre, dato che nella maggior parte dei paesi poveri sono i pazienti a dover sostenere i costi dell'assistenza sanitaria, le NCD rappresentano un'importante voce di spesa nei budget delle famiglie più povere. In tali contesti le spese per la gestione delle NCD possono rapidamente prosciugare le risorse economiche ed essere loro stesse causa di povertà. Si stima che ogni anno 100 milioni di persone diventino povere a causa delle spese sostenute per l'assistenza sanitaria [26].

Impatto economico

Le NCD rappresentano una minaccia seria non solo per la salute, ma anche per la crescita economica. La metà dei decessi provocati dalle NCD colpisce, infatti, individui in età produttiva [2]. In tutto il mondo le NCD hanno ridotto la qualità e la quantità della forza lavoro e del capitale umano [27]. Negli Stati Uniti i maschi con malattie croniche lavorano per un tempo inferiore del 6,1% rispetto alla popolazione sana, mentre nelle donne si è osservata una riduzione del 3,9% delle ore lavorative [28]. Uno stile di vita sano ha ridotto, sempre negli Stati Uniti, si stima che i costi delle cure del 49% tra i maschi di età pari o superiore ai 40 anni. L'obesità ha invece aumentato tali costi del 36%, il fumo del 21% e il consumo eccessivo di bevande alcoliche del 10% [27]. Per i prossimi 20 anni si stima che le NCD costeranno oltre 47 trilioni di dollari americani, rappresentando il 75% di tutto il PIL mondiale del 2010, e spingendo molte famiglie oltre la soglia di povertà [2].

In particolare, i costi mondiali delle malattie cardiovascolari ammontavano, nel 2010, a 863 miliardi di dollari (in media, 125 dollari a persona). Questa quota è destinata a salire a 1.044 miliardi di dollari entro il 2030, un aumento del 22%. In tutto, i costi delle malattie cardiovascolari potrebbero ammontare a 20 trilioni di dollari nei pros-

simi 20 anni (in media, circa 3.000 dollari a persona). Oggi, il 55% delle perdite economiche da malattie cardiovascolari sono imputabili alle spese dirette per l'assistenza sanitaria, mentre il restante 45% è dovuto alla perdita di produttività per morte prematura o disabilità [2].

Nel 2010 i costi del diabete ammontavano a 500 miliardi di dollari, e saliranno a 745 miliardi entro il 2030, con i paesi in via di sviluppo che ne pagheranno la quota maggiore [2]. Si stima che i 13,3 milioni di nuovi tumori del 2010 siano costati alla società 290 miliardi di dollari. I costi sanitari hanno contribuito al 53% del totale, mentre i costi non medici e la perdita di guadagno hanno ammontato rispettivamente al 23% e 24% del totale. Nel 2030 i tumori costeranno alla società 458 miliardi di dollari [2].

Infine, i costi della broncopneumopatia cronica ostruttiva (BPCO) aumenteranno dagli attuali 2,1 trilioni di dollari ai 4,8 trilioni entro il 2030. Circa metà di questa somma sarà a carico dei paesi in via di sviluppo [2].

D'altro canto è sempre più universalmente riconosciuto che i programmi di prevenzione potranno evitare molte di queste perdite a prezzi contenuti: la promozione di stili di vita sani (aumento dell'attività fisica, cessazione del fumo di tabacco e del consumo eccessivo di alcol, adozione di una dieta sana e bilanciata) dovrebbe costare, nei paesi a basso e medio reddito, circa 2 miliardi di dollari americani per anno, cioè meno di 40 centesimi di dollaro a persona [2].

Riduzione dei rischi e prevenzione delle NCD: efficacia degli interventi individuali e di popolazione

Gli interventi di popolazione mirati a prevenire le NCD sono generalmente fattibili e costo-efficaci [29]. Inoltre, gli interventi a basso costo per controllare i fattori di rischio per NCD sono applicabili e implementabili ovunque nel mondo. Tra gli interventi costo-efficaci ce ne sono alcuni considerati "autentici affari". Si tratta di interventi che andrebbero immediatamente pianificati per produrre risultati concreti in tempi brevi [4]. Tra questi citiamo:

- proteggere le persone dal fumo di tabacco e vietare il fumo nei luoghi pubblici;
- avvertire sui rischi del fumo di tabacco;
- vietare ogni forma di promozione del fumo;
- aumentare le tasse sul fumo;
- limitare l'acquisto al dettaglio di bevande alcoliche;
- ostacolare ogni forma di promozione del consumo di bevande alcoliche;
- aumentare le tasse sull'alcol;
- ridurre la quantità di sale nei cibi e nella dieta;

- sostituire nei cibi i grassi saturi con quelli poli-insaturi;

- promuovere attività fisica e dieta sana.

Oltre a questi interventi, molti altri sono considerati costo-efficaci e a basso costo:

- trattamento della dipendenza da fumo di sigaretta;

- promuovere l'allattamento al seno e l'alimentazione complementare nella prima infanzia;

- approvare leggi che vietino di guidare dopo l'assunzione di bevande alcoliche;

- ostacolare ogni forma di promozione del consumo di alimenti ad alto contenuto di grassi, carboidrati o sale, specialmente tra i bambini;

- aumentare le tasse sul cibo-spazzatura e concedere sussidi per l'acquisto di alimenti più sani.

Ci sono inoltre forti evidenze a sostegno dei seguenti interventi:

- promuovere un'alimentazione sana a scuola;

- promuovere un'alimentazione sana (anche tramite colloqui individuali) presso le strutture sanitarie;

- creare e divulgare linee guida nazionali sull'attività fisica;

- implementare l'attività fisica a scuola;

- promuovere l'attività fisica e una dieta sana nei posti di lavoro;

- promuovere l'attività fisica e una dieta sana in comunità;

- ridisegnare gli ambienti di lavoro e di vita in modo da promuovere l'attività fisica.

Altri interventi sulle popolazioni si concentrano sulla prevenzione dei tumori. La vaccinazione contro l'epatite B, una delle principali cause di epatocarcinoma, è fortemente raccomandata, così come lo è la vaccinazione contro il papillomavirus umano (HPV), la principale causa di cancro della cervice uterina. Andrebbero considerati anche gli interventi volti a proteggere da fattori di rischio ambientali o occupazionali, quali l'aflatossina, l'asbesto e contaminanti delle acque destinate al consumo umano. Lo screening per il carcinoma mammario e per il cancro della cervice uterina può essere efficace nel ridurre l'impatto sulla società di questi tumori [4].

A tutti questi interventi si possono aggiungere programmi volti a ridurre l'impatto delle NCD sugli individui e sulle loro famiglie. I migliori interventi sono:

- terapia multi-farmacologica ed educativa dei pazienti affetti da diabete con un rischio di eventi cardiovascolari a dieci anni superiore al 30%;

- somministrazione di aspirina per il trattamento dell'infarto miocardico acuto;

- screening per il carcinoma della cervice uterina all'età di 40 anni seguito dalla rimozione di

tutte le lesioni cancerose/precancerose identificate;

- mammografia biennale tra i 50 e 70 anni d'età e trattamento del carcinoma mammario a tutti gli stadi;
- trattamento dell'asma persistente con corticosteroidi per via inalatoria e beta-2 agonisti.

Finanziare e rafforzare i sistemi sanitari in modo che possano garantire questi interventi individuali attraverso la rete assistenziale territoriale è considerato di prioritaria importanza [4].

Buone pratiche

Linee guida e prassi validate per controllare i fattori di rischio e prevenire le NCD sono state adottate da diversi paesi con livelli di reddito differenti, e sembrano funzionare. Ad esempio, la diminuzione nel consumo di tabacco nei paesi ad alto reddito (come l'Australia, il Canada, la Finlandia, l'Olanda e il Regno Unito) è stata ampiamente documentata in diversi sondaggi che vengono ripetuti regolarmente [4]. Anche paesi a basso e medio reddito hanno conseguito importanti risultati e documentato un declino nel consumo di tabacco: la Turchia è recentemente diventata una delle 17 Nazioni "Smoke-free". Ha aumentato del 77% le tasse sul fumo (il che ha comportato un aumento del 62% del prezzo delle sigarette) e adottato strategie per il controllo del fumo, incluse immagini scioccanti sui pacchetti di sigarette, un efficace divieto di pubblicizzare il tabacco ed il divieto di fumare negli ambienti pubblici. L'Egitto invece ha aumentato dell'87% le tasse sulle sigarette e del 100% le tasse sul tabacco sfuso, portando ad un aumento del 44% del costo medio del fumo e a una diminuzione del 21% nel consumo di sigarette. Infine, l'Ucraina ha alzato le tasse sulle sigarette del 127%, determinando un aumento di prezzo del prodotto del 73% tra febbraio 2009 e marzo 2010 [4, 30-31].

Per quanto concerne la promozione di un'alimentazione sana e bilanciata, il Regno Unito ha avviato un programma di riduzione dell'apporto di sale coinvolgendo l'industria alimentare e i consumatori e ha migliorato la qualità dell'informazione disponibile sulle etichette dei cibi. Nel 2000 l'apporto medio di sale era di 9,5 grammi al giorno, di gran lunga superiore alla dose raccomandata (6 grammi al giorno per gli adulti). La campagna si è svolta tra il 2004 e il 2010. Durante questi anni la quantità di sale nei cibi è stata ridotta persino del 55%, la consapevolezza dei consumatori sulle dosi raccomandate è aumentata di dieci volte ed è raddoppiata la proporzione di individui attenti all'apporto di sale nella dieta. Nel 2008 l'apporto di sale era calato a 8,6 grammi al giorno. Si stima che questo potrà evitare ogni anno più di 6.000 morti pre-

ture e far risparmiare circa 1,5 miliardi di sterline, molto più del costo dello stesso intervento di promozione della salute [22, 32].

Un altro importante intervento sulla popolazione è il North Karelia Project. Tale progetto è stato lanciato nel 1972 in Finlandia per promuovere un'alimentazione sana e la cessazione dell'uso di tabacco tramite media, servizi sanitari e interventi in comunità in partnership con numerose organizzazioni [33]. Prima del lancio dell'iniziativa, quasi tutta la popolazione finlandese usava il burro spalmato sul pane e per cucinare. Dopo l'intervento meno del 5% della popolazione usava ancora il burro mentre il 60% usava principalmente oli vegetali in cucina. La prevalenza dei fumatori è diminuita da oltre il 50% all'inizio degli anni '70 a circa il 20% nel 2006. Inoltre, il livello medio di colesterolo nel sangue è diminuito di oltre il 20%. Questo ha portato a un calo dell'85% di mortalità con un guadagno di aspettativa di vita di 7 anni tra gli uomini e 6 tra le donne [34].

Uno studio longitudinale condotto in Cina ha dimostrato che aumentare le tasse sui cibi meno sani conduce effettivamente a un calo del loro consumo [35], mentre negli Stati Uniti la riduzione del prezzo degli alimenti più sani ha condotto a un aumento del 78% del loro consumo [36]. La combinazione di aumento delle tasse sui "cibi spazzatura" e riduzione del prezzo degli alimenti più sani potrebbe condurre, soprattutto nei paesi a basso reddito, a un importante abbattimento dell'impatto delle NCD [37].

Elementi chiave per i decisori

- Le NCD sono oggi la principale causa di morte, rendendosi responsabili di più del 60% di tutti i decessi. Tra esse, le malattie cardiovascolari sono le più comuni.
- Quasi l'80% dei decessi imputabili a NCD si verificano in paesi a basso o medio reddito, dove si osserva un'alta proporzione di morti da NCD sotto i 60 anni d'età.
- La prevalenza delle NCD e le morti da NCD aumenteranno in futuro, soprattutto nei paesi più poveri.
- L'epidemia di NCD ha un impatto fortemente negativo sullo sviluppo umano, sociale ed economico. Infatti, le NCD diminuiscono la produttività e determinano povertà.
- Le NCD hanno un rilevante impatto economico: nei prossimi venti anni provocheranno una perdita di produttività pari a 47 trilioni di dollari.
- La maggior parte delle NCD può essere prevenuta intervenendo sugli individui e sulle popolazioni al fine di controllarne i fattori di rischio. Gli interventi basati su più approcci evidence-based mostrano i risultati migliori.

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An overview of strategies and elements to address non-communicable disease prevention and chronic disease at local level

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INTRODUCTION

Non-communicable diseases (NCDs) are defined as diseases of long duration and generally slow progression (1). They are an important cause of premature mortality and they have a major impact on the expectancy of life lived in good health because they also cause disability (2,3-5).

There is a clear evidence that more people are living with chronic diseases as a result of increasing prevalence of some chronic conditions and longer survival among patients diagnosed with chronic diseases. Moreover, the rising costs of health care have focused attention on societal burden of chronic diseases, particularly multiple chronic conditions (6,7).

AIM

The purpose of this paper is to provide an overview of strategies and to focus elements for a strategic plan to improve the capacity of local health services to prevent, control, and manage non-communicable diseases such as cardiovascular diseases and diabetes.

BURDEN OF DISEASE

The global burden and threat of non-communicable diseases constitutes a major public health challenge that undermines social and economic development and increase inequalities between countries and within populations (8-48). Current global mortality from NCDs remains high and is increasing: thirty-eight million people die each year from NCDs, mainly from cardiovascular diseases (CVDs), cancers, chronic respiratory diseases, and diabetes (2,4-5). CVDs are responsible

for over 17.3 million deaths per year and are the leading causes of death in the world (8). In Europe and in European Union (EU), significant reductions in CVDs mortality have occurred over the last three decades but CVDs remain the leading cause of death, accounting for over 4 million deaths in Europe and over 1.9 million deaths each year in the European Union (47% of all deaths in Europe and 40% in the EU) (29). Moreover, in Europe since 2007-2008 the impact of the economic and social crisis on health through its social determinants has included an increase in cardiovascular acute events and mortality (40-44). The cost-of-illness for cardiovascular disease worldwide was estimated to be US\$ 863 billion in 2010 rising to US\$ 1.04 trillion in 2030 (8). Overall CVDs are estimated to cost the EU economy almost €196 billion a year. Of the total cost of CVDs in the EU, around 54% is due to direct health care costs, 24% to productivity losses and 22% to the informal care of people with CVD (29). Across six European countries (i.e. France, Germany, Spain, Italy, Sweden and the United Kingdom), accounting together for 74% of the European Union's gross domestic product (GDP) and 64% of its population, the total financial impact of CVDs (including direct and indirect costs) is estimated to be €102.1 billion by the end of 2014 and it is projected to increase to €122.6 billion by the end of the decade (46). In Italy, from 2000 to 2012, NCDs are estimated to account for 92% of total deaths (total deaths 573.000), and CVDs are estimated to account for 37 % of total deaths (2). In 2010, the death rate (per 100.000 population) was 145,6 for CVDs and 68,4 for coronary heart disease, and 27,8 for stroke (49). Over 2014-2020 period in Italy, projected absolute number of deaths from CVDs is 1.712.977 and working-age deaths from CVDs is 105.316. Italy has the third highest cost (after France and

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Germany) from CVDs at €18.3 billion, which equals 1.3% of the country's GDP. The Total cost from CVDs is expected to rise further to €23.0 billion by 2020 (46).

HEALTH PROMOTION AND PREVENTION

Tobacco smoking, physical inactivity, unhealthy diets and the harmful use of alcohol are the shared causative behavioural risk factors of the main types of NCDs such as heart disease, stroke, cancer, diabetes and chronic respiratory disease (16,36). Long-term exposure to these behavioural risk factors results in raised blood pressure (hypertension), raised blood sugar (diabetes), raised and abnormal blood lipids (dyslipidaemia) and

obesity, and major cardiovascular risk factors such as hypertension and diabetes link CVDs to renal disease (16). A clear evidence shows that morbidity and mortality from NCDs can be greatly decreased by reducing the prevalence of these major behavioral risk factors (3,15-38), and that investing in health promotion and prevention will reduce premature death and preventable morbidity and disability, and improve the quality of life and well-being of people and societies (38). The World Health Organization set a target of a 25% relative reduction in non-communicable disease's mortality by 2025. Known as the 25x25 strategy, this goal is now incorporated into WHO's Global NCD Action Plan 2013–2020 (see Box 1) (36,50-51).

BOX 1: Targets of World Health Organization's 25 x 25 strategy for NCDs.

Mortality and Morbidity

- A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases.

Behavioural risk factors

- At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context.
- A 10% relative reduction in prevalence of insufficient physical activity.
- A 30% relative reduction in mean population intake of salt/sodium.
- A 30% relative reduction in prevalence of current tobacco use in persons aged 15+years.

Biological risk factors

- A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances.
- Halt the rise in diabetes and obesity.

National systems response

- At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes.
- An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major non-communicable diseases in both public and private facilities.

Moreover, the rise in the prevalence and significance of NCDs is the result of complex interaction between healthcare, economic growth and development, environmental, occupational and social determinants of health, and it is influenced by policies in a range of sectors, from agriculture and the food industry to education, the environment and urban planning. It is also strongly associated with universal trends such as ageing of the global population, rapid unplanned urbanization and the globalization of unhealthy lifestyles (8-15,29,36,38-39,45).

Addressing CVDs require concrete and sustained action in three areas which represent the key components of any global or national strategy: 1) sur-

veillance, mapping and monitoring the epidemic of CVDs; 2) prevention reducing exposure to risk factors; and 2) improved management and equitable healthcare for people with CVDs through early detection and timely treatment (16,36).

Risk factors and work conditions can be addressed through health promotion aimed at improving individual health behaviors; health protection, including occupational safety and health interventions; and efforts to support the work–family interface. This requires a multi-sector strategy and a commitment to whole-system working involving not only health and social care but also other services that influence the health and wellbeing of communities (e.g., social deter-

minants of health include areas such as employment and working conditions, education, housing and social policy) (2,4-5,15-26). Prevention activities should be embedded in health services and in society by the means of Health-In-All-Policies approaches, based on the perspective that health is fundamental to every sector of the economy and that every policy, large or small, whether focused primarily on transportation, education, agriculture, energy, trade or another area, should take

into consideration its impact on health (7,16,28,52-58).

Actions should include setting goals and targets and measuring results, strengthening health systems and primary healthcare, and developing the appropriate capacity and institutional arrangements to manage NCD programmes (16).

Moreover, addressing NCDs require concrete and sustained action in some different areas (see Box 2).

BOX 2: areas of intervention for NCDs.

1. Surveillance, monitoring and evaluation of NCDs and risk factors (16,36).
 - Investing in data collection systems in order to monitor trends in CVD risk factors, mortality rates and incidence.
 - Data have to be integrated into general health information systems, in order to support linkages and sustainability and to allow longer-term measurement of the impact, and distribution of the impact, of interventions on NCDs.
2. Prevention and reduction of risk factors, with a life course approach and a combination of population wide and high risk strategies (28,36,38,53,59-60).
 - Population-level approaches and those targeted at people at high-risk need to be balanced.
 - Interventions that address the whole population are the most cost effective and cost saving.
 - Lifestyle/behavioural risk factors that need to be addressed directly, taking gender and other social differences into consideration.
 - Policymakers are also encouraged to adopt legislative measures to improve dietary standards and reduce smoking, while at the same time promoting greater physical activity.
 - Interventions to control tobacco and to reduce salt have been assessed as among the most cost-effective globally.
 - Use of economic methods in making policy decisions that will promote living well with chronic diseases (e.g., use of cost-effectiveness techniques; focus on economic evaluation of interventions that involve multiple chronic conditions and cut across a variety of community settings) (7).
 - It is nevertheless recognized that multicomponent programmes are most effective as part of an integrated and comprehensive approach.
3. Improved management and healthcare (28).
 - Clinical preventive services (e.g., vaccination programmes, population-based screening programmes and cardio-metabolic risk assessment in primary care services), early detection and timely treatment.
4. Invest in workforce (28).
 - The workforce needs a core set of competencies to improve care for chronic conditions (e.g., centre on the patient; communication skills that empower patient; competencies in health promotion; capability in motivating and training patients in health-related self-management; capability in creating and maintaining partnerships with patients and their families, other providers and the community; capability to work in multidisciplinary teams; practicing Evidence Based Medicine; using information technology).
 - The workforce needs skills that ensure continuous quality improvement in terms of patient safety and service delivery efficiency.
5. Involving scientific and professional bodies to draw up effective strategies for implementing professional guidelines and overcoming barriers (28,36).
6. Community interventions can support worksite programs and policies and make it easier for employees and their families to make healthy choices, especially for hard-to-reach populations (60-61).

PATIENT CENTERED CARE AND COMMUNITY

A successful, long-term, population-based approach to reducing the prevalence and the conse-

quences of chronic diseases would include: 1) the promotion of healthy behaviours and the primary prevention of chronic disease; 2) prevention by screening and treatment of preclinical chronic conditions; 3) prevention of disability and suffer-

ing by effectively treating chronic conditions that are already clinically manifest (7,59-61).

The effectiveness of clinicians in promoting healthy behaviors and the quality of their service to patients are probably maximized when practices have systems in place to support this entire counseling sequence (62). A well-designed primary care system is central to most proposals to reform healthcare delivery and bend cost trends (63). Moreover, educational and support interventions for people with a chronic disease should be operated at two levels: a patient-centered communication style that incorporates patient preferences, assesses literacy and numeracy, and addresses cultural barriers to care in order to support self-management; and socio-psychological behavioural change, tailored to individuals within their socio-economic environments, increasing motivation and supporting problem-solving (64-66).

Two overlapping conceptual models of care for people with chronic conditions help to explicate the complex interacting factors that must be addressed to control the effects of chronic disease in the population: the Chronic Care Model and the Expanded Chronic Care Model (7,67-70). According to these models, the integration of primary care with the community and with information resources is a first step in fulfilling a much larger need, faced by communities, to provide a web of integrated and coordinated services to help citizens sustain healthy behaviors. The goal is to ensure productive interactions between a prepared proactive practice team and an informed activated patient (64).

The Institute of Medicine (IOM) identified a set of key principles for successful integration in healthcare. These included: a shared goal of population health improvement; participation of the larger community in defining and addressing health concerns; aligned leadership; sustainability, including shared infrastructure; and the sharing and collaborative use of data and analysis (71-73). Integrated health service delivery comprises the management and delivery of health services such

that people receive a continuum of health promotion, health protection and disease prevention services, as well as diagnosis, treatment, long-term care, rehabilitation, and palliative care services through the different levels and sites of care within the health system and according to their needs (74). Moreover, a community-level integration includes not only local health systems but also different sectors (i.e. volunteer groups in health and social, transportation, schools, environments and parks, neighborhoods) which can work together to advance their own aims while supporting behaviours intended to lead to better health (62,73,75).

ELEMENTS FOR A STRATEGIC PLAN TO IMPROVE THE CAPACITY OF LOCAL HEALTH SERVICES TO PREVENT, CONTROL AND MANAGE CARDIOVASCULAR DISEASES AND DIABETES

A strategic plan to address CVDs must align its efforts around the World Health Organization's related target of reducing premature CVD mortality of 25% by 2025 (36,50-51).

The actions outlined under this objective require the implementation of health promotion and prevention programs for CVDs and diabetes since childhood, and increasing access to high-quality, effective and safe care (24-26,58).

There are four priority action areas for NCDs such as CVDs: 1) governance, including building alliances and networks, and fostering citizen empowerment; 2) strengthening surveillance, monitoring and evaluation; 3) promoting health and preventing disease; 4) reorienting health services further towards prevention and care of chronic diseases (53).

The trigger for the challenge is a collaborative partnership between stakeholders (see Box 3) meeting simultaneously the needs of the whole community and individuals within the commu-

Box 3: panel of stakeholders

- Consumers, patients, caregivers, and patient advocacy organizations.
- Volunteer groups in promoting health and well-being at community level.
- Clinicians and their professional associations.
- Healthcare institutions, such as hospital systems and medical clinics, and their associations.
- Local authorities, their associations (such as Federsanità-Associazione Nazionale Comuni Italiani (ANCI)) (80);
- Healthcare policymakers.
- Healthcare researchers and research institutions.
- Healthcare industry and industry associations.

nity, and improving the capacity of local health services in addressing the social determinants of health. (20,44,62,73,75-79).

Purchasers and payers, such as public and private insurers.

Partnerships are necessary through many sectors of society such as health, education, social care, transport, and environment. The objective is the participation of different sectors which can influence together the health and wellbeing of communities.

Stakeholders' interest can be many and varied, but they must be involved in a participatory process in order to recognize that NCDs such as CVDs create disparities and vulnerabilities in health status for affected populations. The plan requires the involvement of stakeholders in a consultation process to develop a road map and a menu of policy options to attain the voluntary global targets, including that of a 25% relative reduction in premature mortality from cardiovascular diseases, cancer, diabetes or chronic respiratory diseases by 2025. The road map and the policy options must facilitate the use of supportive information systems (e.g., Information and Communication Technology, ICT), and the development of models for sustainable provision of end-user e-services for citizens (e.g., online cardiovascular risk self-assessment and lifestyle self-evaluation, online access to personal electronic health record, self-monitoring of health-related issues). The actions outlined under this objective aim to improve: 1) integration between information collected at the patient, health system, and population levels; 2) capacity of surveillance system to collect data along the entire chronic disease continuum (from upstream risk factors to end of life care), integrating the multiple measures of health status and determinants of health, including risk factors and interventions and costs (e.g., use of atlases of cardiovascular diseases); 3) adoption of electronic medical records which include informations about risk of chronic disease (e.g., through a health risk appraisal), presence of chronic disease, and measures of quality of life and functioning (28,36,81).

The health promotion and prevention programs are based on a population level approach focusing on enhancing citizen's health literacy (24,28,65-66). The actions outlined under this objective aim to improve the citizens' access to: 1) educational materials and programs about cardiovascular risk and disease (e.g., educational materials available in different places such as municipal libraries, schools, worksites, General Practitioners' waiting rooms); 2) cardiovascular risk assessment and lifestyle evaluation in primary care settings or

through a certified software; 3) courses on Basic Life Support (BLS) or BLS-Early-Defibrillation (BLS-D). The health promotion and prevention programs include school education programmes (e.g., taking advantage of ongoing co-operations and of courses carried out by the Foundation for Your Heart in Florence; lessons about BLS in schools) and worksite education programmes (e.g., collaboration with occupational physicians for worker cardiovascular risk assessment and lifestyles evaluation) (82).

The model of care is based on the Expanded Chronic Care Model (7,70) with a shift from organization to patient-centric provision of health care strengthening the role of patients and family caregivers. Person-centred care is focused on prevention, patient empowerment, self-management, and support to transition patients smoothly across the health and social care services. The actions outlined under this objective must be implemented through care/clinical pathways.

The American Heart Association Guide for Improving Cardiovascular Health at the Community Level (version 2013) and the European Guidelines on cardiovascular disease prevention in clinical practice (version 2012) suggest the targets and the actions for prevention, control and management of CVDs. (25-26). For cardiovascular risk assessment, the European Guidelines (version 2012) are to be used, considering first conditions of high or very high risk, then evaluating the Italian CUORE score, according to the Italian application of the same guidelines (26). The risk categories (i.e. very high risk, high risk, moderate risk, low risk) are compatible with the joint European Atherosclerosis Society (EAS)/ European Society of Cardiology (ESC) lipid guidelines, the joint European Society of Hypertension (ESH)/ESC guidelines and the joint European Association for the Study of Diabetes (EASD)/ESC (83-85).

The strategic plan explores integration between Primary Care, Secondary Care and Public Health to improve population health (see Box 4).

BOX 4: priority areas of intervention for implementation of the strategic plan

- The strategic plan must be a part of the Plan of the Prevention implemented at the regional level.
- Cardiovascular risk is assessed in all patients aged 35 to 69 years by the means of a multi-year program starting from men aged 55 to 69 years and women aged 65 to 69 years.
- Cardiovascular risk assessment and lifestyle evaluation.
 - ✓ Life course perspective (from wellness through illness).
 - ✓ Software for cardiovascular risk assessment and lifestyle evaluation.
 - ✓ Available:
 - in different setting of healthcare (i.e. General Practitioner's ambulatory, Health Districts, Prevention Departments, Hospital);
 - online and multiplatform (i.e. computers, tablets, smartphones).
- Centres of Cardiovascular Prevention or existing Cardiology Departments.
 - ✓ Referral of high or very high risk individuals to existing Centres of Cardiovascular Prevention or, in areas not served by them, to existing Cardiology Departments.
 - ✓ Individuals with a high or very high self-evaluated risk have a direct access to the Cardiovascular Prevention Centres or Clinics.
 - ✓ A Plan for Preventive Cardiovascular Care for clients with high and very high risk, containing the clinical evaluations, the objectives to be achieved, the educational and drug therapies recommended, the scheduled follow-up visits possible and the indications of self-management if appropriate (home blood pressure and blood sugar monitoring).
- Primary Care.
 - ✓ The activation of case managers at the level of General Practitioners or at Health Districts or Prevention Departments level for client groups assigned to trained nurse staff.
 - ✓ The assignment of supervising the whole model, at a local level, to the District Director or to his/her delegate.
- Technical Committee.
 - ✓ At Health District level specific groups are created, composed by the District Director or his/her delegate, by a physician chosen within the General Practitioners, a cardiologist and a Prevention Department physician, designated by the Director General of the Health Unit.
 - ✓ The whole of the district groups form a regional group, which is entrusted with the responsibility of:
 - providing training packages and training plans for the health care professionals involved;
 - planning a campaign of information and communication for the population, to be carried out with representatives of the municipalities, of citizens and of the voluntary health organizations, to promote the knowledge of cardiovascular risk evaluation and management plans.

The plan goals and objectives must be clear, measurable, and aligned with the healthcare organizational mission and identified community needs. The plan requires a program for measuring outcomes and using that information for ongoing program planning, improvement, and evaluation. It is planned from the start what will be measured, how it will be measured, for what purpose and who will receive the information.

Rather than investments, the plan requires the re-deployment of resources for healthcare to health promotion and prevention programs at the community level.

CONCLUSION

Non-communicable diseases and chronic conditions are the leading cause of mortality and morbidity in Europe. The health system must be more focused on health promotion and prevention, chronic care, self-management programmes for

patients, education programmes for healthcare providers, the use of multi-disciplinary teams, and information and communication technology which facilitate the easy update and exchange of information.

The proposed strategic plan is a relevant choice for healthcare systems at different levels (i.e., local and regional) because it is a strategy for prevention, control and management of cardiovascular diseases and diabetes in community context.

The plan needs to be closely aligned with local context needs and expectations although it must include several aspects (i.e., a population level approach, involvement of communities, multi-stakeholder collaborations and partnerships, care/clinical pathways, and electronic information systems).

The strategic plan is able to develop interventions targeted to society and individual level, involving communities and improving the capacity of local health services to address non-communicable diseases and to achieve the goals of chronic care.

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Non Communicable Diseases Foresight in the European Region: THE FRESHER PROJECT

(FoResight and Modelling for European Health policy and Regulation)

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ABSTRACT

The FRESHER Consortium, funded by the European Commission, within Horizon 2020, brings together ten research groups, including leaders in the management of large scale European Foresight projects and highly experienced health policy modelers, in a unique interdisciplinary team with the aim of realizing an ambitious project in Foresight and Modelling for European Health policy and Regulation. The overall project objective is the representation of alternative futures where the detection of emerging health scenarios will be used to test future policies to effectively tackle the burden of non-communicable diseases (NCDs). The project will produce quantitative estimates of the future global burden of NCDs in the EU and its impact on health care expenditures and delivery, on population well-being, and on health and socio-economic inequalities, as well as potential changes in these impacts according to alternative health and non-health policy options. In order to maximize its impact on decision-making (in the public and private sectors), FRESHER will promote an interactive process with key stakeholders, at all stages of the project, in elaborating the framework, and giving inputs for the qualitative foresight scenarios and the quantitative micro-simulation model, and in deriving recommendations from their results for future policies, directly or indirectly, affecting population health and well-being.

SUMMARY

Il progetto FRESHER, finanziato dalla Commissione Europea nell'ambito di Horizon 2020, è costituito da un consorzio di dieci gruppi europei di ricerca, tra cui i team leader nella gestione di importanti progetti di analisi previsionale delle politiche sanitarie. Il consorzio si propone di innovare i processi di modellazione finalizzati all'assunzione di provvedimenti regolatori in politica sani-

taria a livello comunitario. L'obiettivo generale del progetto è l'uso di scenari utilizzati per simulare politiche sanitarie volte a ottimizzare l'impatto delle politiche sanitarie sull'impatto di salute delle malattie non trasmissibili (NCDs). Il progetto stimolerà il futuro carico globale delle malattie non trasmissibili nei paesi della Comunità Europea e il loro impatto sulla spesa sanitaria, sul benessere e salute della popolazione, sulle condizioni socio-economiche, sulle disuguaglianze e sui potenziali cambiamenti di questi fattori in base ad opzioni alternative di politiche sia sanitarie che non sanitarie. Al fine di massimizzare l'impatto che i risultati del progetto potranno avere sul processo decisionale (nel settore pubblico e privato), FRESHER promuoverà uno scambio interattivo con le principali parti interessate, in tutte le fasi di elaborazione, dando input sia per gli scenari di previsione qualitativi che per il modello di micro-simulazione quantitativa, oltre che per produrre raccomandazioni per le future politiche che, direttamente o indirettamente, influiscono sulla stato di salute e benessere della popolazione.

Introduction

The FRESHER project (FoResight and Modelling for European Health policy and Regulation), financed by the European Commission within the HORIZON 2020 program, has the overall objective to represent alternative futures where the detection of emerging health scenarios will be used to test future research policies to effectively tackle the burden of non-communicable diseases (NCD)s.

The FRESHER project aims at solving some of the complex bottlenecks, for elaborating an appropriate "Foresight for health policy development and regulation in Europe" that can be useful for public decision-making. In particular, It will provide a coherent analytic framework for integrating the

synthesis of best available quantitative knowledge about major epidemiological risk factors for the European population on the one hand and qualitative foresight approaches for building long-term scenarios on the other hand in order to fuel and inform advanced quantitative forecast modeling. FRESHER will use an innovative micro-simulation tool (based on new developments of the current OECD model in this field) that would allow for systematic and quantitative assessment of impact on population health, well-being, health care expenditures and inequalities of alternative foresight scenarios and of alternative (health and non-health) policy choices in the context of each scenario. The organization of a policy dialogue with major stakeholders of public health policies in Europe, not only for dissemination of results but at all stages of the project will guarantee that the foresight and simulation exercises are carried out beyond purely academic purposes, with the aim of directly contributing to public debates on health policies and to public decision-making.

Objectives

FRESHER will pursue four a strongly interacting goals:

1. To produce quantitative estimates of the future (horizon 2030 and 2050) global burden of chronic NCDs in the EU and its impact on health care expenditures and delivery, population well-being and health inequalities and socio-economic inequalities.
2. To base such estimates not only on extrapolation of observed past health trends but also on foresight techniques giving credit to the interdependencies of structural long-term trends in demographic, gender relations, technological, economic, environmental, and societal factors for European countries (horizon 2050).
3. To illustrate options for decision-makers in order to contain the burden of NCDs and its negative impacts on wellbeing of European individual citizens and societies as a whole.
4. To promote an interactive process with key actors in public health and European policies in elaborating, fueling and disseminating both foresight scenarios and results of the micro-simulation model as well as policy recommendations deriving from their results for future health research and policies (health and non-health) affecting population health and well-being.

In order to fulfil these goals, the FRESHER project combines the insights from the exploration of

current literature and data on evaluation of risk-factors and NCDs prevention and treatment policies, from possible scenarios for the future of health and health care and from an organized policy dialogue with key European decision-makers and public health stakeholders. All these efforts will converge to elaborate and produce inputs for an empirically-based, but yet unique, micro-simulation model capable of quantifying the current and future health and economic impacts of risk factors and testing “what if” policy options regarding the potential future impact of the qualitative scenarios, as well as potential new policies and policy combinations. An intensive effort will be devoted to translating results of alternative scenarios and quantitative simulations into the definition and discussion of the future agenda for health research and health policies by European decision-makers and key public health stakeholders.

From a scientific perspective, the clear ambition of FRESHER is a conceptual renewal and empirical improvement of health forecasting models mainly through:

- An integration of better understanding of complex causal chains of chronic diseases and multiple risk factors and co(-morbidity)
- An integration of better understanding of the impact of non-health determinants on population health and health expenditures
- An explicit relationship of quantitative modelling with qualitative approaches for building long-term foresight scenarios and identifying weak signals
- Systematic sensitivity analysis allowing for best practice in management of heterogeneity of data and uncertainties.

From a research perspective, FRESHER will provide significant inputs to inform research policies and the identification of health research priorities. From a policy perspective, FRESHER main ambitions are the following:

- To provide EU decision-makers with robust quantitative estimates of global burden of NCDs and its evolving patterns through time
- To provide to all European stakeholders an operational tool for aid to decision making comparing potential impact of alternative policy choices on population health and health care expenditures as a basis for policy dialogue and clarification of trade-offs (inside the health sector and between health and other sectors)
- To enlarge the scope of vision and time horizon of decision-makers and therefore contributing to a multi-sectorial approach to health policy and health system reform

- To identify priorities for public/private partnerships in development and diffusion biomedical innovations and health services delivery.
- To inform investment decisions in order to anticipate/adapt health infrastructures and services supply (including human capital) to future needs.
- To inform socio-economic policies in order to reduce overall stress factors and develop health and well-being facilitating factors.

Methods

Introduction to Foresight

Foresight uses a set of strategic tools that support

governmental and industry decisions with adequate lead time for societal preparation and strategic response". In general, it anticipates multiple, plausible futures within a 5 – 25 years horizon (which differentiate it from the planning exercises). Principal aims of a foresight exercise are:

- to explore alternatives in the face of uncertainty
- to uncover assumptions (mental maps) and discuss them
- to share understanding and concerns
- to illuminate potential problems and future opportunities
- to help identify choices and policy options

Visions, scenarios and forecasts

Different categories of scenario building can be used and are described in the table below:

Categories of scenarios: Predictive, Explorative and Normative			
Category:	Answers the question:	Main objective:	Methods/techniques:
- Predictive	"what will happen"	to clarify how specific drivers will develop	trend extrapolations; BAU scenarios
- Explorative	"what can happen"	to identify drivers (frequently using qualitative data)	forecasting; foresight; strategic scenarios
- Normative	"what should happen"	to assess how a specific target can be reached	normative scenarios; backcasting

Based on: Vergragt & Quist, 2011; and Nowack et al. 2011.

Recent health related Foresights and Forecasts show widespread use of visions, scenarios and forecasts with demographic shifts, rising health-care costs, and emerging technologies predominating. Scenarios are ubiquitous in health Foresights and Forecasts. Many combine statistical forecasting with perceived trends to develop future scenarios that could form the basis for discussions for future policy formulations and options [1]. Many also commence from a vision normatively determined on previous trends and future expectations to foresight and forecast future requirements in research, policy development, resources prioritization and interactive stakeholder engagement [2]. Visions, scenarios, forecasts are in all regards preoccupied with issues of demographic trends, rising healthcare costs in order to finance those shifts, the inadequacies of healthcare structures in high and low income countries in delivering services often through lack of skilled personnel combined with the serendipitous effects of climate change, the widening epi-

demiology of chronic and infectious diseases and perceived changes in social attitudes to caring in communities.

Forecasting models and analytical frameworks

Building analytical models are a common tool in health foresights exercises. A number of models have tackled the issues of global epidemics (AIDS, tuberculosis and malaria in sub-Saharan Africa). The UK study on obesity concluded with two models; a quantitative model for modeling future trends in obesity and the impact on health and a qualitative model for designing and evaluating options for policy responses, based on the knowledge of the key variables influencing obesity development and the range of different ways in which UK society might change in the future. The tool has been tested, refined and validated as part of the UK Foresight Tackling Obesities project and is viewed as having the potential to inform future policy making [3]. However, there is no

single approach to modelling for health forecasting in the scientific literature, and so various methods have often been adopted to forecast aggregate or specific health conditions. The key principles of health forecasting have not also been adequately described to guide the process [4]. In Europe, there is no coherent (i.e. using consistent concepts and methods) and comprehensive empirically-based framework that can provide comparative measures of the future burden of disease and injury, including the environmental, biological and behavioural risk factors influencing that burden and the socio-economic factors contributing to that burden. As a result, policy-makers are confronted with competing estimates of health care costs and the life expectancy impacts for particular diseases or risk factors, with each study having its own data and methods. Thus policy makers lack an empirical framework from which the impact of different priorities for investment to alleviate the burden of disease could be evaluated. Further, an empirical assessment of the impacts of policy strategies through appropriately designed experimental studies is virtually impossible in most instances, and causal inference based on observational data is difficult because of the heterogeneous information on possible interventions contained within them and the unobserved but important factors complicating identification of true causal effects.

A **data-driven/data mining approach** that enables forecasting the future burden of risk factors, diseases and health inequalities is needed to enable priority setting in terms of the relative importance of investments in prevention and treatment and other dimensions of social, economic and environmental policies affecting population health and wellbeing. Further, a data-driven approach that captures the mid- and long-term impacts of policy options, quantifying ranges of uncertainty around them, and isolating these impacts from the effects of potential confounding factors, while at the same time accounting for the heterogeneity of actors, exposures and behaviours, is needed for an accurate and thorough quantitative assessment of the value of health policies alternatives. However, much of current published research on risk factors focuses on one disease at a time whereas NCD's are mostly chronic diseases that are characterised by complex causality, the involvement of multiple risk factors, a long latency period, a prolonged course of illness, and unlikelihood of cure and that often lead to functional impairment or disability. A recent review of the literature on 25 forecasting models already used to inform policy-makers about fu-

ture health spending in OECD countries reveals that they do not really take into account recent advances in biomedical and epidemiological research that better understand multiple causal chains and pathways leading to chronic diseases [5]. Epidemiological modelling has been more able to better capture these advances for producing straightforward estimates of incidence and death rates for the most common related conditions for the next 50 years, but with limited capacity to take into account economic and social broader impacts and factors [6]. Through its mapping of determinants and horizon scanning approaches (WP 2 & 3), the FRESHER project will significantly attempt at improving the integration of advanced knowledge on NCDs causal chains in quantitative forecast modelling of both population health and health expenditures.

Moreover, a data-driven approach may miss major parameters and be unable to inform decision-making if it remains based on extrapolation of observed well-known trends without being able of identifying key-drivers of change, critical uncertainties and potential shocks that may strongly influence mid-term and long-term evolutions. Indeed, the emergence of grand challenges within research and innovation policy discourse in Europe has refreshed key questions for foresight theory and practice [7]. Few health-related forecasts include analysis or explicit reference to wild cards or weak signals. One recent study [8] analyzed certain weak signals in the area of health. This study posited that societal developments are often influenced by improbable events with high impact. These events are preceded by "weak signals" which are only partially discussed in policy, if at all and rarely acted upon. The increasing complexity and uncertainty is reflected in the growing demand for tools for anticipatory intelligence, such as scenario analyses, Delphi, modelling and simulation tools. The study indicated that several countries, Finland, United Kingdom and the Netherlands, have initiated horizon scanning projects to identify disruptive events that are not on the radar of policy yet. The overall goal of the project was to contribute to the development of an effective system for the early identification of weak signals of emerging issues. For that a weak signals pool, integrating several scanning tools to collect and disseminate the information, has been set-up. Examples of wild cards and weak signals emerging can be found in diversification in medicine where emerging technologies may lead to new approaches and new health-related service markets. Diminishing trust in conventional medicine, the debate on cultural diversity in medicine

and the rising use of complementary and alternative medicine may lead to new requirements with regard to regulation. In order to be able to capture critical drivers, trends and challenges, the FRESHER project will complement its data-driven approach by a foresight informed approach. It will allow, as much as possible, for integrating in quantitative modelling the contribution of qualitative foresight scenario building, including identification of wild cards and weak signals.

Microsimulation modelling.

The use of **micro simulation models** for health and health care policy has indeed been facilitated in recent years by the advent of inexpensive and powerful computer programmes [9, 10]. In general, there are two categories of such models, those at the level of populations (macro) and those at the level of individuals (micro). The health policies we aim to evaluate through FRESHER intend to influence the behaviour of individuals either directly or through social groups and networks. Micro simulation models are able to take into consideration the underlying heterogeneity in populations and the underlying differences in individual's behaviours which influence the relative effectiveness of policies across different population groups [11]. Micro simulation models also overcome some of the challenges faced in other individual-level simulation approaches such as Markov chains and semi-Markov processes. In these other techniques, the modeller must define all of the possible states and transitions that will take place, and therefore the number of states introduced in the model remains limited [12]. An example of this approach is the Dutch RIVM Chronic Disease Model [13]. Alternatively, in micro simulation, instead of defining a fixed set of possible states, the focus shifts to defining events which individuals may experience. Individuals' characteristics then influence the probability and the timing of events occurring. For example, an individual who is a sustained heavy drinker in the model would have a higher likelihood of developing an alcohol-related disease. All events in the model compete to be the next to occur in an individual's life and a stochastic process ensures that even those at high risk do not always experience a particular event. Micro-simulation models can, as a result, reproduce the characteristics and behaviours of a large sample of individuals representing the whole population of interest, and its underlying diversity [14]. Individual life trajectories can be simulated until death. When a representative population is projected, then future

cross-sectional estimates, such as annual disease and risk factors prevalence and health expenditures, can be generated. In a **dynamic micro-simulation models**, certain characteristics and behaviours can evolve over time, such as tobacco smoking, alcohol-consumption or air pollution exposures which the literature shows are subject to change over the life course. There are a number of recent case-based, dynamic micro simulation models that have been developed and used to support policy decisions [5, 15, 16]. Dynamic micro simulation models like the U.S. FEM, the Swedish SISEM-LEV, the Canadian POHEM and the OECD CDP allow the characteristics of individuals to evolve over time in a realistic manner due to factors endogenous within the models [5]. All of these models have been used to evaluate the potential future cost-benefit ratio of policies to improve health and reduce disease.

None of these past efforts however address the need for a European health model that can inform about which policy measures or strategies represent the best use of society's resources - and by how much they can reduce the harmful consequences of risky health behaviours and environmental harms. The lack of adequate decision support systems for Europe is an important barrier to an efficient allocation of resources and often prevents national and EU policy bodies from considering the full range of costs and consequences of different actions.

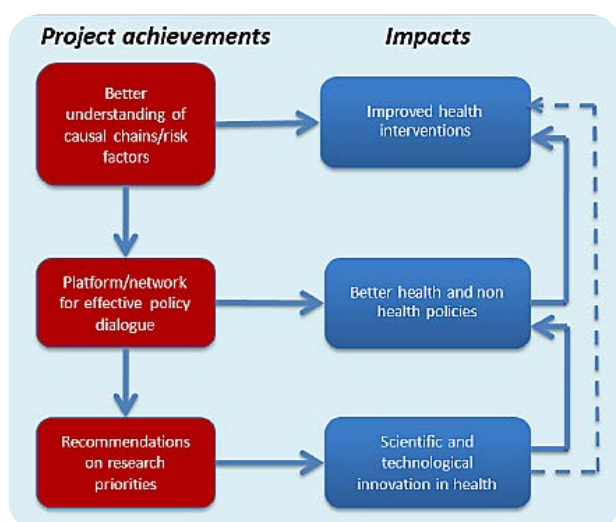
Expected impacts

The overall objective of FRESHER is the representation of alternative futures where the detection of emerging health scenarios will be used to test future policies (in the health sector, in non-health sectors affecting health and in Research & Development and innovation policy) to effectively tackle the burden of NCDs. The expected impacts of the project will vary according to different time horizons:

- **Immediate impact** (as soon as the end of the project) will be achieved thanks to the development and validation of an integrated framework and operational model tool that will provide better knowledge and understanding of causal chains for chronic diseases and therefore lead to more effective/better targeted interventions to improve population health. It will contribute to optimization of resource allocation in health policy between prevention and care, biomedical innovations and policies targeting other determinants of health.

- **Short/medium term impact** will be the improvement of policy formulation (both health and non-health) through the set up and running of an informed, evidence-based, policy dialogue (network/platform). This improvement will cover identification of most appropriate policies to tackle NCDs and to reduce health inequalities according to socio-economic status, gender and regions.
- **Medium/long term impact** will include new and better scientific and technological knowledge to address future health needs achieved thanks to the identification of priorities and the subsequent orientation of research, as well as more evidence-based policies to maximize public health and social welfare of the European population.

Potential impacts of the Fresher are illustrated in the figure below:



Policy dialogue

One goal of project will be the building of a participatory European policy dialogue, with the involvement of all stakeholders, aiming at producing a common European strategy to tackle the future health NCDs scenarios, overcoming some of the already existing limitations of current policies in terms of: geographic scope (because they are not adapted to the cultural and socio-economic differences between European regions, countries and within countries); temporal scope (because they often consider only a short term horizon); consideration of the emerging trends of game-changers elements, both scientific and societal; and current lack of inter sectorial approach. The policy dialogue will consider all the areas of policy intervention, and will analyse the combinatorial effect of implementing them simultane-

ously and the potential for positive and negative synergies.

It will address the three components of all national health programmes: surveillance, prevention, and health care and will include a comprehensive approach targeting the population as a whole but also including individual health care intervention in terms of prevention, early diagnosis and early treatment interventions.

It will suggest the reorganization of the health system to better confront the emerging epidemic of chronic diseases by strengthening the capacity of the health workforce and improving access to new medicines and technology which may become available in the coming years.

The policy dialogue will be developed using, among other scientific instruments, the Satterfield model, which includes the consideration of all domains that shall influence evidence-based decision making [80].

This model, which pretty much resembles the Grade System used for the production of Diagnostic and Therapeutic Guidelines for clinical practice, clearly implies the need to work towards obtaining high quality evidence and pave the way for the design of a future Public Health Research agenda, and for translating foresight and modelling results into policy recommendations, to support with evidence the work of policy makers.

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Invecchiamento e cronicità: un problema per il futuro della sanità e dell'assistenza

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INTRODUZIONE

L'aumento della sopravvivenza ha come trade-off l'incremento costante degli anziani, quindi di una fascia di popolazione più esposta rispetto al resto della popolazione a problemi di salute di natura cronico-degenerativa. Il processo di invecchiamento, oltre a comportare un peggioramento generale delle condizioni di salute, aumenta la quota di popolazione con disabilità, una condizione della persona legata a quel ventaglio di attività di vita che subiscono serie restrizioni a causa di limitazioni funzionali (menomazioni fisiche o sensoriali legate alla vista, udito e alla parola). Si tratta di limitazioni che insorgono con il peggioramento delle condizioni di salute e riducono la mobilità degli anziani o le loro capacità sensoriali (vista e udito in particolare). Questi problemi diventano preoccupanti per la vita di un anziano, laddove le politiche sociali non intervengono con adeguate strategie di aiuto e assistenza che permettano loro di continuare a vivere in maniera autonoma e a partecipare attivamente alla vita sociale.

Il quadro futuro generato dalla dinamica demografica avrà probabili implicazioni sulla spesa per l'assistenza sanitaria per acuti e per l'assistenza socio-sanitaria. Il processo di invecchiamento sperimentato nel nostro Paese acuirà il problema della spesa per l'assistenza agli anziani. Infatti, per questo target di utenza, il modello di welfare italiano si è basato tradizionalmente sulle famiglie che hanno svolto un ruolo di sussidiarietà all'intervento dello Stato, quest'ultimo sempre più limitato dai vincoli di finanza pubblica. La dinamica demografica che si è andata sviluppando nel corso degli anni disegna strutture familiari con uno o due componenti e con molti anziani soli, tale processo causerà il dissolvimento strutturale della rete di assistenza di natura informale,

tipica della realtà italiana. Pertanto, in un futuro prossimo, verrà meno il ruolo tradizionale della famiglia e sarà il sistema di welfare a dover intervenire con nuove risorse e soluzioni innovative economicamente sostenibili.

Scenari epidemiologici

Nel 2012 la speranza di vita alla nascita ha raggiunto i 79,6 anni per gli uomini e a 84,4 anni per le donne, contestualmente il nostro Paese è caratterizzato dal persistere di livelli molto bassi di fecondità, in media 1,42 figli per donna nel 2012 (media Ue28 1,58). Nel 2013 si stima che saranno iscritti in anagrafe per nascita poco meno di 515 mila bambini, circa 64 mila in meno in cinque anni e inferiori di 12 mila unità al minimo storico delle nascite del 1995. La sopravvivenza in aumento e la bassa fecondità ci collocano tra i paesi con il più alto indice di vecchiaia del mondo, infatti nel nostro Paese vivono 151,4 persone di 65 anni e oltre ogni 100 giovani con meno di 15 anni. In Europa ci supera solo la Germania (158), mentre la media Ue28 è pari 116,6 (Istat, Rapporto annuale 2014).

Le dinamiche appena riferite prospettano per il futuro un aumento della pressione sul Sistema di protezione sociale dovuto all'incremento di persone bisognose di cure e assistenza. In generale, non si tratta di un peggioramento delle condizioni di salute, ma di un incremento della popolazione anziana esposta al rischio di ammalarsi. Infatti, proiettando i tassi di prevalenza di alcune malattie croniche sulla struttura per età della popolazione prevista per i prossimi venti anni [1] ci si attende una prevalenza di multicronici [2] pari a quasi 13 milioni nel 2024 e di oltre 14 milioni nel 2034 [3], pari rispettivamente al 20,2% e 22,6% della popolazione (nel 2013 si attesta al 14,4%) (cfr Tabella 1)

TABELLA 1 Proiezioni della prevalenza di multicronicità¹ per classe di età e ripartizione territoriale (valori assoluti)

	2024	2034
Nord ovest		
0-24	34.957	34.878
25-44	152.972	156.630
45-64	670.181	604.301
65-74	854.885	1.093.733
75 +	1.474.218	1.692.519
Tot	3.187.212	3.582.060
Nord est		
0-24	23.232	23.434
25-44	107.209	111.393
45-64	544.087	501.789
65-74	654.726	864.741
75 +	1.049.917	1.233.239
Tot	2.379.171	2.734.597
Centro		
0-24	25.675	25.442
25-44	120.548	120.503
45-64	552.973	522.933
65-74	675.317	859.275
75 +	1.153.849	1.326.239
Tot	2.528.361	2.854.392
Mezzogiorno		
0-24	33.690	30.251
25-44	193.462	171.723
45-64	1.100.700	1.003.775
65-74	1.367.769	1.647.370
75 +	1.933.481	2.360.783
Tot	4.629.102	5.213.902
Italia		
0-24	117.555	114.006
25-44	574.190	560.250
45-64	2.867.942	2.632.798
65-74	3.552.696	4.465.118
75 +	5.611.464	6.612.780
Tot	12.723.847	14.384.952
¹ Persone affette da tre o più patologie croniche		
Fonte: Elaborazioni su dati Istat - Previsioni demografiche (Anni 2011-2065) - dati pre-Censimento 2011 di fonte anagrafica; Indagine sulle condizioni di salute e utilizzo dei servizi sanitari - Anno 2013		

Nel 2024, circa 9 milioni di malati con almeno tre patologie croniche si concentreranno nelle classi di età superiori ai 65 anni, nel 2034 tale condizione affliggerà circa 11 milioni di persone an-

ziane. Complessivamente, il numero maggiore di multicronici si registrerà nelle regioni del Nord, pari a 5,6 milioni nel 2024 e a 6,3 nel 2034.

Tra le patologie croniche che impattano maggiormente sul SSN in termini di costi si possono annoverare il diabete, l'ipertensione, le artrosi, artriti e osteoporosi, l'asma e la bronchite cronica (cfr Tabella 2). Proiettando le prevalenze osservate nel 2013 ci si attendono nel 2024 21,6 milioni di persone affette da artrosi/artriti e osteoporosi, le quali saliranno ulteriormente a 24,6 milioni nel 2034. Numerose anche le persone affette da ipertensione, la quale interesserà circa 15 milioni di italiani nel 2024 e 17 milioni nel 2034. Le patologie respiratorie colpiranno, nel 2024, 6,5 milioni di persone che saliranno a 7 milioni nel 2034; infine, il diabete affliggerà, nel 2024, 5 milioni di individui, 5,7 milioni nel 2034.

Scenari di spesa sanitaria e socio-assistenziale

Il quadro descritto non necessariamente implica la non sostenibilità del Sistema sanitario nazionale poiché a determinare la domanda di assistenza sanitaria intervengono aspetti di natura individuale, l'andamento dell'economia, il progresso scientifico e le scelte politiche, di natura allocativa e organizzativa; mentre i primi sono facilmente prevedibili, almeno per quanto attiene agli aspetti demografici, per il resto gli scenari sono assai complicati e dipendono principalmente da fattori molto complessi da prevedere, soprattutto a lungo termine.

Per quanto riguarda i fattori individuali, l'invecchiamento della popolazione è l'unico dato certo il cui andamento nei prossimi decenni è noto sin da ora. Meno certo è invece l'effetto che l'invecchiamento avrà sulle condizioni di salute. In letteratura vengono avanzate tre ipotesi di scenario possibili per il livello di morbilità futuro [4]. Il primo scenario ipotizza l'espansione della morbilità a causa del protrarsi della sopravvivenza media della popolazione, secondo questa ipotesi gli anni di vita guadagnati sarebbero trascorsi in cattiva salute; il secondo scenario prevede un equilibrio dinamico, secondo il quale l'aumento dell'aspettativa di vita non si accompagnerebbe al medesimo aumento della morbilità, pertanto ci sarebbe solo una traslazione in avanti negli anni dell'incidenza della cronicità; il terzo postula la compressione della morbilità, pertanto la crescita della sopravvivenza sarebbe seguita dal miglioramento delle condizioni di salute.

Allo stato attuale, naturalmente, non è possibile stabilire quale dei tre scenari sia il più verosimile, occorrerebbe, per esempio, sapere se sull'aumento della sopravvivenza incidono maggiormente le po-

TABELLA 2 Proiezioni della prevalenza di alcune patologie croniche per classe di età e ripartizione territoriale (valori assoluti)

	Diabete		Ipertensione		Artrite/Artrosi		Osteoporosi		Asma bronchiale		Bronchite cronica	
	2024	2034	2024	2034	2024	2034	2024	2034	2024	2034	2024	2034
Nord ovest												
0-24	7.768	7.751	7.768	7.751	7.768	7.751	0	0	159.251	158.890	27.189	27.128
25-44	49.716	50.905	133.850	137.051	87.959	90.062	15.297	15.663	168.269	172.293	45.892	46.989
45-64	275.346	248.279	1.116.968	1.007.168	826.037	744.836	270.150	243.594	197.418	178.011	145.466	131.166
65-74	389.603	498.455	1.180.021	1.509.710	1.081.920	1.384.199	442.858	566.589	134.539	172.128	173.780	222.333
75 +	567.962	652.065	1.601.466	1.838.610	1.688.367	1.938.379	955.914	1.097.465	211.046	242.297	366.227	420.457
Tot	1.290.395	1.457.454	4.040.074	4.500.289	3.692.051	4.165.228	1.684.220	1.923.311	870.522	923.620	758.553	848.072
Nord est												
0-24	8.712	8.788	5.808	5.859	5.808	5.859	0	0	104.545	105.454	23.232	23.434
25-44	31.873	33.117	104.311	108.383	89.824	93.330	8.693	9.032	124.594	129.457	37.668	39.138
45-64	192.939	177.940	860.507	793.610	740.885	683.288	196.798	181.498	138.916	128.116	115.763	106.764
65-74	265.539	350.715	899.994	1.188.684	849.319	1.121.754	314.187	414.968	97.297	128.506	129.729	171.342
75 +	332.252	390.266	1.111.937	1.306.089	1.282.493	1.506.425	564.829	663.451	132.901	156.106	263.587	309.611
Tot	831.315	960.825	2.982.558	3.402.624	2.968.329	3.410.654	1.084.506	1.268.950	598.253	647.640	569.979	650.289
Centro												
0-24	5.706	5.654	5.706	5.654	5.706	5.654	0	0	99.848	98.942	19.970	19.788
25-44	30.137	30.126	93.424	93.390	66.301	66.277	9.041	9.038	102.465	102.428	24.110	24.101
45-64	235.884	223.069	819.792	775.257	672.848	636.296	228.150	215.755	139.210	131.647	119.875	113.363
65-74	290.013	369.014	884.541	1.125.492	843.110	1.072.775	366.660	466.539	124.291	158.149	165.722	210.865
75 +	444.830	511.290	1.131.269	1.300.285	1.336.748	1.536.465	790.307	908.383	171.610	197.249	331.929	381.521
Tot	1.006.570	1.139.152	2.934.731	3.300.078	2.924.714	3.317.467	1.394.158	1.599.715	637.424	688.414	661.605	749.
Mezzogiorno												
0-24	14.439	12.965	9.626	8.643	9.626	8.643	4.813	4.322	151.607	136.129	26.471	23.769
25-44	53.875	47.822	142.035	126.075	156.729	139.117	17.142	15.216	154.280	136.944	61.222	54.343
45-64	420.044	383.056	1.416.500	1.291.767	1.309.190	1.193.906	462.969	422.201	254.479	232.071	245.281	223.683
65-74	635.160	765.000	1.680.998	2.024.630	1.583.549	1.907.260	781.333	941.055	191.418	230.548	391.537	471.575
75 +	765.371	934.519	1.906.743	2.328.136	2.132.344	2.603.595	1.365.302	1.667.035	285.761	348.914	611.628	746.799
Tot	1.888.889	2.143.362	5.155.903	5.779.251	5.191.437	5.852.521	2.631.559	3.049.828	1.037.545	1.084.606	1.336.140	1.520.168
Italia												
0-24	36.625	35.157	28.908	27.906	28.908	27.906	4.813	4.322	515.250	499.415	96.862	94.119
25-44	165.601	161.969	473.621	464.899	400.812	388.786	50.173	48.949	549.608	541.122	168.891	164.571
45-64	1.124.212	1.032.344	4.213.767	3.867.802	3.548.960	3.258.325	1.158.066	1.063.049	730.023	669.846	626.386	574.975
65-74	1.580.315	1.983.184	4.645.554	5.848.515	4.357.898	5.485.988	1.905.039	2.389.151	547.545	689.331	860.767	1.076.115
75 +	2.110.415	2.488.140	5.751.415	6.773.120	6.439.953	7.584.864	3.676.351	4.336.334	801.317	944.567	1.573.371	1.858.388
Tot	5.017.168	5.700.794	15.113.265	16.982.242	14.776.530	16.745.870	6.794.442	7.841.805	3.143.744	3.344.281	3.326.277	3.768.167

Fonte: Elaborazioni su dati Istat - Previsioni demografiche (Anni 2011-2065) - dati pre-Censimento 2011 di fonte anagrafica; Indagine sulle condizioni di salute e utilizzo dei servizi sanitari - Anno 2013

litiche di prevenzione o l'aumento dell'efficacia delle cure. La prevenzione agirebbe sugli stili di vita, riducendo la prevalenza di cronicità; l'efficacia delle cure, frutto di una forte innovazione tecnologica e dei progressi scientifici, aumenterebbe gli anni di vita ma non migliorerebbe necessariamente la salute. Nel primo caso ci si potrebbe effettivamente attendere una contrazione della morbilità, nel secondo un suo deciso aumento. Negli ultimi anni si sta facendo avanti

nella letteratura scientifica un'altra ipotesi che svincola in parte la spesa sanitaria dal processo di invecchiamento della popolazione su cui si basano i tre precedenti scenari. Tale ipotesi [5] (death related costs) sostiene che la quota maggiore di costi per la sanità viene sostenuta nell'ultimo anno di vita e che questi decrescano con l'età del malato, pertanto l'invecchiamento della popolazione non avrebbe un impatto rilevante sulla spesa sanitaria.

Le ultime previsioni della spesa sanitaria effettuate dal Ministero dell'Economia e Finanza, Ragioneria Generale dello Stato [6] (RGS) hanno considerato uno scenario che assume l'invarianza nel tempo del profilo di consumo per età, sesso e tipologia di prestazione, il costo unitario delle prestazioni è legato all'andamento del Pil. Tale approccio valuta l'andamento della spesa sanitaria pubblica futura solo in relazione all'invecchiamento della popolazione, ipotizzando costante il consumo sanitario e il rapporto tra costi e Pil. Sulla base di questo scenario la RGS stima che l'incidenza della spesa pubblica sul pil nel 2025 sarà pari a circa al 7,2%, nel 2035 al 7,6% e raggiungerà l'8,3% nel 2060.

Sul lato della spesa sociale destinata all'assistenza agli anziani e ai disabili, il nostro Paese sta mostrando evidenti segni di difficoltà a far fronte ai bisogni legati alle rilevanti trasformazioni sociali ed economiche inerenti la pressione demografica, le modificazioni delle strutture familiari, la crisi economica con la crescente disoccupazione. A queste difficoltà il nostro sistema di welfare sta cercando di rispondere con riforme e interventi che poggiano su una diversa allocazione di risorse - all'interno del sistema di protezione sociale - tra pensioni, forme di sostegno al reddito e all'occupazione, sanità e assistenza. Tuttavia, gli sforzi sino ad ora profusi non sembrano andare nella giusta direzione, come dimostra la continua contrazione delle risorse per il settore dell'assistenza sociale. Una testimonianza è rappresentata dai finanziamenti a disposizione dei Comuni che, a partire dal 2011, mostrano una importante contrazione a causa riduzioni delle entrate da trasferimenti statali, che unitamente ai vincoli stabiliti dal Patto di stabilità interno, tendono a contenere le spese. Infatti, importanti riduzioni riguardano sia la principale fonte di finanziamento nazionale del welfare locale, data dal Fondo nazionale per le politiche sociali, sia altri fondi specifici, le cui risorse vengono stanziare annualmente con le leggi di stabilità. La conseguenza delle continue riduzioni di spesa è evidente quando si osserva che nel 2011 la spesa pro capite per gli anziani a carico dei bilanci comunali è stata pari a soli 112 euro, per un totale di meno 1,4 miliardi annui, pari allo 0,1% del Pil.

In generale, il sistema di protezione sociale del nostro Paese, nel 2013, ha allocato per la spesa per l'assistenza di lungo periodo agli anziani non autosufficienti solo l'1,9% del Pil, la Ragioneria Generale per questa tipologia di spesa, sempre nell'ambito dello scenario legato all'invecchiamento, prevede un aumento di tale quota che si

attesterebbe, nel 2025 a circa il 2%, nel 2035 al 2,3% e raggiungerà quasi il 3,3% nel 2060.

Conclusioni

Il Sistema di welfare italiano si trova a far fronte a vecchie e nuove sfide con risorse sempre più limitate, le prospettive future, viste le dinamiche demografiche ed epidemiologiche che rendono necessarie soluzioni innovative in grado di assicurare il soddisfacimento dei bisogni dei cittadini e la sostenibilità dell'intero sistema. Si tratti di una riflessione necessaria e urgente, affinché non ci si trovi costretti a scelte di emergenza che finirebbero per peggiorare, anziché risolvere, i problemi della nostra società. Appare ormai evidente che le riforme prospettate sino ad ora, basate su una diversa allocazione di risorse all'interno del sistema di protezione sociale, in particolare tra pensioni e altre forme di assistenza, non abbiano dato risposte adeguate al cambiamento dell'economia e della società. Vale la pena iniziare a ragionare su alcune proposte, emerse già da qualche anno, che prospettano, sulla scorta di esperienze europee dei welfare-mix, un "secondo welfare" basato su sistemi, sostenuti con incentivi pubblici, in grado di intrecciare in modo virtuoso l'iniziativa privata e quella di natura associativa.

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- [3] La stima della prevalenza è stata fatta ipotizzando che la dinamica della cronicità e gli altri fattori che la possono influenzare, come per esempio le risorse a disposizione del settore e lo sviluppo dell'innovazione scientifica e tecnologica, mantenga lo stesso trend osservato tra il 2005 e il 2012.
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Latest news on NCDs -

March-June 2015¹

THE "OSSERVATORIO NAZIONALE SULLA SALUTE NELLE REGIONI ITALIANE" HAS PRESENTED THE REPORT "OSSERVASALUTE" 2014



The "Rapporto Osservasalute" 2014 is now online. It has been presented on 30th of March at the Università Cattolica del Sacro Cuore of Rome.

Since 12 years, the National Observatory on Health in the Italian Regions monitors the health status of the population and the impact of the organizational determinants on which the Regional Health Services are currently based. The Report Osservasalute is divided into two parts, dealing first with issues relating to health and the needs of the population and the second to the Regional Health Systems and the quality of services offered. It has the aim to collect objective and scientifically rigorous data, to make them available to the national and international scientific community and those who

have decision-making responsibilities, so that they could take appropriate action, timely and rational, likely to improve health and to meet the needs of target populations.

<http://www.osservasalute.it/>

DEATHS FROM CARDIOVASCULAR DISEASE INCREASE GLOBALLY WHILE MORTALITY RATES DECREASE

Cardiovascular diseases, the leading cause of premature death in the world, include heart attacks, strokes, and other circulatory diseases. At the same time, efforts to prevent and treat cardiovascular diseases appear to be working as the rise in deaths is slower than the overall growth of the population.

<http://www.sciencedaily.com/releases/2015/04/150402101410.htm>

Diabetes &...

8TH ITALIAN BAROMETER DIABETES FORUM



The 2015 Italian Barometer Diabetes Forum, will take place on 2nd and 3rd of July. The title of the 8th edition of the Forum is "Obesity and type 2 diabetes management: fighting the double burden. Coming soon at:

<http://www.ibdo.it/>

GLOBAL ECONOMIC IMPACT OF DIABETES REVEALED IN NEW STUDY

Diabetes reduces people's employment chances and wages around the world, according to a new study. Researchers studied the economic impact of type II diabetes worldwide, and were surprised to find not only a large cost burden in high-income countries, but also in low and middle-income countries - where people with diabetes and their families face high costs for treatment. While it is widely known that diabetes poses a huge health challenge, awareness of its impact on the global economy and labor markets has never before been studied in such detail.

<https://www.uea.ac.uk/about/-/global-economic-impact-of-diabetes-revealed-in-new-study>

Alcohol & Smoke

CIGARETTE WARNING LABELS MAY BE MORE EFFECTIVE WITH IMAGERY

Young adults are more likely to appreciate the dangers of smoking when warnings are presented in images as well as text, according to a new study. The labels used in the study emphasized negative consequences of smoking associated with lung cancer, heart disease and stroke, impotence, eye disease, neck, throat and mouth cancers, and vascular disease.

https://news.wsu.edu/2015/04/07/cigarette-warning-labels-may-be-more-effective-with-imagery/#.VXmZkc_tmko

¹ In collaboration with the European Public Health Association (EUPHA)

ELECTRONIC CIGARETTE VAPORS CONTAIN TOXINS, HAVE POTENTIAL TO BE A PUBLIC HEALTH CONCERN

On the heels of the Federal Drug Administration's (FDA) second public workshop to explore the public health considerations associated with e-cigarettes, nonprofit research organization RTI International released a new research paper "Exhaled Electronic Cigarette Emissions: What's Your Secondhand Exposure?," which explores the composition of e-cigarette vapor and the potential health impacts of secondhand exposure.

<http://www.rti.org/newsroom/news.cfm?obj=634D5E57-AE47-910C-96E6B0EE7A3C9455>

SEEING COMMERCIALS FOR ELECTRONIC CIGARETTES CAN INCREASE THE URGE TO SMOKE TRADITIONAL CIGARETTES, A NEW STUDY SUGGESTS.

Researchers at the Annenberg School for Communication at the University of Pennsylvania discovered that watching advertisements that showing vaping can increase the desire of current and former smokers to pick up a conventional cigarette. In the new study, published in the journal Health Communication, the researchers assessed the urge to smoke among 301 daily smokers, 272 intermittent smokers and 311 former smokers. They then had the participants watch three e-cigarette commercials. Some of the commercials showed vaping, and others did not.

<http://time.com/3744977/electronic-cigarettes-ecigs-vaping-ads/>

EXPERTS CALL FOR A TOBACCO-FREE WORLD BY 2040

Leading public health researchers today call for the sale of tobacco to be phased out by 2040, showing that with sufficient political support and stronger evidence-based action against the tobacco industry, a tobacco-free world — where less than 5 percent of adults use tobacco — could be possible in less than three decades.

<http://www.reuters.com/article/2015/03/13/health-tobacco-idUSL5N0WC30520150313>

REDUCING GLOBAL TOBACCO USE

Although global efforts to cut tobacco use have had some success, more can be done to reduce the number of deaths from smoking, according to a new commentary. More than 170 countries have signed the World Health Organization's (WHO) Framework Convention on Tobacco Control agreement since it was adopted in 2005. However, smoking rates are still high in many low- and middle-income countries compared with Canada and other high-income countries where efforts to curb smoking have been more successful.

http://www.sciencedaily.com/releases/2015/04/150420122830.htm?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily%2Fscience_society%2Fpublic_health+%28Public+Health+News+---+ScienceDaily%29

Prevention & Risk Factors

MOST PARENTS CAN'T TELL IF THEIR KID IS OBESE

Parents of obese children may not be able to recognize that their kid is overweight unless they are at very extreme levels of obesity, new research shows. The study published in the British Journal of General Practice found that parents are additionally more likely to underestimate their child's weight if they are Black or south Asian, from more deprived backgrounds or if their offspring is male.

<http://www.nhs.uk/news/2015/03/March/Pages/Parents-fail-to-spot-that-their-kids-are-obese.aspx>

TACKLING OBESITY NEEDS A NUMBER OF MAGIC BULLETS

No one health issue has the most impact on human health, or engenders more debate about how to tackle it, than obesity. It has become the scourge of the health agenda, especially in the west, and it is a growing problem. Now experts weigh in on the series of challenges faced by everyone in the field of obesity care and study: from environmental and personal factors to biology, behaviour, cutting edge science, politics and public health.

http://www.sciencedaily.com/releases/2015/05/150515102040.htm?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily%2Fscience_society%2Fpublic_health+%28Public+Health+News+---+ScienceDaily%29

**UK COALITION
GOVERNMENT DERAILED
EFFORTS TO REDUCE
SALT IN FOOD**

A poor diet is the leading cause of death and disability worldwide. Large amounts of salt, for example, are added to food by industry and eating too much can raise blood pressure, a major factor associated with strokes, heart failure and heart attacks. The UK coalition government derailed a successful program that reduced salt content added to foods by industry, argue experts in a new article.

http://www.sciencedaily.com/releases/2015/04/150428190633.htm?utm_source=feedburner&utm_medium=email&utm_campaign=Feed%3A+sciencedaily%2Fscience_society%2Fpublic_health+%28Public+Health+News+---+ScienceDaily%29

Other News

**WHAT DO WE KNOW
ABOUT THE STRENGTHS
AND WEAKNESS OF
DIFFERENT POLICY
MECHANISMS TO
INFLUENCE HEALTH
BEHAVIOUR IN THE
POPULATION?**

With health care systems under increasing pressure the development of a well-defined and effective public health strategy has never been more important. Many health problems are potentially avoidable and governments have long had tools at their disposal to influence population health and change individual behaviours, directed both 'upstream' at some of the underlying causes of poor health, as well as at 'downstream' challenges when poor health behaviours are already manifest. But how effective are these different actions? This policy summary briefly maps out what is known about some of these mechanisms, including approaches that have come to recent prominence from behavioural economics and psychology. Combinations of taxation, legislation and health information remain the core components of any strategy to influence behavioral change. There remain many unanswered questions on how best to design new innovative interventions that can complement, and in some instances augment, these well-established mechanisms.

<http://www.euro.who.int/en/about-us/partners/observatory/publications/policy-briefs-and-summaries/what-do-we-know-about-the-strengths-and-weakness-of-different-policy-mechanisms-to-influence-health-behaviour-in-the-population>

**NEW WHO STATEMENT ON
PUBLIC REPORTING OF
CLINICAL TRIAL RESULTS**

The WHO have announced a new statement on the public disclosure of clinical trial results which updates and expands a previous statement that noted the 'the registration of all interventional trials is a scientific, ethical, and moral responsibility.' The new statement includes timelines by which researchers are expected to report clinical trials results.

<http://www.who.int/ictrp/results/en/>

Interesting publications on NCDs

March - June 2015

Trends & Policy

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